ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UNDER GRADUATE PROGRAM

Course Structure and Syllabus
Of

BCA

W.e.f. AY 2022-23

ADAMAS UNIVERSITY, KOLKATA
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION OF THE UNIVERSITY

To be an internationally recognized university through excellence in inter-disciplinary education, research and innovation, preparing socially responsible well-grounded individuals contributing to nation building.

MISSION STATEMENTS OF THE UNIVERSITY

M.S 01: Improve employability through futuristic curriculum and progressive pedagogy with cutting-edge technology

M.S 02: Foster outcomes based education system for continuous improvement in education, research and all allied activities

M.S 03: Instill the notion of lifelong learning through culture of research and innovation

M.S 04: Collaborate with industries, research centres and professional bodies to stay relevant and up-to-date

M.S 05: Inculcate ethical principles and develop understanding of environmental and social realities

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CHANCELLOR / VICE CHANCELLOR

ADAMAS UNIVERSITY, KOLKATA
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION OF THE SCHOOL

To develop well-grounded, socially responsible engineers and technocrats in a way to create a transformative impact on Indian society through continual innovation in education, research, creativity and entrepreneurship.

MISSION STATEMENTS OF THE SCHOOL

M.S. 01: Build a transformative educational experience through disciplinary and inter-disciplinary knowledge, problem solving, and communication and leadership skills.

M.S. 02: Develop a collaborative environment open to the free exchange of ideas, where research, creativity, innovation and entrepreneurship can flourish among individual students.

M.S. 03: Impact society in a transformative way – regionally and nationally - by engaging with partners outside the borders of the university campus.

M.S. 04: Promote outreach programs which strives to inculcate ethical standards and good character in the minds of young professionals.

DEAN / SCHOOL CONCERNED

ADAMAS UNIVERSITY, KOLKATA
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION OF THE DEPARTMENT

Graduates of the Department of Computer Science and Engineering will be recognized as innovative leaders in the fields of computer science and software engineering. This recognition will come from their work in software development in a myriad of application areas, as well as through their work in advanced study and research. The faculty is, and will continue to be, known for their passion for teaching and for their knowledge, expertise, and innovation in advancing the frontiers of knowledge in computer science and software engineering.

MISSION STATEMENTS OF THE DEPARTMENT

M.S 01: Our mission is to teach and prepare liberally educated, articulate, and skilled computer scientists and software engineers for leadership and professional careers and for advanced study.

M.S 02: A central objective of our program is to contribute to society by advancing the fields of computer science and software engineering through innovations in teaching and research, thus enhancing student knowledge through interactive instruction, global engagement, and experiential learning.

M.S 03: The program will serve as a resource to inform society about innovations related to the production and uses of computers and software.

M.S 04: To impart moral and ethical values, and interpersonal skills to the students.

HEAD OF THE DEPARTMENT	**DEAN / SCHOOL CONCERNED**

ADAMAS UNIVERSITY, KOLKATA
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Name of the Programme: BCA

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 01: Graduates would demonstrate analytical and design skills including the ability to generate creative solutions and foster team-oriented, professionalism through effective communication in their careers.

PEO 02: Graduates would expertise in successful careers based on their understanding of formal and practical methods of application development using the concept of computer programming languages and design principles in national and international level.

PEO 03: Graduates would pursue advanced education, research and development moreover other creative and innovative efforts in Computer Application, as well as other professional careers.

PEO 04: Graduates would implement their exhibiting critical thinking and problem solving skills in professional practices or tackle social, technical and business challenges.

PEO 05: Graduates would illustrate effective work conventionalities and be able to adapt as well as accept to the challenges of a dynamic job environment.

HEAD OF THE DEPARTMENT	**DEAN / SCHOOL CONCERNED**

ADAMAS UNIVERSITY, KOLKATA
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Name of the Programme: BCA

GRADUATE ATTRIBUTES/PROGRAMME OUTCOMES

GA 1 / PO 1: Computational knowledge: Acquire Knowledge of mathematical foundations, computer application theory and algorithm principles in the design and modelling of computer based system.
GA 2 / PO 2: Design/development of solutions: Avail appropriately system design notations and apply system design engineering process in order to design, plan, and implement software systems.
GA 3 / PO 3: Conduct investigations of complex problems: Implement document solutions to significant computational problems and apply mathematical and scientific reasoning to a variety of computational problems for the research in the computer application field.
GA 4 / PO 4: Problem analysis: Earn caliber to design, analyze and develop principles in the construction of complex hardware and software design computer systems.
GA 5 / PO 5: The engineer and society: Own Skills of observations and drawing logical inferences from the scientific experiments and develop application programs to meet the desired results including attainable constraints such as social, economic, environmental, functional, and technological.
GA 6 / PO 6: Communication: Assist and manage the execution of a productive project planning through effective communication among range of professional/non-professional audience.
GA 7 / PO 7: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
GA 8 / PO 8: Environment and sustainability: Appraise regarding the social and environmental issues to fulfil the local and global needs and give relevant solutions for them.
GA 9 / PO 9: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
GA 10 / PO 10: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
GA 11 / PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
GA 12 / PO 12: Life-long learning: Understand and adopt emerging technologies, research, strategies for lifelong learning at national and international level.

HEAD OF THE DEPARTMENT **DEAN / SCHOOL CONCERNED**

ADAMAS UNIVERSITY, KOLKATA
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Name of the Programme: BCA

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO-1: To engage in professional development and to pursue post graduate education in the fields of Information Technology and Computer Applications.

PSO-2: To provide the students about computing principles and business practices in software solutions, outsourcing services, public and private sectors.

PSO-3: Analyze and synthesis computing systems through quantitative and qualitative techniques.

HEAD OF THE DEPARTMENT	**DEAN / SCHOOL CONCERNED**

ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

UG Program: BCA

COURSE STRUCTURE

FIRST YEAR

SEMESTER I							
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**H**	**C**
1	MTH11221	Mathematics-I	3	1	0	4	4
2	CSE11401	Introduction to Programming	3	0	0	3	3
3	ENG11055	English Communication	3	0	0	3	3
4	CSE11402	Computer Fundamentals	3	0	0	3	3
5	EVS11112	Environmental Science	3	0	0	3	3
6	CSE12403	Programming Lab	0	0	3	3	2
7	DGS11001	Design Thinking	2	0	0	2	2
Total			**17**	**1**	**3**	**21**	**20**

SEMESTER II							
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**H**	**C**
1	MTH11507	Mathematics-II	3	1	0	4	4
2	CSE11404	Programming &Data Structures	3	0	0	3	3
3	ECE11501	Digital Electronics	3	0	0	3	3
4	CSE11405	Design of Logic Circuits	3	0	0	3	3
5	CSE11453	Principles of Programming	3	0	0	3	3
6	CSE12407	Data Structures Lab	0	0	3	3	2
7	ECE12502	Digital Electronics Lab	0	0	3	3	2
8	CSE12454	Principles of Programming Lab	0	0	3	3	2
9	EIC11001	Venture Ideation	2	0	0	2	2
Total			**17**	**1**	**9**	**27**	**24**

1st Year Credits = 44

SECOND YEAR

SEMESTER III							
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**H**	**C**
1	CSE11409	Object Oriented Programming with JAVA	3	0	0	3	3
2	CSE11455	Data Science with Python	3	0	0	3	3
3	CSE11411	Computer Organization & Architecture	3	0	0	3	3
4	CSE11412	Database Management System	3	0	0	3	3
5	CSE12413	Object Oriented Programming Lab	0	0	3	3	2
6	CSE12456	Data Science with Python Lab	0	0	3	3	2
7	CSE12415	Computer Organization Lab	0	0	3	3	2
8	CSE12416	Database Management System Lab	0	0	3	3	2
9	SOC14100	Community Service[#]	0	0	0	0	1
10	IDP14001	Interdisciplinary Project	0	0	5	5	3
Total			**12**	**0**	**17**	**29**	**24**

#Community Service will be taken up during the summer break after 2th semester, and will be evaluated in the 3rd semester.

SEMESTER IV							
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**H**	**C**
1	ECE11503	Data Communication & Computer Network	3	0	0	3	3
2	CSE11417	Algorithm Design	3	0	0	3	3
3	CSE11418	Operating System	3	0	0	3	3
4	CSE11457	Introduction to Cloud Computing	3	0	0	3	3
5	ECE12504	Computer Network Lab	0	0	3	3	2
6	CSE12420	Algorithm Design Lab	0	0	3	3	2
7	CSE12421	Operating System Lab	0	0	3	3	2
8	CSE12458	Cloud Computing Lab	0	0	3	3	2
9	CSE12459	Applied Computing Lab	0	0	3	3	2
10	PSG11021	Human Values and Professional Ethics	2	0	0	2	2
Total			**14**	**0**	**15**	**29**	**24**

2nd Year Credits : 48

THIRD YEAR

SEMESTER V							
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**H**	**C**
1	CSE11406	Web Designing	3	0	0	3	3
2	CSE11460	AI and Machine Learning	3	0	0	3	3
3	CSE11424	Software Engineering	3	0	0	3	3
4	TBD	Business Communication	3	0	0	3	3
5	CSE12461	AI and Machine Learning Lab	0	0	3	3	2
6	CSE12408	Web Designing Lab	0	0	3	3	2
7	CSE14428	Project-I	0	0	0	0	4
Total			**12**	**0**	**6**	**18**	**20**

SEMESTER VI							
S.No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**H**	**C**
1	MKT12403	E-commerce & Applications	3	0	0	3	3
2	CSE11429	Cyber Security	3	0	0	3	3
3	CSE15430	Comprehensive Viva Voce	0	0	0	0	4
4	CSE14431	Project-II	0	0	12	0	8
Total			**6**	**0**	12	**6**	**18**

3rd Year Credits: 38

CREDIT DISTRIBUTION (SEMESTER-WISE)

SEM I	SEM II	SEM III	SEM IV	SEM V	SEM VI	TOTAL
20	**24**	**24**	**24**	**20**	**18**	**130**

CREDIT DISTRIBUTION (YEAR-WISE)

YEAR I	YEAR II	YEAR III	TOTAL
44	**48**	**38**	**130**

MTH11221	Mathematics-I	L	T	P	C
Version 1.0	Contact Hours –60	3	1	0	4
Pre-requisites/Exposure	12th level Mathematics				
Co-requisites	--				

Course Objectives:

1. To develop the fundamental concepts of set theory, differential calculus and its applications in real life problems
2. To understand the basics of linear algebra, different functional forms, and graphical presentation.
3. Build up the concept of fundamental knowledge of integral calculus and its applications in several areas.

Course Outcomes

On completion of this course, the students will be able to

CO1. **Explain** the basic idea of set theory and functions.
CO2. **Define** the different functional forms and show their graphical presentation.
CO3. **Utilize** the fundamental concepts of differential calculus to find the maximum/ minimum value of a function.
CO4. **Illustrate** the basic concept of integration and its applications to find areas under the curves.

Course Description:

Knowledge of mathematics is pre-requisite to understand the modern theoretical as well as applied economics. This course is a review course to help students brush up their high school mathematics and getting a foothold of basic mathematical tools needed for the beginners. This course will help them to understand the basics of algebra, different functional forms, and graphical presentation. They will learn to evaluate limit, continuity and differentiation. It will continue to strengthen the basic knowledge of integration for students. The emphasis is on the understanding and developing the skill in the application of mathematical theorems and techniques in many disciplines.

Course Content:

Module-I: [15 Lecture Hours]
Algebra of Set: Mapping and Function, Sets, Subset, Power Set, Union, Intersection, Complement, Set Operations, Venn Diagram, Properties of Set, Laws of Algebra of Sets, Inclusion-Exclusion Principle. Mapping, Different types of Mapping with examples, Function and its properties.

Module-II: [14 Lecture Hours]
Differential Calculus: Limits of Function and Continuity, Fundamental Properties of Continuous Functions (without proof), geometric meaning of derivative and differential, rules of differentiation, Examples.

Module -III: [16 Lecture Hours]
Differentiation: Definition of Derivative, Rules of Differentiation (Without Proof), Derivatives of Algebraic, Trigonometric, Parametric, Logarithmic, Explicit / Implicit Functions, Second order Derivative with examples, Application: Maxima/Minima of Functions, and its applications.

Module -IV: [15 Lecture Hours]

Integration and its application: Definition of Integration, Standard Formulas, Method of Substitution, integration by parts, Partial fraction, Reduction Formulas (Without Proof), Area Bounded by the Curve (Excluding volume) and its applications

Text Books:

1. Grewal, B. S., Higher engineering mathematics, Khanna publishers
2. B. K. Pal and K. Das, BCA Mathematics (Volume - I), U. N. Dhur& Sons Publishers

Reference Books:

1. Shanti Narayan, "Differential Caluculs", S.Chand& Company, 1998.
2. Shanti Narayan, P.K. Mittal, Integral Calculus, S.Chand& Company, 1999

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	**Internal Assessment**	**Mid Semester Examination**	**End Semester Examination**
Weightage (%)	**30**	**20**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	P	P	P	P	P	P	P	P	P	PO10	PO11	PO12	PSO1	PSO2	PSO3
MTH11221	Mathematics- I	CO11221.1	2	3	2	1	3	2	1	-	3	-	-	2	3	1	1
		CO11221.2	2	3	1	2	3	3	2	-	1	-	-	2	3	2	1
		CO11221.3	2	3	2	2	2	3	1	-	3	-	-	1	1	2	3
		CO11221.4	2	2	2	3	1	3	3	-	2	-	-	1	1	3	3
		CO11221	2	2	1	2	2	2	1	-	2	-	-	1.5	2.0	2.0	2.0

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name: **Enrolment No:**	ADAMAS UNIVERSITY PURSUE EXCELLENCE

Course: MTH11221 – Mathematics-I
Program: BCA **Time: 03 Hrs.**
Semester: I **Max. Marks: 50**

Instructions:
Attempt any three questions from **Section A** (each carrying 4 marks); any **Two Questions** from **Section B** (each carrying 10 marks)**. Section C** is Compulsory (carrying 8 marks)**.**

	Section A (Attempt **any Three)**		
1.	Let U = {,-2,-1,0, 3, 5, 10, 12, 13, 16} be universal set and A = {-2, 3, 5, 12}, B = {-2, -1, 0, 5, 12, 13} be two subsets of U. **Show** that De-Morgan's Laws hold for the sets A and B. **(U)**	**4**	**CO1**
2.	If $log_a bc = x, log_b ca = y, log_c ab = z$ then **show**that $\frac{1}{x+1}+\frac{1}{y+1}+\frac{1}{z+1}=1$. (**R**)	**4**	**CO2**
3.	**Use** parametric form of differentiation to find $\frac{dy}{dx}$ if $x = e^t(\sin t - \cos t), y = e^t(\sin t + \cos t)$ at $t = \frac{\pi}{4}$.**(AP)**	**4**	**CO3**
4.	**Show** that $\int_0^{\frac{\pi}{2}} \log\tan x\,dx = 0$. **(U)**	**4**	**CO4**
	SECTION B (Attempt any **Two Questions)**		
5.	**Utilize** MVT to prove $\frac{x}{\sqrt{1-x^2}} \geq \sin^{-1} x \geq x$ if $0 \leq x < 1$. When does the equality hold?	**10**	**CO3**

6.	a) **Show** that $\int_0^{\frac{\pi}{2}} x^2 \sin x\,dx = \pi - 2$ **(U)** b) **Apply** the optimum condition to Show that x^x is minimum for $x = \frac{1}{e}$. **(AP)**	**5** **5**	**CO4** **CO3**
7.	Given $f(x) = \begin{cases} 2x + 6, & -3 \le x \le 0 \\ 6, & 0 < x < 2 \\ 2x - 6, & 2 \le x \le 5 \end{cases}$. **Utilize** the definition of limit to evaluate $\lim_{x\to 0} f(x)$, $\lim_{x\to 2} f(x)$ and $\lim_{x\to 5} f(x)$ **. (AP)**	**10**	**CO3**
	SECTION C is Compulsory		
8.	a) **Show** that a and b are the roots of equation $\frac{1}{x-a-b} = \frac{1}{x} - \frac{1}{a} - \frac{1}{b}$ b) Using Venn-diagram **show**that $(A-B)\cup(B-A) = (A\cup B) - (A\cap B)$ **.(U)**	**5** **3**	**CO2** **CO1**

CSE11401	Introduction to Programming	L	T	P	C
Version 1.0	Contact Hour -60	3	1	0	3
Pre-requisites/Exposure	H. Sc. level Computer Knowledge or Basic Computer Skills				
Co-requisites	--				

Course Objectives:

1. To **provide** students with understanding of code organization and functional hierarchical decomposition with using complex data types.
2. To **gain** a thorough understanding of the fundamentals of C programming
3. To **give** stress on fundamental parts of programming language, so that the students will have a basic concept for understanding and using other programming language.

Course Outcomes:

On completion of this course, the students will be able to

CO1.**Define** basics concepts of programming structure and implement the basics concepts of programming.
CO2.**Solve** and execute various problems using programming language to choose the best solution
CO3.**Apply** modularized solution and design such programs to appraise the solution
CO4.**Identify** the basic usage of memory and construct such memory in terms of array in a program. Also, students be able to define user defined data types using structure and union.
CO5.**Create** and manipulate permanent storage access through File Handling.

Course Description:

This course introduces basic concepts in programming language to solve numerical problems. All the lectures will be devoted on discussions of basic theories and advanced topics, focusing on practical implementation of knowledge. Classes will be conducted by lecture as well as power point presentation, audio visual virtual lab session. The tutorials will familiarize the students with practical problem-solving techniques led by the course coordinator. Students will strongly grab the basic concepts of the subject via exercise and discussions with the course coordinator.

Course Content:

Unit-I **12 Lecture Hours**

Basic Concepts of Programming: Introduction to components of a Computer System (disks, memory, processor, where a program is stored and executed, operating systems, compilers, etc.), Idea of Algorithm: steps to solve logical and numerical problems, Representation of Algorithms: Flowchart/Pseudo code with examples, From Algorithms to Programs; source code, variables and memory locations, Syntax and Logical Errors in compilation, Object and Executable code.

Unit-II **12 Lecture Hours**

Basics of C Programming: Characters used in C, Identifiers, Keywords, Data type & sizes, Constants & Variables, Various Operators used such as Arithmetic Operators, Relational & Logical Operators, Increment & Decrement Operators, Assignment Operators, Conditional or Ternary Operators, Bitwise Operators & Expressions; Standard Input

& Output, formatted input scanf( ), formatted output printf( ); Flow of Control, if-else, switch-case, Loop Control Statements, for loop, while loop, do-while loop, nested loop, break, continue, goto, label and exit( ) function.

Unit-III **12 Lecture Hours**

Functions and Pointers: Definition of Function, Declaration or Prototype of Function, Various types of Functions, Call by Value, Call by Reference, Recursion, Tail Recursion, Definition of Pointer, Declaration of Pointer, Operators used in Pointer, Pointer Arithmetic, Functions with Pointer.

Unit-IV **12 Lecture Hours**

Arrays and String: Definition, Single and Multidimensional Arrays, Representation of Arrays - Row Major Order, and Column Major Order, Application of arrays – searching and sorting, Sparse Matrices and their representations. Definition of a String, Declaration of a String, Initialization of a String, Various String Handling Functions with example

Unit-V **12 Lecture Hours**

Structures and Unions: Definition of a Structure, Declaration of a Structure & Structure Variable, Initialization of a Structure, Operators used in Structure, Structure within Structures, Union, Difference between a Structure and a Union.

Files: Types of File, File Processing, Handling Characters, Handling Integers, Random File Accessing, Errors During File Processing.

Text Books:

1. "The Complete Reference", 4th Edition by Herbert Schildt, Tata Mcgraw Hill Education
2. "Programming In ANSI C" by E. Balagurusamy , Tata McGraw - Hill Education, New Delhi

Reference Books:

1. "The C Programming Language", 2nd Edition, Brian W. Kernighan, Dennis M. Ritchie, PHI
2. "Schaum's Outline of Programming with C", 2nd Edition, Byron S. Gottfried, Mcgraw Hill Education

Modes of Examination: Assignment/Quiz/Project/Presentation/Written Exam

Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs)

Mapping between COs, POs and PSOs

Course Outcomes (COs)		Mapped POs and PSOs
CO-1	**Define** basics concepts of programming structure and implement the basics concepts of programming.	**PO1, PO2**
CO-2	**Solve** and execute various problems using programming language to choose the best solution	**PO1, PO4, PSO1**
CO-3	**Apply** modularized solution and design such programs to appraise the solution	**PO1, PO2, PO3, PSO1**
CO-4	**Identify** the basic usage of memory and construct such memory in terms of array in a program. Also, students be able to define user defined data types using structure and union.	**PO2, PO3, PO4,PSO1**
CO-5	**Create** and manipulate permanent storage access through File Handling.	**PO1, PO2, PSO1**

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11401	**Introduction to Programming**	CO11401.1	3	3	1	3	2	1	3	-	2	-	-	2	3	2	1
		CO11401.2	3	3	3	3	3	2	3	-	3	-	-	1	3	2	3
		CO11401.3	2	3	3	3	2	1	3	-	3	-	-	2	3	3	3
		CO11401.4	3	3	2	3	2	2	2	-	2	-	-	1	3	3	1
		CO11401	2.75	3.0	2.25	3.0	2.25	1.5	2.75	-	2.0	-	-	1.2	2.4	2.0	1.6

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name:

Enrolment No:

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION

Name of the Program: BCA **Semester: I**
Code- CSE11401 **Stream- CSE**
Time: 03 Hrs.

Paper title– Introduction to Programming **Total pages- 2**
Max. Marks: 50 **Total no. of questions- 12**

Instructions:
Attempt All Questions from **Section A** (Each Carrying 1 Marks); any **Three Questions** from **Section B** (Each Carrying 5 Marks). **Any Two Questions from Section C** (Each Carrying 10 Marks).

1. At top of sheet, clearly mention Name, Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. Assumptions made if any, should be stated clearly at the beginning of your answer.
3. All parts of a Question should be answered consecutively.

Section A (Answer **All the Questions) (5 x 1 = 5)**			

1.	**What** will be the output?
	int main()
	{
	int a = 10, b = 25;
	a = b++ + a++;
	b = ++b + ++a;
	printf("%d %d \n", a, b);
	}
		R	**CO1**

2.	**What** will be the output?
	{ int i = 0;
	do
	{
	i++;
	if (i == 2)
	continue;
	printf("In while loop ");
	} while (i < 2);
	printf("%d\n", i);
	}
		R	**CO2**

3.	**Classify** break keyword	**U**	**CO2**
4.	**What** is call is by value function calling?	**R**	**CO3**
5.	**Define** Structure	**R**	**CO4**
SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**			
6.	**Solve** the addition of n numbers using for loop.	**AP**	**CO1**
7.	**Compare** the difference between = and == symbols in C language.	**U**	**CO2**
8.	**Find** the key features of C programming language.	**U**	**CO3**
9.	**List** the difference between call by value and call by reference method with a help of example.	**U**	**CO4**
SECTION C (Attempt Any **Two Questions) (2 x 10 = 20)**			
10.	**Solve** a program in C to read the file and store lines into an array.	**AP**	**CO5**
11.	**What** is the description of Syntax error? **Solve** the following pattern using C language: 1 1 2 1 2 3 1 2 3 4	**R** **AP**	**CO2** **CO3**
12.	**Solve**a C program which takes input from user and show the data types of user given input.	**AP**	**CO2**

ENG11055	English Communication	L	T	P	C
Version 1.0	Contact Hour -45	3	0	0	3
Pre-requisites/Exposure	12th level English				
Co-requisites	--				

Course Objectives:

1. To know the importance and techniques of communication skills in order to improve professional skills
2. To enhance the knowledge of the students on vocabulary, syntax, and grammatical skills
3. To improve writing skills by applying writing techniques, tools in practice sessions
4. To achieve an overall enhancement in terms of reading, listening and speaking

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Explain** a basic understanding of communication processes and to know the practical implications and its challenges at the workplace

CO2. **Choose** grammar correctly and unambiguously

CO3. **Compare** formats of business communication like reports, letters, and other technical writings

CO4. **Improve** competence in speaking, reading, listening,and writing in English.

CO5. **Build** English pronunciation and use neutral accent successfully

CO6. **Build** different other accents of spoken English

Catalog Description:

English Communication is one of the basic requirements of a successful career. Both verbal and nonverbal communication is important to exchange ideas among the employees within the organization and outside the organization as well. In this course, the focus will be on improving LSRW skills, i.e. listening, speaking, reading and writing. Students will learn how to communicate effectively through prescribed syllabus. Classroom activities will be designed to encourage students to play an active role in the construction of their own knowledge and in the design of their own learning strategies. We will combine traditional lectures with other active teaching methodologies, such as group discussions, role play, small skit enactments, analysis of video scenes and debates. Class participation is a fundamental aspect of this course. Students will be encouraged to actively take part in all group activities and to give an oral group presentation. Students will be expected to interact with media resources, such as, web sites, videos, DVDs, and newspapers etc.

Course Content

Module I: 9lecture hours

Communication Level 1: Basics of Communication, Means of Communication, Barriers of Communication

Module II: 9 lecture hours

Grammar and Syntax Level 1:Tense: types and uses, Idioms, One Word Substitutes, Discussion on the use of Articles and related exercises, Discussion on the use of Prepositions and related exercises, Exercises on Sentence –Making (Syntax), Practice exercises on Voice change, Class Exercises on Synonyms and Antonyms.

Module III: 9 lecture hours

Reading and Listening Skills Level 1: Introduction to listening skills: purposes and practice, Discussion on types of listening: difference between listening and hearing, Active listening: introduction listening exercises, Elementary level listening exercise, Intermediate level listening exercise, Advance level listening exercise, Introduction to Reading Skills, Strategies of reading, Skimming, Scanning and Summarizing, Comprehension exercises.

Module IV: 9 lecture hours

Speaking Skills Level 1: Introduction to Speaking Skills: Mother tongue influence, Discussion on various kinds of narrative styles and techniques: Welcome speech, Vote of Thanks, Farewell Speech, Debate and Elocution, Class Exercises on Descriptive narration, Practical Exercises on Narration styles, Presentation of small skits, Practicing Extempore in the class, Mock practices of Group discussion, Practicing speaking in pairs, Mock practice of job interviews.

Module V: 9 lecture Hours

Writing Skills Level 1: Business letters: definition, types and format, Practice exercises, Business reports: definition, types and format, Practice exercises, CV and Application letters: types and formats, Practice exercises, Compositions: Essays, precis paragraph writing

Text Books:

1. Kaul Asha. Effective Business Communication. PHI Learning Pvt Ltd. 2014.
2. Wren and Martin. High School Grammar And Composition. S. Chand, 1995.
3. Gupta, A. English Reading Comprehension. Ramesh Publishing House, 2009.

Reference Book:

1. Lewis, Norman. Word Power Made Easy. Anchor: 2014.
2. Riordan, Daniel G & Pauley Steven A. :Technical Report Writing Today. 2004.
3. Hamp-Lyons and Heasely, B . Study Writing; A Course in Written English. For Academic and Professional Purposes, Cambridge Univ. Press, 2006.
4. Quirk R., Greenbaum S., Leech G., and Svartik, J. A Comprehensive Grammar of the English language, Longman:London, 1985.
5. Balasubramaniam, T. A Textbook of English Phonetics for Indian Students. Macmillan: 2012.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
ENG11055		CO11055.1	3	1	1	2	1	1	3	-	1	-	2	1	2	2	3

	ENGLISH COMMUNICATION	CO11055.2	1	2	1	1	3	3	2	-	3	-	2	2	1	2	1
		CO11055.3	1	2	2	2	3	3	2	2	2	-	3	1	3	2	1
		CO11055.4	1	1	3	1	2	2	2	2	3	-	2	1	2	2	1
		CO11055.5	2	2	2	1	2	3	3	-	3	-	-	3	3	2	1
		CO11055.6	3	2	1	2	3	2	1	2	1	-	3	3	2	1	1
		CO11055	1.83	1.67	1.67	1.5	2.33	2.33	2.17	2.0	2.17	-	2.4	1.83	2.17	1.83	1.33

1=weakly mapped 2= moderately mapped 3=strongly mapped

Model Question Paper

Name: **Enrolment No:**	

Course: ENG11055 – English Communication
Program: BCA **Semester: I**

Time: 03 hrs. **Max. Marks:50**

Instructions:

Attempt all questions from **Group A** (each carrying 1 mark); any **Three Questions** from **Group B** (each carrying 5 marks)**; any Two questions fromGroup C** (each carrying 10 marks)**.**

	Group A (Answer all the questions) (5×1=5)		
1.	**Where** were you ___ 28 February, 2019? (Fill in the blank with appropriate preposition)**(R)**	**[1]**	**CO1** **CO2**
2.	**What** is non-verbal communication?**(R)**	**[1]**	
3.	**Name** one word substitute for: "One who loves books"**(R)**	**[1]**	
4.	**What** is the antonym of "Happiness"?**(R)**	**[1]**	
5.	**Recall**an example of an idiom.**(R)**	**[1]**	
	Group B (Attempt any **Three Questions) (3×5=15)**		
6.	**What** are the barriers to communication? Explain some physical and psychological barriers of communication. **(R)**	**[5]**	**CO1**
7.	**What** do you understand by communication? Write a note on the importance of effective communication.**(R)**	**[5]**	**CO1**
8.	Fill in the blanks using suitable article. Please copy the sentences given, while answering: a. He was ____ first man to arrive. b. Would you like to be _____ teacher? c. I am going to buy _____ hat. d. Picasso was ____ famous painter. e. The Ganga is ____ sacred river.	**[5]**	**CO2**
9.	Change the following sentences from active to passive voice: a. The cat killed a mouse b. People lined the road c. He was singing a song yesterday d. I have read this book. e. Who broke the jug?	**[5]**	**CO2**

	GroupC (Attempt any **Two Questions) (2×10=20)**		
10.	**Write** a paragraph on the impact of COVID 19 in our society.**(R)**	**[10]**	**CO3**
11.	**Write** an application to the Vice-Chancellor of your University as the class representative of your respective class requesting permission to organize a science exhibition in your department. **(R)**	**[10]**	**CO3**
12.	**Read** the following passage and answer the questions that follow. A few countries already use powerful electromagnets to build high speed trains. These trains are called maglev trains. Maglev is the shortened form of magnetic levitation. Maglev trains work on the principles of magnetism and float over a guideway. The maglev train is different from a conventional train in that it does not have an engine. At least it does not have the kind of engines that pull train cars along steel tracks. It does not consume fossil fuels either. Since maglev trains float in the air, there is no friction between the train and the track. This lack of friction and the aerodynamic design of these trains allow them to reach speeds of over 500 kilometer per hour. Japan and Germany pioneer research in the maglev train technology. They have already built their prototypes and are in the process of testing them. Transrapid is an electromagnetic suspension system developed by German engineers. The idea of maglev transportation has been in existence for over a century. The first commercial maglev train made its debut in Shanghai, China in 2002. This train was developed by a German company. Right now the Shanghai Transrapid line connects Longyang Road station and Pudong airport. China is planning to extend this line to Hangzhou by building a 99 miles guideway. Several other countries are also planning to build their own maglev train system, but right now the Shanghai maglev train is the only commercial maglev line. Complete the sentences: (2×5=10) (a) The two main differences between maglev trains and conventional trains are: ……..., …….. (b) Maglev trains are environment friendly because …… (c) The two nations that lead the research in maglev train technology are …….. (d) The two factors that help maglev trains to achieve high speeds are ……. (e) A suitable title for the passage would be …….	**[10]**	**CO4** **CO5** **CO6**

CSE11402	Computer Fundamentals	L	T	P	C
Version 1.0	Contact Hour -45	3	0	0	3
Pre-requisites/Exposure	H. Sc. level Computer Knowledge or Basic Computer Skills				
Co-requisites	--				

Course Objectives:

1. To **give** students an in-depth understanding of why computers are essential components in business, education and society.
2. To **introduce** the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software.
3. To **explain** the representation of data and information in computer systems, use standard word, and spreadsheets, graphics generation packages, and standard database system.
4. To **provide** foundational or "computer literacy" curriculum that prepares students for life-long learning of computer concepts and skills.

Course Outcomes

On completion of this course, the students will be able to

CO1.**Recall** the fundamental concepts of computers with the present level of knowledge of the students.
CO2.**Interpret** programming languages, peripheral devices, networking, multimedia and internet
CO3.**Interpret** number systems and their arithmetic with the help of various LOGIC gate.
CO4.**Interpret** how logic circuits and Boolean algebra forms as the basics of digital computer.
CO5.**Demonstrate** the use of Operating system commands and shell script

Course Description:

This course introduces basic concepts in computer fundamental to understand the basic utilise of computer in our daily problems. All the lectures will be devoted on discussions of basic theories and advanced topics, focusing on practical implementation of knowledge. Classes will be conducted by lecture as well as power point presentation, audio visual virtual lab session. The tutorials will familiarize the students with practical problem-solving techniques led by the course coordinator. Students will strongly grab the basic concepts of the subject via exercise and discussions with the course coordinator.

Course Content:

Unit-I **10 Lecture Hours**

Introduction to Computers: Basic Concept, Different types of computer, Characteristics of Computer, Block Diagram of Computer, classification of Computer: Mini, Micro, Main-Frame and Super Computers, Types of Programming Languages: Machine Languages, Assembly Languages and High Level Languages.

Unit-II **8 Lecture Hours**

Number Systems And Logic Gates: Basic Concept, Number Systems, Conversions, Arithmetic System, Signed and Unsigned Numbers, Binary Addition, subtraction, multiplication and division, Logic Gates, Boolean Algebra, Combination of Logic Gates.

Unit-III **9 Lecture Hours**

Data Organization and Memories: Data Organization: Drives, Files and Directories, Types of Memories: RAM ROM, PROM, EPROM, and Secondary Memories: Floppies, Hard Disc, Pen drives, CD; I/O Devices: Scanners, Digitizers, LCD, Optical Input Devices etc.
Hard Drive Performance: Average Access Time, Data Transfer Rate, Optimizing Disk Performance, Disk Cleanup, Defragmentation, File Compression, Drive Interface.

Unit-IV 8 Lecture Hours

Computer Organization: Central processing unit; Machine Cycles; Volatile and Non-Volatile Memory, Flash Memory. Factors affecting Processing Speed, Registers, Memory and Computing Power, Clock. Buses- Data Bus, Address Bus and control Bus. Cache Memory.

Unit-V 10 Lecture Hours

Operating Systems: Need of Operating System, Types of Operating System, User Interface- Command Line and Graphical user Interface, Hardware Management: Device Drivers, Interrupts Processing, and Utility Software.
Features of Different Operating System: DOS, Windows NT, Windows 9X, Windows 2000 Professional, Windows XP, The Macintosh Operating System, UNIX, LINUX

Text Books:

1. Peter Nortons -Introduction to Computers, Sixth Edition, Published by Tata McGraw Hill.

Reference Books:

1. Rajaraman V. – Fundamental of Computers, Prentice Hall of India Pvt. Ltd., New Delhi – 2nd edition, 1996.
2. Computer Fundamentals By P K Sinha & Priti Sinha Fourth Edition.

Modes of Examination: Assignment/Quiz/Project/Presentation/Written Exam

Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs)

Mapping between COs, POs and PSOs

Course Outcomes (COs)		Mapped POs and PSOs
CO-1	**Recall** the fundamental concepts of computers with the present level of knowledge of the students.	PO1, PSO1
CO-2	**Interpret** programming languages, peripheral devices, networking, multimedia and internet	PO1,PO12,PO4
CO-3	**Interpret** number systems and their arithmetic with the help of various LOGIC gate.	PO4,PO12
CO-4	**Interpret** how logic circuits and Boolean algebra forms as the basics of digital computer.	PO1, PO2,PO12,PO4
CO-5	**Demonstrate** the use of Operating system commands and shell script	PO1,PSO1,PO12

		Computational knowledge	Design/development of solutions	Conduct investigations of complex problems	Problem analysis	The engineer and society	Communication	Modern tool usage	Environment and sustainability	Ethics	Individual and team work	Project management and finance	Life-long learning	To engage in professional development and to pursue post graduate education in the fields of Information Technology and Computer Applications.	To provide the students about computing principles and business practices in software solutions, outsourcing services, public and private sectors.	Analyze and synthesis computing systems through quantitative and qualitative techniques.
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CSE11402	Computer Fundamentals	3	2	-	2	-	-	-	-	-	-	-	2	2	-	-

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name:

Enrolment No:

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION

Name of the Program: BCA **Semester: I**
Code- CSE11402 **Stream- CSE**
Time: 03 Hrs.
Paper title– Computer Fundamentals **Total pages- 2**
Max. Marks: 50 **Total no. of questions- 12**

Instructions:
Attempt All Questions from **Section A** (Each Carrying 1 Marks); any **Three Questions** from **Section B** (Each Carrying 5 Marks). **Any Two Questions from Section C** (Each Carrying 10 Marks).

1. At top of sheet, clearly mention Name, Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. Assumptions made if any, should be stated clearly at the beginning of your answer.
3. All parts of a Question should be answered consecutively.

Section A (Answer **All the Questions) (5 x 1 = 5)**			
1.	**What** is the difference between Hardware and Software?	**R**	**CO1**
2.	**Recall** the name of 5 internal and external commands of DOS.	**R**	**CO5**
3.	**What** are storage devices? Explain with examples	**R**	**CO2**
4.	**List** the difference between volatile and non-volatile memory.	**R**	**CO2**
5.	**Explain** Basic gate	**U**	**CO3**
SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**			
6.	**Explain** Defragmentation	**U**	**CO2**
7.	**Define** X-OR gate with the help of truth table and diagram.	**R**	**CO3**
8.	**What** is Memory? **Explain** types of Memory in brief.	**R, U**	**CO2**
9.	**Illustrate** short note on-(I)Taskbar and (II)Toolbar	**U**	**CO5**
SECTION C (Attempt Any **Two Questions) (2 x 10 = 20)**			
10.	**Solve** to simplify the following expression i) $A(A+\overline{A})+B = AA+A\overline{A}+B$ ii) $(A+B)(\overline{A}+B)\overline{B} = (A+B)(\overline{A}\,\overline{B}+B\overline{B})$	**AP**	**CO3**
11.	**Solve** how to make a 2-input NAND out of 2-input NORs	**AP**	**CO3**
12.	**What** is operating system? **Define** the needs of operating system.	**R**	**CO5**

Course code: EVS11112	**Environmental Science**	**L**	**T**	**P**	**C**
Version 1.1	**Contact Hours – 30**	2	0	0	2

Pre-requisites/Exposure	Basic physics, chemistry, mathematics of +2 level.
Co-requisites	--
Academic year	

Course Objectives:

1. To understand the intrinsic relation between humans and environment, our position in the ecosystem around us
2. To comprehend the significance of the biodiversity surrounding us.
3. To figure out the importance and need for energy resources, various sources of energy, renewable and non-renewable sources, conventional and unconventional sources.
4. To have basic concepts about sustainability, our dependence on nature and the consequences of overexploitation.
5. To enable students to appreciate the importance and how much we owe to the earth systems for our survival.
6. To have a basic concept about the types of pollution and mitigation procedures.
7. To have an overall idea about the environmental legal framework in our country and about the EIA and environmental audit procedures.

Course Outcomes:

On completion of this course, the students will be able to

CO 1: **Compare** between various types of ecosystems, ecosystem dynamics, perceive and appreciate the surrounding nature.
CO 2: **Perceive** the intrinsic relation between humans and the environment, our position in the ecosystem around us, and the importance of biodiversity.
CO 3: **Identify** the presence of various pollutants, their significance, and impacts, and develop the underlying concepts involved in various air pollution prevention and mitigation measures.
CO 4: **Estimate** the importance of natural resources including energy resources.
CO 5: **Relate** to the legal framework in our country for safeguarding the environment including pollution prevention, control, management, and wildlife management.

Catalog Description:

To distinguish between various types of ecosystems, ecosystem dynamics, perceive and appreciate the surrounding nature and feel connected, develop the concept of innate relationship of humans and biodiversity, need for conservation and different conservation strategies. The students will be developed in a way so that they can spontaneously comprehend the importance of studying about the various air pollutants, their significance and impacts, and develop the underlying concepts involved in various air pollution prevention and mitigation measures, understand fundamental water chemistry, deduce the relationship between various water pollutants, and understand the principles of various water and wastewater treatment procedures. They will understand the routes of generation, classification, management and environmental significance of solid waste, apply the basic concepts of waste management in their daily lives, understand the need of the 5Rs of waste management, importance of waste minimization.

Course Content:

Unit I: Resources

Multidisciplinary nature of environmental sciences; scope and importance; need for public awareness; concept of sustainability and sustainable development

Forest resources: Function of forests, cause and effects of deforestation, case studies.

Water resources: distribution of water, hydrological cycle, use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies

Food Resources: World food problems and environmental concern, Food security, case studies

Energy resources: Concept of energy, SI Units of Work, Heat and Power, World energy use, Energy consumption pattern in India and U.S., Environmental aspects of energy utilization Renewable and non-renewable sources; Fossil fuel: types, use and environmental impacts, Solar energy: Solar Radiation – Passive and active solar systems – Flat Plate and Concentrating Collectors – Solar direct Thermal Application– Fundamentals of Solar Photo Voltaic Conversion- advantages and disadvantages of Solar Power generation, Solar energy status in India; Wind Energy: site selection, Wind turbine: basic working principle and types, Wind energy status in India, advantages and disadvantages of Wind Power generation; Hydroelectric power : How is it generated, advantages and disadvantages; Biomass energy: various types, generations of biofuel, Biogas plants, Bio diesel; Geothermal Energy: source, advantages and disadvantages, Nuclear Power: nuclear fission, moderation of reaction, nuclear reactor: pressurized water reactor, advantages and disadvantages

Unit II: Ecosystems and Biodiversity and its conservation

Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Food chains, food webs and ecological pyramids, energy flow, ecological succession, Levels of Biodiversity: genetic, species and ecosystem diversity. Biogeographical classification of India, Values of biodiversity, Biodiversity at global, National and local levels, India as a mega-diversity nation, Biodiversity hotspots, Threats to Biodiversity, In-situ and Ex-situ conservation of Biodiversity

Unit III:Environmental Pollution and Waste Management

Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution, marine pollution; case studies. Nuclear hazards and human health risks.

Sources and generation of solid wastes, their characterization, chemical composition and classification. Different methods of disposal and management of solid wastes, Recycling of waste material. Waste minimization technologies.

Unit IV: Global Issues and Environmental Acts of India

Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents, habitat loss, Holocene Extinction.

International agreements on Environmental conservation and pollution prevention.

Environment Laws: Environment Protection Act;Air (Prevention & Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. Waste Management Rules, 2016 and other important acts.

Text Books:

1. Principles of Environmental Science, 4th edition by Cunningham, W.P. and Cunningham, M.A. (2002), Tata McGraw-Hill Publishing Company, New Delhi

2. Basic Environmental Engineering & Elementary Biology by Monidranath Patra and Rahul Kumar Singha, Aryan Publishing house

3. Introduction to Environmental Engineering and Science, by Masters, G.M., Prentice Hall of India, Second Indian Reprint.

Reference Books:

1.Wastewater Engineering: Treatment and Reuse, 4th Edition, Metcalf and Eddy, Inc. McGraw-Hill, Inc., New York, 2002

2.Environmental Engineering", Howard S. Peavy, Donald R. Rowe and George Tchobanoglous, McGraw-Hill Education (India) Private Limited, New Delhi

3.Introduction to Environmental Engineering, 2nd Ed. by Davis, M. L. and Cornwell D. A. McGraw Hill, Singapore.

4.Environmental Sciences: The Environment and Human Impact by Jackson, A.R.W. and Jackson, J.M., Longman Publishers

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination

Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
EVS11112	Environmental Science	CO11112.1	1	3	1	3	2	3	1	-	1	-	-	2	2	1	2
		CO11112.2	3	2	3	1	3	3	2	-	1	-	-	3	3	2	3
		CO11112.3	1	2	2	1	1	3	2	-	3	-	-	1	1	1	3
		CO11112.4	2	3	1	3	2	2	3	-	1	-	-	1	2	2	3
		CO11112.5	2	2	1	1	3	2	3	-	3	-	-	1	2	2	1
		CO11112	1.8	2.4	1.6	1.8	2.2	2.6	2.2	-	1.8	-	-	1.6	2.0	1.6	2.4

1=weakly mapped 2= moderately mapped 3=strongly mapped

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ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2021

Name of the Program: BCA Semester I Stream: CSE
PAPER TITLE: Environmental Science PAPER CODE: EVS11112
Maximum Marks: 50 Time duration: 3 hours
Total No of questions: 12 Total No of Pages: 02

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 1 = 5)		
1.	Briefly **evaluate** what information about any ecosystem are conveyed by ecological pyramids?	**U**	**CO1**
2.	**Analyse** how DO of a water body is related to eutrophication?	**U**	**CO3**
3.	**What** are the diverse applications of solar energy unlike other renewable energy resources?	**R**	**CO4**
4.	**What** are the different types of wind turbine?	**R**	**CO4**
5.	**List** few problems associated with large dams.	**R**	**CO2**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**What** are the adverse effects of open dumping of municipal solid wastes on environment? **How** does sanitary landfill differ from open dumping? (2.5+2.5 = 5) .	**U**	**CO5**
7.	**What** is electrostatic precipitator? **What** are the advantages of electrostatic precipitator? (2.5+2.5 = 5)	**U**	**CO3**
8.	**Describe** the distribution of water resources.	**R**	**CO5**
9.	**Draw** a simple flowchart describing the steps that are followed in an EIA process in India.	**R**	**CO6**
	SECTION C (Answer Any Two Questions) (2 x 10 = 20)		
10.	**How** is photochemical smog formed? **What** are effects of photochemical smog? **Discuss** the factors affecting photochemical smog? (4+3+3=10)	**U**	**CO4**
11.	**What** do you mean by BOD of water? **How** thermal pollution of water is linked to DO? A city discharges 1.25 m^3/s of wastewater into a stream whose minimum rate of flow is 8.0 m^3/s. The velocity of the stream is about 3.0 km/h. The temperature of the wastewater is 20°C and that of the stream is 15°C. The 20°C BOD_5 of the wastewater is 250 mg/l and that of the stream is 2 mg/L. The wastewater contains no dissolved oxygen, but the stream is flowing with saturated DO concentration of 9.2 mg/L. Saturated DO at 15°C is 10.2 mg/L. At 20°C, deoxygenation constant (k^1) is estimated to be 0.3 per day and reaeration	**Ap**	**CO3**

	constant (k^2) is 0.7 per day. Determine the critical oxygen deficit and its location. Also estimate the 20°C BOD_5 of a sample taken at the critical point. Use the temperature coefficients of 1.135 for k^1 and 1.024 for k^2. (2+2+6=10)		
12.	**What** is hazardous waste? Discuss the methods of hazardous waste management? What is composting? (2+6+2=10)	**An**	**CO3**

CSE12403	Programming Lab	L	T	P	C
Version 1.0	Contact Hour -45	0	0	3	2
Pre-requisites/Exposure	Knowledge of C Programming Language.				
Co-requisites					

Course Objectives:

1. To **introduce** students to the basic knowledge of programming fundamentals of C language.
2. To **impart** writing skill of C programming to the students and solving problems.
3. To **impart** the concepts like looping, array, functions, pointers, file, structure.

Course Outcomes:
On completion of this course, the students will be able to

CO1. **Interpret** various Unix commands.
CO2. **Plan** how to Write, Compile and Debug program in C language
CO3. **Solve** programs connecting decision structure and loops
CO4. **Utilize** user defined functions to solve real time problems
CO5. **Develop** C programs using Pointers to access arrays, strings, functions, structures & files.
CO6. **Utilize** the knowledge of utilization of computer programming in numerical techniques solutions.

Course Description:

This course introduces basic concepts in programming language to solve numerical problems.
All the lectures will be devoted on discussions of basic theories and advanced topics, focusing on practical implementation of knowledge. Classes will be conducted by lecture as well as power point presentation, audio visual virtual lab session. The tutorials will familiarize the students with practical problem-solving techniques led by the course coordinator. Students will strongly grab the basic concepts of the subject via exercise and discussions with the course coordinator.

Course Content:

Experiment 1:
To be familiar with syntax and structure of C- programming and learn problem solving techniques using C language.

Experiment 2:
Implement different data types, Operators and Expressions in C.

Experiment 3:
Implement the knowledge using Decision Statements (if, if-else,if-else-if ladder, switch and GOTO)

Experiment 4:
Familiarize and usage of Loop& nested loop Statements (for,while, do-while)

Experiment 5:
Implement C program using different dimensions of Array.

Experiment 6:
Understand and develop function programming, its types and function-call.

Experiment 7:
Implement C programming with Pointer, String and Function call by reference.

Experiment 8:

Implement C programming with Structure.

Experiment 9:
Implement the concept of data files and file handling in C

Modes of Examination: Assignment/Quiz/Project/Presentation/Written Exam

Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) with Program Outcomes (POs) and Program Specific Outcomes (PSOs)

Mapping between COs, POs and PSOs

Course Outcomes (COs)		Mapped POs and PSOs
CO-1	**Interpret** various Unix commands.	PO1
CO-2	**Plan** how to Write, Compile and Debug program in C language	PO1, PO2, PO4, PSO1
CO-3	**Solve** programs connecting decision structure and loops	PO1, PO2, PO3, PO4, PSO1
CO-4	**Utilize** user defined functions to solve real time problems	PO2, PO4, PSO1,PO7
CO-5	**Develop** C programs using Pointers to access arrays, strings, functions, structures & files.	PO1, PO2, PO4, PO7,PSO1
CO-6	**Utilize** the knowledge of utilization of computer programming in numerical techniques solutions.	PO1, PO3, PSO1,PO7

		Computational knowledge	Design/development of solutions	Conduct investigations of complex problems	Problem analysis	The engineer and society	Communication	Modern tool usage	Environment and sustainability	Ethics	Individual and teamwork	Project management and finance	Life-long learning	To engage in professional development and to pursue post graduate education in the fields of Information Technology and Computer Applications.	To provide the students about computing principles and business practices in software solutions, outsourcing services, public and private sectors.	Analyze and synthesis computing systems through quantitative and qualitative techniques.
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CSE12403	Programming Lab	3	3	2	3	-	-	2	-	-	-	-	-	3	-	-

1=weakly mapped 2= moderately mapped 3=strongly mapped

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ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA | Semester: I | Stream: CSE
PAPER TITLE: Programming Lab
PAPER CODE:CSE12403
Maximum Marks: 50 | Time duration: 3 hours
Total No of questions: 5 | Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Section A (Answer All the Questions) (5 x 10 = 50)			
1.	Write to program to **Show** how comment can be implemented to make your programs readable.	**U**	**CO2**
2.	**Build** a program to generate Fibonacci series.	**AP**	**CO3**
3.	**Develop** a program to display the following pattern. * * * * * * * * * * * * * * *	**AP**	**CO3**
4.	**Find** a procedure to calculate sum of digits of the number using Recursive Function.	**R**	**CO4**
5.	**Solve** a C Program to count number of lines in a file	**AP**	**CO5**

DGS11001	Design Thinking	L	T	P	C
Version 1.0	Contact Hours –30	2	0	0	2
Pre-requisites/Exposure	Knowledge of analysing society problems and product usage problems and a zeal to improve the current situation, in addition to knowing to using laptop/computers, internet, social media interaction, file sharing and uploading, email and communication etiquettes.				
Co-requisites	-				

Course Objectives:

1. To enable students to acquire knowledge, imagination and be more assertive on opinions on problems in society.
2. To enable students to learn basics of research, data collection, analysis, brainstorming to find solutions to issues.
3. To make them understand Design Thinking methodologies to problems in field of study and other areas as well.
4. To help students to understand future Engineering positions with scope of understanding dynamics of working between inter departments of a typical OEM.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Examine** design thinking concepts and principles
CO2. **Find** the methods, processes, and tools of design thinking
CO3. **Apply** the Design Thinking approach and model to real world scenarios
CO4. **Analyze** the role of primary and secondary research in the discovery stage of design thinking

Catalog Description:

Design thinking course is a completely online course offered to the first year UG programs across all streams. This course is designed to help understand the steps followed in the process of designing a solution to a problem.

Course Content:

Unit I: 3 Lecture Hours

WHAT IS DESIGN THINKING: Designers seek to transform problems into opportunities. Through collaboration, teamwork, and creativity, they investigate user needs and desires on the way to developing human-centered products and/or services. This approach is at the very heart of design thinking.

Unit II: 3 Lecture Hours

THE DESIGN THINKING MODEL: A tool that helps guide you along a design thinking path. The model does this by providing a series of activities that that will help you effectively design a product, service or solution to a user's need. The model presents the approach as a process, allowing us to look at each step – or phase – along the journey to the development of a final design.

Unit III: 4 Lecture Hours

PHASE 1: DISCOVER: Begin the design thinking process with the Discover phase, where you will identify the specific problem your design is intended to solve, as well as important usability aspects from those who will use your design. Discovery can be performed through a variety of different research methods which you will learn in this module.

Unit IV: **4 Lecture Hours**

PHASE 2: DEFINE: In the Define phase, you come to understand the problem. We often refer to this as framing the problem. You can do this by using a variety of tools, including storytelling, storyboarding, customer journey maps, personas, scenarios, and more.

Unit V: **4 Lecture Hours**

PHASE 3: DEVELOP: Turn your attention to solving the problem. In this phase you brainstorm custom creative solutions to the problems previously identified and framed. To do this, you conceptualize in any way that helps, putting ideas on paper, on a computer, or anywhere whereby they can be considered and discussed.

Unit VI: **4 Lecture Hours**

PHASE 4: DELIVER: This phase is all about testing and building concepts. Here you take all of the ideas that have been discussed to this point and bring them a little closer to reality by building a concept; something that makes it easier for a user to experience a design. This concept is referred to as a prototype.

Unit VII: **4 Lecture Hours**

PHASE 5: ITERATE: You will test the prototype of your design solution, collecting and acting on feedback received. These actions may mean minor or major revisions to your design, and are repeated as often as necessary until a solution is reached. Tools such as focus groups and questionnaires are used to help you collect feedback that can help with your final design.

Unit VIII: **4 Lecture Hours**

BEYOND DESIGN THINKING: The Design Thinking Model is a tool that helps guide you along a design thinking path. The model does this by providing a series of activities that that will help you effectively design a product, service or solution to a user's need. The model presents the approach as a process, allowing us to look at each step – or phase – along the journey to the development of a final design.

Text Books:

1. Brown, Tim. "What We Can Learn from Barn Raisers." Design Thinking: Thoughts by Tim Brown. Design Thinking, 16 January 2015. Web. 9 July 2015.
2. Knapp, Jake. "The 8 Steps to Creating a Great Storyboard." Co.Design. Fast Company & Inc., 21 Dec. 2013. Web. 9 July 2015.
3. van der Lelie, Corrie. "The Value of Storyboards in the Product Design Process." Journal of Personal and Ubiquitous Computing 10.203 (2006): 159–162. Web. 9 July 2015. [PDF].
4. Millenson, Alisson. "Design Research 101: Prototyping Your Service with a Storyboard." Peer Insight. Peer Insight, 31 May 2013. Web. 9 July 2015.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

DGS11001	**Design Thinking**	**CO11001.1**	**3**	**2**	**1**	**3**	**3**	**3**	**1**	**-**	**3**	**-**	**2**	**1**	**3**	**1**	**2**
		CO11001.2	**2**	**3**	**1**	**2**	**1**	**3**	**1**	**-**	**1**	**-**	**-**	**1**	**3**	**3**	**1**
		CO11001.3	**2**	**1**	**3**	**3**	**3**	**1**	**2**	**-**	**2**	**-**	**-**	**2**	**2**	**2**	**1**
		CO11001.4	**3**	**2**	**2**	**1**	**3**	**2**	**3**	**-**	**1**	**-**	**-**	**3**	**3**	**3**	**2**
		CO11001	**2.5**	**2.0**	**1.75**	**2.25**	**2.5**	**2.25**	**1.75**	**-**	**1.75**	**-**	**2.0**	**1.75**	**2.75**	**2.25**	**1.5**

1=weakly mapped 2= moderately mapped 3=strongly mapped

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ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA Semester: I Stream: CSE
PAPER TITLE: Design Thinking
PAPER CODE: DGS11001
Maximum Marks: 40 Time duration: 3 hours
Total No of questions: 12 Total No of Pages: 01

Instruction for the Candidate:

- At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
- All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
- Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 1 = 5)		
1.	**List** the steps involved in Design Thinking.	**U**	**CO1**
2.	**Estimate** the basic elements of Design Thinking.	**U**	**CO2**
3.	**Define** Napkin Pitch.	**R**	**CO3**
4.	**What** is Assumption testing?	**R**	**CO4**
5.	**Define** the principles of Ethnography.	**U**	**CO2**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
4.	Briefly **explain** the importance of ethnography in design thinking?	**U**	**CO2**
5.	**What** are the successive steps for concept development?	**Ap**	**CO3**
6.	**Explain** the different types of concept development strategies.	**Ap**	**CO3**
7.	**Explain**with Example: surface keys for Assumption Testing.	**Evaluate**	**CO4**
	SECTION (Answer Any Two Questions) (2 x 10 = 20)		
8.	**Explain** in detail about importance of prototyping in Design Thinking.	**U**	**CO4**
9.	**Name** an importance of involving stakeholders in developing new concepts and Plan for conducting experiments within short time and inexpensively.	**Create**	**CO3**
10.	**Distinguish** between design thinking and visualization of a problem.	**An**	**CO1**

Course Objectives:

MTH11507	Mathematics -II	L	T	P	C
Version 1.0	Contact Hours -60	3	1	0	4
Pre-requisites/Exposure	Class 12 Mathematics &Mathematics-I				
Co-requisites	----				

1. To develop the fundamental concepts of complex variables and related terms.
2. To understand the basics of linear algebra and its applications to solve system of equations.
3. To solve the differential equations using various analytical methods.
4. To build the basic concept of line and circle using co-ordinate geometry.

Course Outcomes:

On completion of this course, the students will be able to

CO1: **Recall** the concept of a complex number with its essential properties and learn to perform simple algebra on complex numbers.

CO2: **Define** the various terms related to a matrix, determinant, rank, eigen value and eigen vectors, and their important properties.

CO3: **Apply** the different methods of determinant and matrix theory to obtain the inverse of a matrix and the solution of a system of linear equations.

CO4: **Summarize** the methods to get the solution of differential equations of first and second order.

CO5: **Explain** the general form of a straight line and circle with the knowledge of various basic terms in co-ordinate Geometry.

Course Description:

This is an important course to acquire knowledge of mathematical foundations to be used in computer application theory, build sophisticated algorithms and other applications in related fields. Also, this course skills the students to find solutions of simple problems. This course deals with complex numbers and its algebra in Argand plan, matrix theory, rank, determinants, system of equations, ordinary differential equations of first and second orders, basic co-ordinates geometry: lines and circle. The classes will be conducted by lecture as well as power point presentation, audio-visual session as per requirement. The tutorials will familiarize the students with practical problem-solving techniques guided by the course coordinator. Students will strongly grab the basic concepts of the subject via exercise and discussions with the coordinator.

Course Content:

Module 1: **lecture hours -12**

Complex Numbers: Definition, Representation of Complex Numbers, Argand plane, Sum, subtraction, product and division of complex numbers, Magnitude, argument and square root of complex numbers.

Module2: **lecture hours -18**

Matrices: Determinant and its properties, Matrices, Addition and Multiplication of Matrices, Inverse Matrix, Solution of Linear Equations in three variables by Cramer's Rule, Rank and Inverse of Matrices by Elementary Transformation, System of Linear Equations, Solution by Matrix Inversion Method, Eigen Values & Eigen Vectors, Caley-Hamilton Theorem and related Problems.

Module3: **lecture hours -18**

Ordinary Differential Equations: Introduction to differential equation, Order / Degree of differential equations, solution of first order ordinary differential equations, Linear differential equation, solution of second order differential equation using operator method and its applications.

Module4: **lecture hours -12**

Co-ordinate Geometry: Rectangular axes, distance formulae, section formulae, shifting of origin, slope of a line and angle between two lines, various forms of equations of a line, parallel to axes, point-slope form, slope-intercept form, two-point form, intercepts form and normal form, general equation of a line, circle, related problems.

Text Books:

1. Grewal, B. S., Higher engineering mathematics, Khanna publishers.

Reference Books:

1. Dr. D. C. Sancheti&V. K. Kapoor, Business Mathematics by. S.Chand& Sons Publications**.**

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
MTH11507	Mathematics-II	CO11507.1	2	3	2	2	2	2	2	-	2	-	-	3	2	1	1
		CO11507.2	3	3	3	3	2	2	1	-	3	-	-	3	1	2	3
		CO11507.3	3	1	3	3	2	3	1	-	2	-	-	3	3	3	3
		CO11507.4	2	3	1	1	1	2	2	-	3	-	-	2	3	1	3
		CO11507.5	2	2	3	3	1	1	3	-	3	-	-	2	2	3	3
		CO11507	2.4	2.4	2.4	2.4	1.6	2.0	1.8	-	2.6	-	-	2.6	2.2	2.0	2.6

1=weakly mapped 2= moderately mapped 3=strongly mapped

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Name: **Enrolment No:**	ADAMAS UNIVERSITY PURSUE EXCELLENCE

Course: MTH11507 – Mathematics-II
Program: BCA **Time: 03 Hrs.**
Semester: II **Max. Marks: 50**

Instructions:
Attempt any three questions from **Section A** (each carrying 4 marks); any **Two Questions** from **Section B** (each carrying 10 marks)**. Section C** is Compulsory (carrying 8 marks)**.**

	Section A (Attempt **any Three)**		
1.	**i) Define** a complex number in argantpaln**. ii) What is the magnitude of (4 + 3i)/(3 − 4i)?What** is its polar angle? (R)	**1+3**	**CO1**
2.	**Find** the rank of the matrix:[1 2 3 1 4 2 2 6 5]. (R)	**4**	**CO2**
3.	**Illustrate** the solution of the differential equation $xdy - ydx = \sqrt{(x^2 + y^2)}dx$. (U)	**4**	**CO4**
4.	**Find** the equation of the circle whose center (1,-4) and radius $\sqrt{13}$. (U)	**4**	**CO5**
	Section B (Attempt any**Two)**		
5.	a) If $z_1$and z_2 be any two complex numbers, **show**that $\|z_1 + z_2\| \leq \|z_1\| + \|z_2\|$. (R) b) **Find**the region in the z-plane represented by $\frac{\pi}{6} \leq amp(Z) \leq \pi/3$. (R) c) Solve the equations 3x + y + 2z = 3, 2x - 3y - z = - 3, x + 2y + z = 4, using matrix inversion methods. (Ap)	**5** **5**	**CO1** **CO3**
6.	a)**Explain** the order and degree of the differential equation: $x\frac{dy}{dx} + y = x^3y^6$, and hence find the solution. (U) b) **Illustrate** the solution of$(D-2)^2y = 8(e^{2x} + sin2x)$. (U)	**5** **5**	**CO4** **CO4**
7.	a)**Find** the distance between the points A(–4, –3) and B(5, 7). (U)	**3+3+4**	**CO5**

	b) If C(3, 6) is the midpoint of line interval AB and A has coordinates (–1, 1), **explain**the coordinates of B. (U) c) **Find** the gradient and y-intercept of the line 2x+3y =6. (U)		
	SECTION C is Compulsory		
8.	Verify Cayley-Hamilton theorem for the matrix $A = [1\ 4\ 2\ 3\ ]$ and **apply**Cayley-Hamilton theorem to compute the inverse of A. Also express $A^5 - 4A^4 - 7A^3 + 11A^2 - A - 10I$ as a linear polynomial in A. (Ap)	**10**	**CO3**

CSE11404	Programming & Data Structures	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	3	0	0	3
Pre-requisite/Exposure	Programming Concepts in C				
Co-requisite	Logical Ability				

Course Objectives:

1. Introduce the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms.

2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Define the concept of Dynamic memory management, data types, and algorithms.

CO2: Illustrate advantages and disadvantages of specific algorithms and data structures.

CO3: Solve bugs in program, recognize needed basic operations with data structures.

CO4: Interpret algorithms and data structures in terms of time and memory complexity of basic operations.

CO5: Compare the computational efficiency of the principal algorithms for sorting, searching, and hashing.

Course Description:

Study of advanced programming topics focused on logical structures of data as well as the design, implementation and analysis of algorithms operating on these structures. Students will gain the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms.

Course Content:

Unit-I	**5 Lecture Hours**

INTRODUCTION:
Data and Information, Representation of Data, Data Type, Data Structure, Classifications of Data Structures, Application of Data Structures, Abstract Data Type, Operations Perform on Data Structure, Overview of Different Data Structures
Algorithm, Types of Algorithm, Algorithm Development Life Cycle.

ARRAY AND STRING
Array, One-dimensional array, Address calculation in One-dimensional array
Multi-dimensional array, Address calculation in two-dimensional array, Operations Perform on Array, Applications of Array, Representation of Polynomials , Sparse Matrix
Strings, Array of strings, Operations Perform on Strings.
Pointer Declaration, Address of Operator, Indirection Operator, Null Pointer, void Pointer
Generic Functions, Dangling Pointer, Arithmetic Operation with Pointer, Pointer to Pointer, Pointers and Arrays, Array of Pointers, Pointer to an Array , Pointer to Function
Passing addresses to Function, Function returning Pointer, Dynamic Memory Allocation
Creating one-dimensional array, Creating two-dimensional array, Pointers, Arrays and Strings.

Unit-II	**10 Lecture Hours**

STACK AND QUEUE: Stack, Operations on Stack, Stack Representation with Array, Stack Representation with Linked List, Processing of function calls, ,Evaluation of Arithmetic expressions, Queue, Operations on Queue, Queue Representation with Array, Queue Representation with Linked List, Application of Queue, Drawback of Linear Queue
Circular Queue, Circular Queue Representation with Array, Dequeue, Operation on DeQueue, Priority Queue, Representation of Priority Queue.

LINKED LIST: Limitations of Array, Linked List, Singly Linked list, Operations on Singly linked list, Representation of polynomials using linked list, Circular Linked list, Operation on Circular Link List, Josephus Problem, Doubly Linked list, Operation on Doubly Link List, Circular Doubly Linked List, Disadvantages of Linked List

Unit-III :	**15Lecture Hours**

TREE: Terminology of Tree, Binary Tree, Strictly Binary Tree, Extended Binary Tree,
Complete Binary Tree, Full Binary Tree, Skewed Binary Tree, Binary Expression Tree
Balanced Binary Tree, Threaded Binary Tree, Properties of Binary Tree
Representation of Binary Tree, Binary Tree Traversal, Binary Search Tree
Operations on Binary Search Tree, Heap, Operations on Heap, AVL Tree, Operations on AVL Tree,
GRAPH:Terminology of Graph, Terminology of a Directed Graph, Operations on Graph
Representation of Graph, Graph Traversal, Spanning Trees and Minimum Spanning Trees
Kruskal's Algorithm, Prim's Algorithm.

Unit-IV	**10 Lecture Hours**

SEARCHING AND SORTING
Linear Search, Binary Search, Interpolation Search, Bubble Sort, Insertion Sort
Selection Sort, Quick Sort, Merge Sort, Heap Sort, Radix Sort, Shell Sort, Time complexity of Sorting Algorithms
RECURSION:
Recursion Essentials, Infinite Regress, Depth of Recursion, Recursion Tree, Types of Recursion, Factorial, Fibonacci Sequence, GCD, Integer Power, Tower of Hanoi
Non-attacking Eight Queens, Converting Recursive function to Iterative.

Unit-V	**5 Lecture Hours**

HASHING:
Hash Table, Hash Function, Division Method, Mid Square method, Folding method
Collision Resolution, Linear Probing, Quadratic Probing, Double Hashing, Separate Chaining, Load Factor

FILE STRUCTURE
Elements of File System, Category of File Organisation, Sequential File Organisation
Heap File Organisation, Hash File Organisation, Index Sequential File Organisation
Primary Index, Secondary Index.

Text Books:

1. Fundamentals of Data Structures, Illustrated Edition by Ellis Horowitz, SartajSahni and Computer Science Press.
2. Introduction To Algorithms, Thomas H.Cormen, Thomas H Cormen, Charles E Leiserson, Ronald L Rivest, Clifford Stein.

Reference Books:

1. Algorithms, Data Structures, and Problem Solving with C++, Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing Company.
2. How to Solve it by Computer, 2nd Impression by R. G. Dromey, Pearson Education.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11404	Programming & Data Structures	CO11404.1	3	2	3	3	2	3	2	-	2	-	-	3	3	3	2
		CO11404.2	2	2	2	3	3	1	3	-	1	-	-	2	2	2	3
		CO11404.3	3	1	3	2	2	2	1	-	1	-	-	3	3	1	1
		CO11404.4	3	3	3	2	1	2	1	-	1	-	-	3	1	3	2
		CO11404.5	3	3	2	3	3	1	1	-	1	-	-	2	3	3	1
		CO11404	2.8	2.2	2.6	2.6	2.2	1.8	1.6	-	1.2	-	-	2.6	2.4	2.4	1.8

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

ECE11501	Digital Electronics	L	T	P	C
Version 1.0	Contact Hours -45	3	0	0	3
Pre-requisites/Exposure	1.Basic concepts of number system (Decimal, Binary) 2.Basic knowledge of electronic circuits (working principle of Transistor)				
Co-requisites	----				

Course Objectives:

1. Explain the elements of digital system abstractions such as digital representations of information, digital logic, Boolean algebra, state elements and finite state machine (FSMs).
2. Construct simple digital systems based on these digital abstractions, using the "digital paradigm" including discrete sampled information.
3. Design and build a simple printed circuit assembly (PCA) that utilizes modern digital integrated circuits.
4. Improving the knowledge and laboratory skills of engineers to proactively anticipate problems and resolve them efficiently with best-practices.
5. Provide a learning platform for students to design, build and test hardware for an embedded application that utilizes a modern digital integrated circuit.

Course Outcomes:

On completion of this course, the students will be able to

CO1. Compare different type of codes and number systems which are used in digital communication and computer systems.
CO2. Applythe codes and number systems converting circuits and compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.
CO3. Apply different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
CO4. Build different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and environmental constraints.
CO5. Apply the fundamental knowledge of digital electronics to design different types of counters and shift registers in real world with different changing circumstances.

Catalog Description:

Digital Electronics is the study of electronic circuits that are used to process and control digital signals. In contrast to analog electronics, where information is represented by a continuously varying voltage, digital signals are represented by two discreet voltages or logic levels. This distinction allows for greater signal speed and storage capabilities and has revolutionized the world electronics. Digital electronics is the foundation of all modern electronic devices such as cellular phones, MP3 players, laptop computers, digital cameras, high definition televisions, etc. The major focus of the DE course is to expose students to the design process of combinational and sequential logic design, teamwork, communication methods, engineering standards, and technical documentation. Utilizing the activity-project-problem-based (APPB) teaching and learning pedagogy, students will analyze, design and build digital electronic circuits. While implementing these designs students will continually hone their interpersonal skills, creative abilities and understanding of the design process.

Course Content:

Unit I: 10 lecture hours

Introduction to Number System & Logic Gates: Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Conversion from One Number System to another, Conversion from one base to another, 1"s Complement and 2"s Complement.
Logic Gates: AND, OR, NOT, NAND, NOR, Exclusive-OR and Exclusive-NOR, Implementations of Logic Functions using gates, NAND-NOR implementations.

Unit II: 8 lecture hours

Boolean Functions: Demorgan's Theorems, Simplification of Boolean Expression using Boolean Algebra, SOP & POS Forms, Realization of Boolean Expression using Gates, K-Maps, Simplification of Boolean Expression using K-Maps. Combinational Logic Circuits: Half Adder, Half Subtractor, Full Adder & Full subtractor.

Unit III: 10 lecture hours

Combinational& Sequential Circuits: Multiplexers & De-multiplexers, Implementation of Boolean equations using Multiplexer and De-multiplexer, Encoders & Decoders. RS & JK Flip-Flops, D & T Flip-Flops, Triggering of flips, Applications of Flip-Flops.

Unit IV: 10 lecture hours

Semiconductor Memories & Organization: Introduction, Classification of memories: Programmable Read Only Memory, Erasable Programmable Read Only Memory, Electrically EPROM, EAPROM, RAM – RAM organization, Memory decoding and memory expansion, Static RAM Cell, Bipolar RAM cell, MOSFET RAM cell, Dynamic RAM cell, Introduction to Programmable Logic Devices.

Unit V: 7 lecture hours

Registers & Counters: Registers, Shift Registers, Design of Asynchronous Counters &Ripple Counters, Design of Synchronous Counters, Up-Down Counters, Encoders-Decoders

Text Books:

1. M. Morris Mano, Michael D. Ciletti; "Digital Design", 4th Edition , Pearson Prentice Hall , 2007.
2. Floyd & Jain; "Digital Fundamentals",8th Edition, Pearson Education,2006.
3. S. Salivahanan and S. Arivazhagan; Digital Circuits and Design (Fourth Edition-2012); Vikas Publishing House

Reference Books:

1. Anand Kumar; "Digital Electronics"; PHI.
2. Donald P Leach , Albert Malvino ;" Digital Principles and Applications", Tata McGraw - Hill, New Delhi; Year: 2006; Edition: 6.
3. G. K Kharate; "Digital Electronics"; Oxford Higher Education
4. R.P Jain, "Modern Digital Electronics", Tata McGraw - Hill, New Delhi, 4th edition
5. LEE, "Digital Circuits & Logic Design" –PHI
6. Maini. A.K., "Digital Electronics Principals, Devices and Applications". Chichester, England.: Jonh Wiley & Sons Ltd.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination

Weightage (%)	**30**	**20**	**50**

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ECE11501	Digital Electronics	CO11501.1	3	3	2	1	2	2	2	-	1	-	-	2	1	1	2
		CO11501.2	2	2	1	3	2	1	1	-	1	-	-	2	3	2	3
		CO11501.3	3	3	1	2	3	3	2	-	3	-	-	3	2	3	2
		CO11501.4	2	2	3	3	2	3	3	-	1	-	-	3	1	2	3
		CO11501.5	3	2	2	2	2	3	1	-	3	-	-	3	1	2	2
		CO11501	2.6	2.4	1.8	2.2	2.2	2.4	1.8	-	1.8	-	-	2.6	1.6	2.0	2.4

1=weakly mapped 2= moderately mapped 3=strongly mapped

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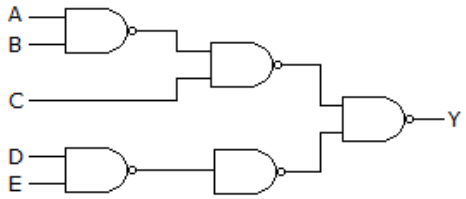
Name: **Enrolment No:**	ADAMAS UNIVERSITY PURSUE EXCELLENCE

Course: ECE11501 - Digital Electronics
Program: BCA **Stream: CSE** **Semester: II**
Time: 03 hrs. **Max. Marks:50**

Instructions:
Attempt **Five Questions** compulsory from **Section A** (each carrying 1 mark); any **Three Questions** from **Section B** (each carrying 5 marks)**, any Two Questions** from **Section C** (each carrying 10 marks)**.**

	SECTION A (Compulsory)		
1. a)	**What** are the differences between combinational & sequential logic? (R)	**[1]**	**CO3**
b)	**What** is the Excess 3 representation of decimal 59? (R)	**[1]**	**CO1**
c)	The circuit of the given figure realizes the function… (U) 	**[1]**	**CO2**
d)	If the input to T-flipflop is 100 Hz signal, what is the final output of the three T-flipflops in cascade? (E)	**[1]**	**CO3**
e)	**What** is the difference between Ring and Johnson Counter? (R)	**[1]**	**CO5**
	SECTION B (Answer any Three Questions)		
2.	**a)Explain** the operation of T Flip flop with diagram and suitable characterisitic table. (Ap) **b) Convert** the SR to D FF using its corresponding characteristics & excitation table. (An)	**[5]**	**CO3**
3.	**a)Build** a 4 to 1 Multiplexer by using the three-variable function given by $F(A, B, C) = \sum_m (1,3,5,6)$ (An) **b) How** does a JK flip flop differ from an SR flip flop in its operation? (An)	**[5]**	**CO2**
4.	**a) Show** the logic diagram of a full subtractor using half subtractors and explain its working with the help of a truth table.(U) **b)**Simplify the following expression into sum of products using Karnaugh map $F(A, B, C, D) = \sum_m (1,3,4,5,6,7,9,12,13)$ (An)	**[5]**	**CO2 & CO1**
5.	**a)List** the names of different types of programmable logic device (PLD). (R) **b)** Realize the following expression using PROM: $Y = AB + \underline{A}C + AB\underline{C}$(An) **c) What** are the differences between ROM & RAM? (R)	**[5]**	**CO4**
6.	**a)** A microprocessor uses RAM chips of 1024 ×1 capacity. **(i) How** many chips will be required and how many address lines will be connected to provide capacity of 1024 bytes. **(ii) How** many chips will be required to obtain a memory of capacity of 16 K bytes. (E) **b) Explain** the detection of Static hazards using K-map. (U)	**[5]**	**CO4 & CO5**
	SECTION C (Answer any Two Questions)		

7.	**a) Design** a 1-bit digital comparator circuit using its corresponding truth table. (U) **b)** Implement the following function using a 3 line to 8-line decoder. (Ap) $S(A, B, C) = \sum_m (1,2,4,7)$ $C(A, B, C) = \sum_m (3,5,6,7)$ **c)Design** and implement the circuit using 4-bit BCD to EXCESS-3 converter and simplify the expression using Karnaugh map. (U)	**[10]**	**CO2**
8.	**a) Explain** the data movement technique through **i)** SISO Shift Register **ii)** SIPO Shift Register (U) **b)Build**and explain block diagram for 4-bit parallel adder. (R) **c) Convert** the binary number 10110 to Gray code. (R)	**[10]**	**CO3 & CO2**
9.	**a) Explain** the operation of master slave J-K flip flop and show how the race around condition is eliminated in it. (An) **b) Explain** the operation of NAND gate S-R Flip flop with diagram and suitable characterisitic table. (An)	**[10]**	**CO3**
10.	**a) Design** Mod-5 Asynchronous up counter using J-K flip flop. (C) **b) List** the different conditions to check for determining the type of Decoder, number of AND gates and OR gates for realization of Boolean expression using PLDs. Realize the following set of logical expressions using ROM, PLA and PAL. (C) $Y_1 = AC + \underline{A}B$ $Y_2 = ABC + AB\underline{C} + \underline{A}BC$ $Y_3 = A\underline{B}C + AB\underline{C} + A\underline{BC}$	**[10]**	**CO3& CO4**

CSE11405	Design of Logic Circuits	L	T	P	C
Version 1.0	Contact Hours -45	3	0	0	3
Pre-requisites/Exposure	Digital Electronics				
Co-requisites	----				

Course Objectives:

1. To introduce an overview of logic families.
2. To develop students for building k-map.
3. To provide the students a detailed analysis of sequential circuit.
4. To introduce the students to formalize with ASM chart.

Course Outcomes:

On completion of this course, the students will be able to

CO1**. Interpret** and construct the basic design principles of logic gate.
CO2**. Interpret** the different fabrication techniques used in Bipolar, CMOS and PLA.
CO3.**Formaliz**e with mealy and Moore machine.
CO4**. Construct** ROM design.

Catalog Description:

The world of electronics is a lot easier to understand if we start by dividing it into two distinct categories: the "analog" world and the "digital" world. The analog world generally refers to any natural phenomenon that varies its own properties over a period of time. Take the outside temperature, for example. We notice that it changes rather slowly throughout the day, and at any instant we can measure how hot or cold it really is by using a simple thermometer.
The same changing properties can be observed, measured, and recorded in other natural phenomenon such as barometric pressure, wind speed, solar radiation, etc. If you were to record and graph each of the above events over a 24 hour period, you would notice one similar characteristic: the physical properties of each phenomenon change over time.

Course Content:

Unit I: 06 lecture hours

Switching Circuits: Logic families: TTL, nMOS, CMOS, dynamic CMOS and pass transistor logic (PTL) circuits, inverters and other logic gates, area, power and delay characteristics, concepts of fan-in, fan-out and noise margin.

Unit II: 12 lecture hours

Switching theory: Switching algebra, logic gates, switching functions, truth tables and switching expressions, minimization of completely and incompletely specified switching functions, Karnaugh map and Quine-McCluskey method, multiple output minimization, representation and manipulation of functions using BDD's, two-level and multi-level logic circuit synthesis

Unit III: 06 lecture hours

Combinational logic circuits: Realization of Boolean functions using NAND/NOR gates, Decoders, multiplexers. logic design using ROMs, PLAs and FPGAs. Case studies, fault diagnosis of combinational circuits

Unit IV: 15 lecture hours

Sequential circuits: Clocks, flip-flops, latches, counters and shift registers, finite-state machine model, Mealy and Moore machines, synthesis of synchronous sequential circuits, Conversion of Mealy m/c to Moore m/c

and vice-versa, minimization and state assignment, Incompletely specified m/c's, asynchronous sequential circuit synthesis.

Unit V: 06 lecture hours

ASM charts: Representation of sequential circuits using ASM charts, synthesis of output and next state functions, data path control path partition-based design

Text Books:

1. H. Taub and D. Schilling, Digital Integrated Electronics, McGraw-Hill.
2. Z. Kohavi, Switching and Finite Automata Theory, Tata McGraw-Hill.
3. Randy H. Katz and Gaetano Borriello, Contemporary Logic Design, Prentice Hall of India

Reference Books:

1. Giovanni De Micheli, Synthesis and Optimization of Digital Circuits, Tata McGraw-Hill.

Modes of Evaluation: Quiz/Assignment/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11405	Design of Logic Circuit	CO11405.1	2	2	2	3	1	1	2	-	2	-	-	1	2	1	1
		CO11405.2	2	3	2	2	2	1	1	-	2	-	-	3	3	2	3
		CO11405.3	2	3	3	3	2	3	1	-	2	-	-	1	2	2	3
		CO11405.4	1	3	2	2	1	1	3	-	3	-	-	3	3	1	1
		CO11405	1.75	2.75	2.25	2.5	1.5	1.5	1.75	-	2.25	-	-	2.0	2.5	1.5	2.0

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name: **Enrolment No:**	ADAMAS UNIVERSITY PURSUE EXCELLENCE

ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION

Name of the Program: BCA **Semester: II**

Code- CSE11405 **Stream- CSE**

Time: 03 Hrs.

Paper title– Design of Logic Circuit **Total pages- 1**

Max. Marks: 50 **Total no. of questions- 12**

Instructions:

Attempt All Questions from Section A (Each Carrying 1 Marks); any Three Questions from Section B (Each Carrying 5 Marks). Any Two Questions from Section C (Each Carrying 10 Marks)

1. At top of sheet, clearly mention Name, Roll No., Enrolment No., Paper Name & Code, and Date of Exam.

2. Assumptions made if any, should be stated clearly at the beginning of your answer.
3. **All parts of a Question should be answered consecutively**

	SECTION A (Answer All questions) (5 x 1 = 5)		
1.	**List** the different logic gates?	**U**	**CO3**
2.	**Explain** switching algebra and switching function.	**U**	**CO1**
3.	**Define** logic design using ROM?	**R**	**CO2**
4.	**Elucidate** the essential components of multi-level component of logic synthesis.	**R**	**CO4**
5.	**What** is ROM logic?	**U**	**CO2**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**Describe**about mealy and Moore machine?	**U**	**CO4**
7.	**Examine**flip-flop and their use in real life?	**Ap**	**CO2**
8.	**Elucidate** the factors influencing on C-MOS delay.	**Ap**	**CO3**
9.	**Explain**in detail about bi-polar S-RAM cell transistor.	**U**	**CO2**

	SECTION C (Attempt any **Two Questions) (2 x 10 = 20)**		
10.	**Build** a synchronous Modulo-10 up/down counter using T FFs.	**Ap**	**CO4**
11.	**Explain** BCD to excess-3 code conversion in PLA.	**U**	**CO4**
12.	**Compare** between Karnaugh map and Quine- McCluskey method and write the advantage of K-map over the Quine-McCluskey method.	**U**	**CO1**

CSE11453	Principles of Programming	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	3	0	0	3
Pre-requisite/Exposure	Knowledge on programming basics				
Co-requisite	NIL				

Course Objectives:

1. To motivate students to solve the problems in engineering using the concepts of object-oriented programming.
2. To enable students to apply OOP concepts in building solutions to real-world problems.
3. To help the student to acquire knowledge of software development
4. To enable students to debug simple C++ programs.
5. To enable students to execute C++ programs successfully.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Discuss fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
CO2: Understand fundamentals of object-oriented programming in C++, including defining classes, invoking methods, using class libraries, etc.
CO3: Explain important topics related to functions and pointers.
CO4: Understand the scope of variables and utility of exception handling.
CO5: Utilise the OOP knowledge to create, debug and run simple C++ programs.

Course Description:

This course introduces students to C++ programming language, a dominant language in the industry today. Students will be taught the fundamentals of programming. These concepts are applicable to programming in any language. Topics covered include basic principles of programming using C++, algorithmic and procedural problem solving, program design and development, basic data types, control structures, functions, arrays, pointers, and introduction to classes for programmer-defined data types..

Course Content:

Unit-I	**09 Lecture Hours**
C Refresher: Procedural programming, variables & data types, operators and conditional execution, understanding loops and structures	
Unit-II	**09 Lecture Hours**
Introduction to OOP: Need for OOP Paradigm, Procedural programming vs object oriented programming, object oriented concepts. **Class concept in OOP**: Difference between C structure and class, specifying a class, Defining member functions: inside and outside class, scope resolution operator, Array within a class, array of objects, Static data members and member functions,Object as function arguments,returning objects,Friend function	
Unit-III	**09 Lecture Hours**
Functions: Main function, function prototyping, inline functions, reference variables, call by reference ,Defaults arguments, function overloading, Math library functions. **Pointers**: memory allocation for objects, pointer to members, pointer to object,this pointer local classes. Constructor and destructor: Constructor, types of constructors: default, parameterized and copy constructor, constructor overloading, constructor with default parameter, dynamic initialisation of objects, destructor Operator overloading and Type Conversion: Defining operator overloading, overloading unary and binary operator, Data Conversion: Basic to User Defined , User defined to basic, Conversion from one user-defined to other.	
Unit-IV	**09 Lecture Hours**
Scope: Local and global scope, Inheritance and polymorphism: Base class, derived class, visibility modes, derivation and friendship, Types of inheritance, Containership, virtual function binding, pure virtual functions, Abstract class, **pointer to derived class.** **Console IO operations**: C++ stream classes, Unformatted IO operations, formatted IO operations, managing output with manipulators. **Exceptions**: Run time errors, exception handling using try, catch and throw, Working with files: Classes for file stream operations, opening and closing files, File opening modes, file Pointers, Error handling during file operations, command line arguments, templates	
Unit-V	**09 Lecture Hours**
Problem solving with C++: Case study for problem solving on various real life systems like Bank, Library, Hospital, Hotel, Employee management system etc.	

Text Books:

1. Bjrane Stroustrup, “C++ Programming language” , Pearson education Asia

Reference Books:

1. Yashwant Kenetkar,”Let us C++”,Oxford University Press
2. B.A. Forouzan and R.F. Gilberg,CompilerScience,”A structured approach using C++” Cengage Learning, New Delhi.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11453	Principles of programming	CO11453.1	3	2	2	3	1	2	2	-	3	-	-	2	3	1	1
		CO11453.2	2	3	3	3	3	1	2	-	2	-	-	2	2	3	3
		CO11453.3	2	3	2	3	1	3	3	-	2	-	-	2	3	2	3
		CO11453.4	2	3	3	1	1	3	3	-	1	-	-	2	1	1	3
		CO11453.5	3	1	2	2	3	1	1	-	1	-	-	3	2	2	3
		CO11453	2.4	2.4	2.4	2.4	1.8	2.0	2.2	-	1.8	-	-	2.2	2.2	1.8	2.6

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

MODEL QUESTION PAPER

ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END SEMESTER EXAMINATION** (Academic Session: 2022 – 23)		
Name of the Program:	BCA	**Semester:**	III
Paper Title:	Principles of Programming	**Paper Code:**	CSE11453
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:	**17**	**Total No of Pages:**	02
(Any other information for the student may be mentioned here)	**1.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **2.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **3.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Ques No.	Question	Knowledge Level	Course Outcome
	Group A : Answer ALL the questions (5 x 1 = 5)		
1	**Define** relational operators in C.	**U**	**CO1**
2	**Explain** class concept.	**U**	**CO2**
3	**Discuss** the significance of inline function with example.	**U**	**CO3**
4	**What** is exception handling?	**R**	**CO4**
5	**Discuss** any real life event suitable for object-oriented approach of programming.	**U**	**CO5**
	Group B : Answer ALL the questions (5 x 2 = 10)		
6	**a) Write** a C program to find the factorial of a number. **(OR)** **b) Write** a C program to find the roots of a quadratic equation.	**Ap**	**CO1**
7	a) **Explain** the major difference between procedural and object-oriented programming. **(OR)** b) **Discuss** the need for object-oriented programming.	**U**	**CO2**
8	a) **Write** suitable C++ code to illustrate function overloading. **(OR)** **b) Explain** about function call by reference with suitable code**.**	**Ap**	**CO3**
9	a) **Explain** how will you handle Arithmetic Exception through suitable C++ program. **(OR)** b) **Discuss** local scope and global scope of a variable with example.	**U**	**CO4**
10	a) **Discuss** the classes needed to design a object-oriented system for withdraw and deposit of money in a bank. **(OR)** b) **Discuss** the classes needed to design a object-oriented system to depict the check-in and check-out of boarders in a hotel.	**U**	**CO5**

Group C : Answer ALL the questions (7 x 5 =35)			
11	a) **Write** a C program to find out whether a number is Armstrong or not. **(OR)** **b) Write** a C program to find out whether a number is prime or not.	**Ap**	**CO1**
12	**a) Explain** the benefits of object-oriented programming**.** **(OR)** **b)** What is an object? Explain with suitable C++ program**.**	**U**	**CO2**
13	a) **What** is pointer arithmetic? Explain the pointer operators. **(OR)** **b) Explain** the utility of function overloading with example**.**	**U**	**CO3**
14	a) **Explain** about new and delete operators in C++. **(OR)** b) **Discuss** the dynamic memory allocation for arrays.	**U**	**CO4**
15	c) **Discuss** the dynamic memory allocation for objects. **(OR)** c) **How** can you define your own exceptions in C++?	**U**	**CO4**
16	a) **Discuss** C++ program to maintain employee database using virtual class. **(OR)** b) **Discuss** C++ program to calculate volume of cube, cylinder, sphere by function overloading.	**Ap**	**CO5**
17	a) **Discuss** C++ program to enter student details of different stream using hierarchical inheritance. **(OR)** b) **Discuss** C++ program to calculate electric bill of person using class.	**Ap**	**CO5**

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

i) If the COs are higher in numbers that can be managed by equating sub-divisional questions

ii) If the COs are lower in numbers, the questions can be increased by equating the number of COs

CSE12407	Data Structures Lab	L	T	P	C
Version 1.0	Contact Hours-45	0	0	3	2
Pre-requisites/Exposure	Basic concept of programming				
Co-requisites	--				

Course Objectives:

The objective of the course is to teach programming (with an emphasis on problem solving) and introduce elementary data structures. The student should, at a rudimentary level, be able to prove correctness (loop invariants, conditioning, etc).

Course Outcomes:
On completion of this course, the students will be able to

CO1. **Explain** asymptotic performance of the algorithms.
CO2**. Illustrate** Linear data structures and their applications such as Stacks, Queues and Linked Lists
CO3**. Solve** and understand Non-Linear Data Structures and their Applications such as Trees and Graphs
CO4. **Interpret** searching and sorting algorithms.

Course Description:

Data Structures (also called Data Structures and Algorithms in some places) is a core course in all computer science undergraduate curricula. The course is the basis for understanding several data structures and also algorithms that operate on them. The course forms the foundation for almost all computer science subjects: compilers, operating systems, databases, AI and software engineering.

Course Content:
List of Programs:

1. Write a menu based C program to insert a node at the beginning, after a specified position, at the end of a singly linked list.
2. Write a menu based C program to delete a node from the beginning, from a specified position, from the end of a singly linked list.
3. Write a menu based C program to display the data part of the nodes in reverse order, reverse the list and sort the elements of a singly linked list.
4. Write a menu based C program to insert a node at the beginning, after a specified position, at the end of a doubly linked list.
5. Write a menu based python program to delete a node from the beginning, from a specified position, from the end of a doubly linked list.
6. Write a menu based C program to display the data part of the nodes in reverse order, reverse the list and sort the elements of a doubly linked list.
7. Write a menu based C program to insert, delete and display operation of a linear queue by using singly linked list.
8. Write a menu based C program to insert, delete and display operation of a linear queue by using an array.
9. Write a menu based C program to implement push, pop and display operation of a linear queue by using singly linked list.
10. Write a menu based C program to implement push, pop and display operation of a linear queue by using an array.
11. Write a menu based C program to implement insert, delete and display operation of a circular queue by using an array.

12. Write a menu based C program to implement insert, delete and traverse operation of a binary search tree using doubly linked list.
13. Write a menu based C program to implement linear search, binary search and interpolation search algorithm.
14. Write a menu based C program to implement bubble sort, selection sort, and quick sort, merge sort, insertion sort, heap sort and radix sort algorithm.
15. Implement Tree Traversals, BFS, Graph Traversal, Shortest path and some topics on Spanning Tree using C.

Text Books:

1. "Fundamentals of Data Structures", Illustrated Edition by Ellis Horowitz, SartajSahni and Computer Science Press.
2. "Introduction To Algorithms", Thomas H.Cormen, Thomas H Cormen, Charles E Leiserson, Ronald L Rivest, Clifford Stein.

Reference Books:

1. "Algorithms, Data Structures, and Problem Solving with C++", Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing Company.

2. "How to Solve it by Computer", 2nd Impression by R. G. Dromey, Pearson Education.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12407	Data Structures Lab	CO12407.1	2	2	2	2	2	2	2	-	2	-	-	1	3	1	3
		CO12407.2	3	3	1	2	3	1	3	-	2	-	-	2	2	3	2
		CO12407.3	2	3	1	3	1	3	2	-	2	-	-	2	3	3	3
		CO12407.4	2	2	2	3	3	2	2	-	3	-	-	3	2	2	1
		CO12407	2.25	2.5	1.5	2.5	2.25	2.0	2.25	-	2.25	-	-	2.0	2.5	2.25	2.25

1=weakly mapped 2= moderately mapped 3=strongly mapped

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA | Semester: II | Stream: CSE
PAPER TITLE: DataStructures Lab
PAPER CODE:CSE12407
Maximum Marks: 50 | Time duration: 3 hours
Total No of questions: 5 | Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Section A (Answer All the Questions) (5 x 10 = 50)			
1.	**Develop** a C program to reverse a singly linked list.	**Ap**	**CO1**
2.	**Develop** a C program to insert an element in a circular queue by using an array.	**Ap**	**CO1**
3.	**Develop** a C program to delete a node from a BST.	**Ap**	**CO3**
4.	**Develop** a C program to insert an element in a stack by using a singly linked list.	**Ap**	**CO1**
5.	**Develop** a C program to implement merge sort algorithm.	**Ap**	**CO4**

ECE12502	Digital Electronics Lab	L	T	P	C
Version 1.0	Contact Hours-45	0	0	3	2
Pre-requisites/Exposure	1.Basic concepts of number system (Decimal, Binary) 2.Basic knowledge of electronic circuits 3.Basic Electrical & Electronics Engineering practices Lab				
Co-requisites	Principle of Digital Electronics				

Course Objectives:

1. To understand number representation and conversion between different representation in digital electronic circuits.
2. To analyze logic processes and implement logical operations using combinational logic circuits.
3. To understand concepts of sequential circuits and to analyze sequential systems in terms of state machines.
4. To understand characteristics of memory and their classification.
5. To evaluate the use of computer-based analysis tools to review performance of various digital circuits.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Apply** a digital logic to solve real life problems.
CO2**. Define** various combinational logic circuits.
CO3. **Construct** sequential logic circuits such as counters, shift registers etc.
CO4.**Apply**different types of wiring and instruments connections keeping in mind technical, Economical, safety issues.
CO5.**Analyze** professional quality textual and graphical presentations of laboratory data andComputational results, incorporating accepted data analysis and synthesis methods,Mathematical software and word-processing tools.
CO6**. Compare** possible causes of discrepancy in practical experimental observations to theory data.

Catalog Description:

Digital Electronics is the study of electronic circuits that are used to process and control digital signals. In contrast to analog electronics, where information is represented by a continuously varying voltage, digital signals are represented by two discreet voltages or logic levels. This distinction allows for greater signal speed and storage capabilities and has revolutionized the world electronics. Digital electronics is the foundation of all modern electronic devices such as cellular phones, MP3 players, laptop computers, digital cameras, high definition televisions, etc. The major focus of the DE course is to expose students to the design process of combinational and sequential logic design, teamwork, communication methods, engineering standards, and technical documentation.Utilizing the activity-project-problem-based (APPB) teaching and learning pedagogy, students will analyze, design and build digital electronic circuits. While implementing these designs students will continually hone their interpersonal skills, creative abilities and understanding of the design process.

Course Content:

List of experiments:

1. A. Study of Logic Gates
   B. Study Universal Logic Gates
2. Study of Half Adder & Full Adder
3. Study of Half Subtractor & Full Subtractor
4. Design and Implementation of Binary to Gray&Gray to Binary Code Convertor
5. Design and Implementation of BCD to Excess-3 & Excess-3 to BCD Code Convertor
6. Design and Implementation of 1Bit & 2Bit Magnitude Comparator
7. Design and Implementation of 4:1 Multiplexer and 1:4 Demultiplexer
8. Design and Implementation of 4:2 Encoder and 2:4 Decoder
9. Verification of Characteristics Tables of S-R and D Flipflop Using Universal Gates
10. Verification of Characteristics Tables of J-K and T Flipflop Using Universal Gates

11. Design of 2-bit Asynchronous Counter Using Flip Flops
12. Design of 2-bit Synchronous Counter Using Flip Flops
13. Design and Implementation of SISO & SIPO Shift Registers using Flip Flops
14. Design and Implementation of PISO & PIPO Shift Registers using Flip Flops

Text Books:

1. M. Morris Mano, Michael D. Ciletti; "Digital Design", 4th Edition , Pearson Prentice Hall , 2007.
2. Floyd & Jain; "Digital Fundamentals",8th Edition, Pearson Education,2006.
3. S. Salivahanan and S. Arivazhagan; Digital Circuits and Design (Fourth Edition-2012); Vikas Publishing House

Reference Books:

1. Anand Kumar; "Digital Electronics"; PHI.
2. Digital Fundamentals, Thomas L. Floyd, Pearson Education, ISBN:9788131734483
3. Digital Principles and Applications, Malvino and Leach, TMH

E-Resources:

1. http://www.vlab.co.in/
2. http://www.asic-world.com/

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ECE12502	Digital Electronics Lab	CO12502.1	2	3	3	1	1	3	1	-	3	-	-	3	2	2	2
		CO12502.2	3	2	2	1	1	3	3	-	3	-	-	1	3	2	3
		CO12502.3	3	2	2	2	3	3	3	-	1	-	-	2	1	2	1
		CO12502.4	2	3	3	3	1	3	1	-	3	-	-	3	3	3	1

		CO12502.5	**3**	**1**	**3**	**1**	**2**	**2**	**1**	**-**	**1**	**-**	**-**	**3**	**3**	**3**	**1**
		CO12502.6	**2**	**2**	**3**	**2**	**3**	**2**	**3**	**-**	**1**	**-**	**-**	**2**	**3**	**1**	**1**
		CO12502	**2.5**	**2.17**	**2.67**	**1.67**	**1.83**	**2.67**	**2.0**	**-**	**2.0**	**-**	**-**	**2.33**	**2.5**	**2.17**	**1.5**

1=weakly mapped; 2= moderately mapped; 3=strongly mapped

[redacted]

Name: **Enrolment No:**	ADAMAS UNIVERSITY PURSUE EXCELLENCE

Course: ECE12502 – Digital Electronics Lab
Program: BCA **Stream: CSE** **Semester: II**
Time: 03 hrs. **Max. Marks: 50**

Questions

1.	**A)** Implement and verify the truth table of logic gates (AND, OR, NOT, EX-OR) using universal NAND gate. (R) **B)** Simplify the following expression into sum of products using Karnaugh map F (A, B, C, D) = $\sum_m$ (1,3,4,6,7,12,13) + $\sum_d$ (2,8,11). Draw the simplified equation using logic gates. (An)	**[50]**	**CO1+CO4 +CO5+CO 6**
2.	**A)Design** and implement the half subtractor and full adder circuit using logic gates and verify the truth table. (U) **B)** Minimize the following logic function using K-maps and realize using NAND gates. Y = $\prod$ (0, 1, 4, 5, 6, 8, 9, 12, 13, 14) (An)	**[50]**	**CO2+CO4 +CO5+CO 6**
3.	**A)Design** and implementation of 3 bit binary to gray and gray to binary converter circuit and verify the truth table. (U) **B)**Simplify the given expression to its Sum of Products (SOP) form. Draw the logic circuit for the simplified SOP function; (C) $Y = (A + B)(A + \overline{AB})C + \overline{A}(B + \overline{C}) + \overline{A}B + ABC$	**[50]**	**CO2+CO4 +CO5+CO 6**
4.	**A)Design** and implementation of 4-bit BCD to Excess 3 code converter circuit. Simplify the equation using Karnaugh map and verify the truth table. (U) **B) What** do you mean by priority encoder? State the De-Morgan's theorem. (R)	**[50]**	**CO2+CO4 +CO5+CO 6**
5.	**A)Design** and verify the truth table of 4:2 encoder and 2:4 decoder circuit. (U) **B)Design** 1-bit full adder using Multiplexer with K-Map. (An)	**[50]**	**CO2+CO4 +CO5+CO 6**
6.	**A) Design** and verify the truth table of 4:1 multiplexer and 1:4 de-multiplexer circuit. (U) **B)** Implementation of Boolean function F (A, B, C, D) = $\sum_m$ (1,4,5,7,9,12,13) using 4X1 MUX. (An)	**[50]**	**CO2+CO4 +CO5+CO 6**
7.	**A) Design** and verify the characteristics table of S-R Flip Flop & D Flip Flop using Universal NAND Gate. (E) **B)** Implement or design a 16:1 MUX using two 8:1 MUX (C)	**[50]**	**CO3+CO4 +CO5+CO 6**
8.	**A) Design** and verify the characteristics table of J-K Flip Flop & T Flip Flop using Universal NAND Gate. (An) **B) Design** a 3-bit asynchronous down counter using positive edge triggered and show the timing diagram. (An)	**[50]**	**CO3+CO4 +CO5+CO 6**
9.	**A) Design**& verify the state table of MOD-4 asynchronous up counter using JK Flip Flop. (C) **B) Explain** the need of counters. Write down the differences between synchronous and asynchronous counter. (U)	**[50]**	**CO3+CO4 +CO5+CO 6**
10.	**A) Design**& verify the state table of MOD-4 synchronous up counter using JK Flip Flop. (C) **B) Design** a 3-bit asynchronous up counter using negative edge triggered and show the timing diagram. (An)	**[50]**	**CO3+CO4 +CO5+CO 6**
11.	**A)i)**Realization and implementation of 1-bit comparator and very the truth table. (U) **ii) Design** and implement the half adder circuit using logic gates and verify the truth table. (U) **B) Design** a 3-bit synchronous up counter using positive edge triggered and show the timing diagram. (An)	**[50]**	**CO2+CO4 +CO5+CO 6**

CSE12454	Principles of Programming Lab	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	0	0	3	2
Pre-requisite/Exposure	Knowledge on programming basics				
Co-requisite	NIL				

Course Objectives:

1) To motivate students to solve the problems in engineering using the concepts of object-oriented programming.
2) To enable students to apply OOP concepts in building solutions to real-world problems.

3) To help the student to acquire knowledge of software development

4) To enable students to debug simple C++ programs.
5) To enable students to execute C++ programs successfully.

Course Outcomes:

On the completion of this course the student will be able to

CO1. **Define** classes, objects, members of a class and the relationships among them needed for a
   i. finding the solution to specific problem.

CO2. **Apply** fundamentals of object-oriented programming in C++, including defining classes, invoking methods, using class libraries, etc.

CO3. **Explain** important topics related to functions and pointers.

CO4. **Understand** the scope of variables and utility of exception handling..

CO5. **Utilise** the OOP knowledge to create, debug and run simple C++ programs.

Course Description:

This course introduces students to C++ programming language, a dominant language in the industry today. Students will be taught the fundamentals of programming. These concepts are applicable to programming in any language. Topics covered include basic principles of programming using C++, algorithmic and procedural problem solving, program design and development, basic data types, control structures, functions, arrays, pointers, and introduction to classes for programmer-defined data types..

Course Content:

Unit-I	**09 Lecture Hours**
Write a C program to find factorial of a number. Write a C program to find roots of a quadratic equation. Write a C program to find whether the number is Armstrong.	
Unit-II	**09 Lecture Hours**
Write a C++ program that demonstrate the basic class program to get department, name and salary of an employee. Write a C++ program that to calculate area of circle, square, rectangle and triangle using switch-case statements Write a C++ program to that accepts number from user and displays all the factors of that number.	
Unit-III	**09 Lecture Hours**
Write a C++ Program to swap two numbers using pointers. Write a C++ Program to add two numbers using pointers. Write a C++ Program to find length of string using pointer.	
Unit-IV	**09 Lecture Hours**
Write a C++ Program to show multiple inheritance Write a C++ Program to show multilevel inheritance Write a C++ Program to fetch the content of an existing file and display its contents.	
Unit-V	**09 Lecture Hours**
Write a C++ Program to read the name and roll numbers of students from keyboard and write them into a file and then display it. Define a class "Time" that contains following data members and member functions. Data members: 1. Hours 2. Minutes 3. Seconds Member Functions: 1. To get time from user 2. To display time on the screen 3. To calculate sum of two time objects. Write a C++ program that can read values of Time for two objects T1 and T2, calculate sum and display sum using defined member functions Create class "Sales" having following data members and member functions: Data Members: 1. Name of Salesman 2. Sales of Salesman Member functions to calculate commission 1. Commission is Rs. 10 per thousand if sales are at least Rs. 25000 or more 2. Commission is Rs. 5 otherwise. Write a C++ program that calculate and print name and sales of salesman.	

Text Books:

2. Bjrane Stroustrup, "C++ Programming language" , Pearson education Asia

Reference Books:

3. Yashwant Kenetkar,"Let us C++",Oxford University Press
4. B.A. Forouzan and R.F. Gilberg,CompilerScience,"A structured approach using C++" Cengage Learning, New Delhi.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Internal	End Term
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12454	Principles of programming lab	CO12454.1	3	2	3	1	1	1	2	-	3	-	-	2	2	2	2
		CO12454.2	2	2	3	1	1	2	3	-	1	-	-	3	2	1	2
		CO12454.3	3	2	1	3	3	2	2	-	3	-	-	3	1	1	1
		CO12454.4	2	3	3	3	1	2	3	-	1	-	-	3	2	3	3
		CO12454.5	3	2	3	1	3	3	1	-	2	-	-	2	3	2	1
		CO12454	2.6	2.2	2.6	1.8	1.8	2.0	2.2	-	2.0	-	-	2.6	2.0	1.8	1.8

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

MODEL QUESTION PAPER

ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END SEMESTER EXAMINATION** (Academic Session: 2022 – 23)		
Name of the Program:	BCA	**Semester:**	II
Paper Title:	Principles of Programming Lab	**Paper Code:**	CSE12454
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:	**05**	**Total No of Pages:**	01
(Any other information for the student may be mentioned here)	**4.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **5.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **6.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Ques No.	Question	Knowledge Level	Course Outcome
Group A : Answer ALL the questions (5 x 10 = 50)			
1	**Write a C** program to find factorial of a number.	**Ap**	**CO1**
2	**Write a C++** program to create a class for Student and implement some functionality of Student class.	**Ap**	**CO2**
3	**Write a C++** Program to make the use of inline function.	**Ap**	**CO3**
4	**Write a C++** Program to handle exception handling for Arithmetic Exception.	**Ap**	**CO4**
5	**Write a C++** Program to read the name and roll numbers of students from keyboard and write them into a file and then display it.	**Ap**	**CO5**

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

iii) If the COs are higher in numbers that can be managed by equating sub-divisional questions

iv) If the COs are lower in numbers, the questions can be increased by equating the number of COs

EIC11001	Venture Ideation	L	T	P	C
Version 1.0	Contact Hours -30	2	0	0	2
Pre-requisites/Exposure	Basic knowledge of English and computer applications such as Internet Explorer and MS Office				
Co-requisites	--				

Course Objectives:

1. To help the students understand the way to be an Entrepreneur
2. To identify the right business opportunity
3. To empower students to perform a technical feasibility study and thereby developing a prototype
4. To help students in identifying their customers using primary and secondary research methods.
5. To expose students to various factors of market and competition with the help of market feasibility study, forecasting techniques, business model canvass and insights about financial statements.
6. To prepare students with finalizing their entrepreneurial Portfolio

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Build** personal capacity in the context of the entrepreneurial process
CO2. **Construct** characteristics of successful entrepreneurs and entrepreneurial forms and processes
CO3. **Apply** resources, research and tools for Entrepreneurial ventures
CO4. **Analyze** and apply opportunity identification techniques, feasibility terminology, processes and models
CO5. **Develop** Ideation and planning documents for entrepreneurial venture

Catalog Description:

Over the last decade, the core of our economy has been transitioning from one of industrial might, large monolithic corporations and mass production towards one of networks, flexible enterprises comprising many smaller units and unique value. This new economy is based on innovation originating in creativity and design; it is also disrupting long-standing and established employment patterns and bringing to the fore the importance of entrepreneurship. This core unit will bring together creativity, design and entrepreneurship at the conceptual and more practical level. It aims to explore the nature, determinants and consequences of creativity, design and entrepreneurship as well as the interaction between them.

Course Content:

Unit 1. **6 Lecture hours**

Introduction

Preview of the Course, Introduction to the Course, Guest Lecture with U.S. Secretary of Commerce Penny Pritzker – Meaning of Innovation, Entrepreneurial opportunities, Factors influencing the feasibility of an innovation, Innovation strategy: technology-push or market-pull, Product-market fit, How to develop a business model, Walkthrough of the business model canvas, Welcome to Innovation for Entrepreneurs: From Idea to Marketplace**.**

Unit 2. **8 Lecture hours**

Customer Discovery and Validation

Customer types, Customer archetypes, Customer segments and business models, Customer segments, value propositions, product features, value mapping, interviewing customer, insights of your customers.

Unit 3: **8 Lecture hours**

Product Understanding and Marketing.

Customer value, The DNA of customer-centricity, Crossing the chasm, Qualitative and quantitative marketing research, importance and methods of market segmentation, Focusing on the target market, Beyond the chasm, Strategic implications of beyond the chasm, E-commerce: The internet as a selling platform.

Unit 4. **8 Lecture hours**

Prototyping and Testing.

Planning for prototyping, Rapid prototyping and development, Lean start-up MVPs, choosing a wire framing/UX prototyping tool, Anatomy of an experience map, what you'll learn from user testing, Analytics and insight, Troubleshooting your customer discovery, Levels of a product/service.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Assessment	ETE
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
EIC11001	Venture Ideation	CO11001.1	1	1	2	2	2	1	3	-	3	-	2	2	1	3	2
		CO11001.2	2	2	1	2	3	2	3	-	3	-	3	2	3	2	3
		CO11001.3	1	2	3	2	2	1	2	3	2	-	3	1	3	2	1
		CO11001.4	2	2	2	3	3	3	3	3	2	-	3	3	1	2	2
		CO11001.5	2	1	3	2	2	1	1	2	3	-	3	3	2	2	3
		CO11001	1.6	1.6	2.2	2.2	2.4	1.6	2.4	2.67	2.6	-	2.8	2.2	2.0	2.2	2.2

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE11409	Object Oriented Programming with JAVA	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	3	0	0	3
Pre-requisite/Exposure	Knowledge of procedural programming				
Co-requisite	NIL				

Course Objectives:

Students will be motivated to solve the problems in engineering using the concepts of object-oriented programming.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Interpret** fundamentals of object-oriented programming in Java, including defining Classes, invoking methods, using class libraries, etc.
CO2. **Construct** programming solutions with exception handling and multi-threading concept
CO3. Develop programming solutions using database connection
CO4. . **Solve** GUI program with proper event handling techniques
CO5. **Develop** programming solutions to real world problems effectively.

Course Description:

This course investigates object-oriented methods including object-oriented programming methodologies and techniques. Current methodology is emphasized. The use of object-oriented features such as encapsulation, information hiding, inheritance and polymorphism is reinforced by class assignments and programming exercises. The importance of multi-threading and exception handling is introduced in this course.

Course Content:

Unit-I	**09 Lecture Hours**
OOP Concepts - Data Abstraction, Encapsulation, Inheritance, Benefits of Inheritance, Polymorphism, Classes and Objects, Procedural and OOP Paradigms. Introduction To Java, Data Types, Variables & Constants, Scope & Life Time Of Variables, Precedence Of Operator, Expressions, Type Casting, Enumerated Types, Block Scope, Control Flow, Conditional Statements, Loops, Break & Continue Statements, Arrays, Console Input/Output, Formatting Output, Constructors Methods, Parameter Passing, Static Fields & Methods, Access Control, "This" Reference, Method Overloading, Recursion, Garbage Collection, Building Strings, String Class.	
Unit-II	**09 Lecture Hours**
Exception Handling - Dealing With Errors, Advantages Of Exception Handling, The Classification - Exception Hierarchy, Checked And Unchecked Exceptions, Try, Catch, Throw, Throws And Finally, Exceptions-Throwing, Exception Specification, Built In Exceptions, Creating Exception Sub Classes. **Multithreading -** Difference Between Multiple Processes And Multiple Threads, Thread States, Creating And Interrupting Threads, Thread Priorities, Synchronizing Threads, Inter-Thread Communication, Procedure Consumer Pattern.	
Unit-III	**09 Lecture Hours**
Collection Framework - Introduction, Generics and Common Use Of Collection Classes, Array List, Vector, Hash Table, Stack, Enumeration, Iterator, String Tokenizer, Random, Scanner, Calendars And Properties. **Files -** Streams - Byte Streams, Character Streams, Text Input/Output, Binary Input/Output, Random Access of File Operations, File Management. **Connecting To Database –** JDBC / ODBC Type 1 To 4 Drivers, Connection And Handling Databases With JDBC.	
Unit-IV	**09 Lecture Hours**
GUI Programming - The AWT Class Hierarchy, Introduction To Swing, Swing Vs, AWT, Hierarchy Of Swing Components, Containers - Jframe, Japplet, Jdialog, Jpanel, Overview Of Swing Components: Jbutton, Jlabel, Jtextfield, Jtextarea, Swing Applications, Layout Management - Types - Border, Grid And Flow **Event Handling -** Events, Sources, Classes, Listeners, Event Sources And Listeners, Delegation Event Model, Examples. Handling Mouse Events, Adapter Classes. **Applets -** Inheritance Hierarchy For Applets, Differences Between Applets And Applications, Life Cycle, Passing Parameters To Applets, Applet Security Issues.	
Unit-V	**09 Lecture Hours**
Application Development: Design of real life GUI applications using Swing/AWT/JDBC for Employee management system, Hotel management system, Hospital management system etc.	

Text Books:

1. Java Fundamentals - A Comprehensive Introduction, Illustrated Edition By Daleskrien, Herbert Schildt, Mcgraw-Hill Education.

Reference Books:

1. Java For Programmers, 2nd Edition By Paul Deitel And Harvey Deitel, Pearson Education.
2. Thinking In Java, Low Price Edition By Bruce Eckel, Pearson Education

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11409	Object Oriented Programming with JAVA	CO11409.1	2	1	2	3	1	2	2	-	1	-	-	3	2	3	3
		CO11409.2	2	3	1	2	3	2	1	-	3	-	-	1	1	2	2
		CO11409.3	2	2	1	2	3	3	1	-	2	-	-	1	2	1	1
		CO11409.4	2	1	3	2	1	2	2	-	3	-	-	1	1	2	1
		CO11409.5	2	2	1	2	1	1	2	-	3	-	-	1	1	3	1
		CO11409	2.0	1.8	1.6	2.2	1.8	2.0	1.6	-	2.4	-	-	1.4	1.4	2.2	1.6

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

MODEL QUESTION PAPER

ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END SEMESTER EXAMINATION** (Academic Session: 2022 – 23)		
Name of the Program:	BCA	**Semester:**	IV
Paper Title:	Object oriented programming with Java	**Paper Code:**	CSE11409
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:	**17**	**Total No of Pages:**	02
(Any other information for the student may be mentioned here)	**7.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **8.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **9.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Ques No.	Question	Knowledge Level	Course Outcome
	Group A : Answer ALL the questions (5 x 1 = 5)		
1	**Discuss** about the concept of Encapsulation.	**U**	**CO1**
2	**Explain** the benefits of exception handling	**U**	**CO2**
3	**What** is byte stream?	**R**	**CO3**
4	**Explain** why Java Swing is considered light-weight.	**U**	**CO4**
5	**Explain** how Java can be used to build an application for Hospital.	**U**	**CO5**
	Group B : Answer ALL the questions (5 x 2 = 10)		
6	**a) Explain** the different types of inheritance. **(OR)** **b) Explain** what is data hiding.	**U**	**CO1**
7	a) **Explain** with suitable Java code about the significance of try, catch blocks. **(OR)** b) **Discuss** how can you handle DivideByZeroException in Java program.	**U**	**CO2**
8	**a) Elucidate** the purpose of Java generics. **(OR)** b) **Explain** with suitable Java code about reading the contents of an existing text file.	**U**	**CO3**
9	a) **Explain** why Java Swing is preferred to Java AWT. **(OR)** **b) How** can you execute an applet in Java? Mention the steps.	**U**	**CO4**
10	a) **Explain** what are the minimum number of classes required for designing a Java application for Bank. **(OR)** a) **Explain** what are the minimum number of classes required for designing a Java application for Employee management system.	**An**	**CO5**

Group C : Answer ALL the questions (7 x 5 =35)			
11	**a) What** gives Java its "write once and run any where nature"?	**An**	**CO1**
	(OR)		
	b) Is multiple inheritance possible in Java? Justify your answer**.**		
12	**a) Compare and** contrast single threading and multi threading**.**	**An**	**CO2**
	(OR)		
	b) Is finally block mandatory with a try-catch block in a Java program? When is it executed?		
13	a) **Discuss** about the JDBC-ODBC drivers.	**U**	**CO3**
	(OR)		
	b) **How** will you handle binary input/output?		
14	a) **Discuss** with an example for JButton and JLabel components in Java.	**U**	**CO4**
	(OR)		
	b) Write short notes on Event delegation model.		
15	**a) Draw** the AWT hierarchy diagram and explain any 5 of its components.	**U**	**CO4**
	(OR)		
	b) Explain what is event listener.		
16	**a) How** will you connect to database with a Java application? Explain with the help of a real life application.	**U**	**CO5**
	(OR)		
	b) What is JDBC-ODBC driver? Elucidate**.**		
17	**a) Consider** there is a hotel in you area, for which you have to design a Java GUI application to manage their system. Explain how will you implement this scenario.	**An**	**CO5**
	(OR)		
	c) Explain how to insert rows into a JTable by using JDBC-ODBC driver in a Java GUI application.		

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

v) If the COs are higher in numbers that can be managed by equating sub-divisional questions

vi) If the COs are lower in numbers, the questions can be increased by equating the number of COs

CSE11455	Data Science with Python	L	T	P	C
Version 1.0	Contact Hour -45	3	0	0	3
Pre-requisites/Exposure	H. Sc. level Computer Knowledge or Basic Computer Skills				
Co-requisites	-				

Course Objectives:

1. To **provide** an introduction to the Python programming language.
2. To **introduce** students with an introduction to programming, I/O, and visualization using the Python programming language.
3. To **develop** Python programming for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Classify** the fundamental Python syntax and semantics and show the use of Python control flow statements.
CO2. **Demonstrate** the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples, sets and strings.
CO3. **Develop** proficiency in the handling of functions.
CO4. **Identify** the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python.
CO5. **Find** the commonly used operations to handle run time error or Exception
CO6. **Summarize** how to handle large data file with the help of various file handling methods.

Catalog Description:

The goal of this course is to provide an introduction to Python. The course will discuss topics necessary for the participant to be able to create and execute Python programs. The lectures and presentations are designed to provide knowledge and experiences to students that serve as a foundation for continued learning of presented areas.
Upon the successful completion of this course, the student will be able to:

- Install and run the Python interpreter
- Create and execute Python programs
- Understand the concepts of file I/O
- Read data from a text file using Python
- Acquire knowledge about Object Oriented Skills in Python

All the lectures will be devoted on discussions of basic theories and advanced topics, focusing on practical implementation of knowledge. Classes will be conducted by lecture as well as power point presentation, as per requirement. The tutorials will familiarize the students with practical problem-solving techniques led by the course coordinator. Students will strongly grab the basic concepts of the subject via exercise and discussions with the coordinator.

Course Content:

Unit-I **12 Lecture Hours**

Introduction to Python: Introduction to Python, Python variables, expressions, statements, Variables, Keywords, Operators & operands, Expressions, Statements, Order of operations, String operations, Comments, Keyboard input, Example programs, Functions- Type conversion function, Math functions, Composition of functions, Defining own function, parameters, arguments, Importing functions, Example programs

Unit II: **8 Lecture Hours**

Conditions & Iterations: Conditions- Modulus operator, Boolean expression, Logical operators, if, ifelse, if-elif-else, Nested conditions, Example programs,
Iteration- while, for, break, continue, Nested loop, Example programs

Unit III: 13 Lecture Hours

Recursion, Strings, List, Dictionaries, Tuples: Recursion- Python recursion, Examples of recursive functions, Recursion error, Advantages & disadvantages of recursion
Strings- Accessing values in string, Updating strings, Slicing strings, String methods – upper(), find(), lower(), capitalize(), count(), join(), len(), isalnum(), isalpha(), isdigit(), islower(), isnumeric(), isspace(), isupper() max(), min(), replace(), split(), Example programs
List- Introduction, Traversal, Operations, Slice, Methods, Delete element, Difference between lists and strings, Example program
Dictionaries- Introduction, Brief idea of dictionaries & lists
Tuples- Introduction, Brief idea of lists & tuples, Brief idea of dictionaries & tuples

Unit IV: 10 Lecture Hours

I/O & File: Data Streams, Creating Your Own Data Streams, Access Modes, Writing Data to a File, Reading Data from a File, Additional File Methods, Using Pipes as Data Streams

Classes & Objects: Creating class, Instance objects, Accessing attributes, Built in class attributes, destroying objects, Inheritance, Method overriding, Overloading methods, Overloading operators, Data hiding, Example program

Unit V: 2 Lecture Hours

Python Exceptions Exception handling: assert statement, Except clause - with no exceptions and multiple exceptions, Try - finally, raising exceptions, user-defined exceptions.

Text Books:

1.Introducing Python- Modern Computing in Simple Packages – Bill Lubanovic, O„Reilly Publication
2.Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress
3.Programming In Python, Dr. Pooja Sharma, BPB

Reference Books

1. Beginning Programming with Python for Dummies Paperback – 2015 by John Paul Mueller
2. Python Programming - Using Problem Solving Approach, Reema Thareja, OXFORD UNIVERSITY PRESS

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11455	Data Science with Python	CO11455.1	2	2	2	3	2	1	2	-	1	-	-	3	3	3	1
		CO11455.2	2	2	3	2	1	2	1	-	2	-	-	3	2	2	1
		CO11455.3	2	2	2	2	2	2	1	-	1	-	-	2	2	2	2
		CO11455.4	1	2	2	2	1	2	1	-	2	-	-	1	2	2	1
		CO11455.5	3	1	3	3	2	2	1	-	1	-	-	3	3	1	2
		CO11455.6	2	2	1	3	3	2	1	-	1	-	-	1	2	2	2
		CO11455	2.0	1.83	2.17	2.5	1.83	1.83	1.17	-	1.33	-	-	2.17	2.33	2.0	1.5

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name:
Enrolment No:

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION

Name of the Program: BCA **Semester: III**
Code- CSE11455 **Stream- CSE**
Time: 03 Hrs.
Paper title– Data Science with Python **Total pages- 1**
Max. Marks: 50 **Total no. of questions- 12**

Instructions:
Attempt All Questions from **Section A** (Each Carrying 1 Marks); any **Three Questions** from **Section B** (Each Carrying 5 Marks). **Any Two Questions from Section C** (Each Carrying 10 Marks).
1. At top of sheet, clearly mention Name, Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. Assumptions made if any, should be stated clearly at the beginning of your answer.
3. All parts of a Question should be answered consecutively.

Section A (Answer **All the Questions) (5 x 1 = 5)**			
1.	**Explain** the Identifiers, Keywords and Variables in Python programming language with examples.	**U**	**CO1**
2.	**List** the basic data types available in Python with examples.	**R**	**CO1**
3.	**Summarize** the difference between set and list datatype.	**U**	**CO1**
4.	**Solve** how slicing operator used on string datatype.	**Ap**	**CO2**
5.	**Why** strings are immutable with an example.	**R**	**CO2**
SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**			
6.	**Apply** Python program to find the GCD of two positive numbers.	**Ap**	**CO1**
7.	**Identity** whether the given string is a Palindrome or not using slicing.	**Ap**	**CO2**
8.	**Show** the various file opening mode in Python language.	**U**	**CO6**
9.	**Explain** with Example: i) try catch block ii) function calling	**U**	**CO3, CO5**
SECTION C(Attempt Any **Two Questions) (2 x 10 = 20)**			
10.	**Solve** Pythonic code to sort a sequence of names according to their alphabetical order without using sort () function.	**Ap**	**CO2**
11.	Consider a Rectangle Class and Create Two Rectangle Objects.**Solve** Python program to Check Whether the Area of the First Rectangle is Greaterthan Second by Overloading > Operator.	**Ap**	**CO4**
12.	**Summarize** the advantage of functions in Python. **Show** the scope and lifetimes of Global & Local variables.	**U** **R**	**CO3**

Version 1.0	**Contact Hours – 45 Hours**	**3**	**0**	**0**	**3**
Pre-requisite/Exposure	**Digtal Logic**				
Co-requisite	**NIL**				

Course Objectives:

To study the basic organization and architecture of digital computers (CPU, memory, I/O, software). Discussions will include digital logic and microprogramming. Such knowledge leads to better understanding and utilization of digital computers, and can be used in the design and application of computer systems or as foundation for more advanced computer-related studies.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Define functional block of a computer and relate data representation

CO2: Explain and understand memory hierarchy design, memory access time formula, performance improvement techniques, and trade-offs.

CO3: **Illustrate** pipelined execution, parallel processing and principles of scalable performances.

CO4: Analyze the concepts of memory utilization in a computer system.

CO5: Define the implementation of parallel processors and Analyze the synchronization techniques

Course Description:

The architecture of computer systems and associated software. Topics include addressing modes, interrupt systems, input/output systems, external memory systems, assemblers, loaders, multiprogramming, performance evaluation, and data security.

This task is challenging for several reasons. First, there is a tremendous variety of products that can rightly claim the name of computer, from single-chip microprocessors costing a few dollars to supercomputers costing tens of millions of dollars. Variety is exhibited not only in cost, but also in size, performance, and application. Second, the rapid pace of change that has always characterized computer technology continues with no letup. These changes cover all aspects of computer technology, from the underlying integrated circuit technology used to construct computer components, to the increasing use of parallel organization concepts in combining those components. In spite of the variety and pace of change in the computer field, certain fundamental concepts apply consistently throughout. The application of these concepts depends on the current state of the technology and the price/performance objectives of the designer. The intent of this paper is to provide a thorough discussion of the fundamentals of computer organization and architecture and to relate these to contemporary design issues.The subtitle suggests the theme and the approach taken in this book. It has always been important to design computer systems to achieve high performance, but never has this requirement been stronger or more difficult to satisfy than today. All of the basic performance characteristics of computer systems, including processor speed, memory speed, memory capacity, and interconnection data rates, are increasing rapidly. Moreover, they are increasing at different rates. This makes it difficult to design a balanced system that maximizes the performance and utilization of all elements.

Course Content:

Unit-I	**10 Lecture Hours**
Introduction: Functional units of digital system and their interconnections, buses, bus architecture, types of buses and bus arbitration. Register, bus and memory transfer. Processor organization, general registers organization, stack organization and addressing modes.	
Unit-II	**10 Lecture Hours**
Computer Arithmetic : Look ahead carries adders. Multiplication: Signed operand multiplication, Booths algorithm and array multiplier. Division and logic operations. Floating point arithmetic operation, Arithmetic & logic unit design. IEEE Standard for Floating Point Numbers Control Unit: Instruction types, formats, instruction cycles and sub cycles (fetch and execute etc), micro operations, execution of a complete instruction. Program Control, Reduced Instruction Set Computer, Pipelining. Hardwire and micro programmed control: micro programme sequencing, concept of horizontal and vertical microprogramming. RISC Scalar Procesors, CISC Scalar Process, Super Scalar and Vector Procesor and its Instruction Set Architecture.	
Unit-III	**15 Lecture Hours**
Memory: Basic concept and hierarchy, semiconductor RAM memories, 2D & 2 1/2D memory organization. ROM memories. Cache memories: concept and design issues & performance, address mapping and replacement Auxiliary memories: magnetic disk, magnetic tape and optical disks Virtual memory Technology, Virtual Meory Models, TLB, Paging, Segmentaion & its concept of implementation, Shared Memory Organization, Interleaved Memory Organization, Cache Memory Optimization Input / Output: Peripheral devices, I/O interface, I/O ports, Interrupts: interrupt hardware, types of interrupts and exceptions. Modes of Data Transfer: Programmed I/O, interrupt initiated I/O and Direct Memory Access., I/O channels and processors. Serial Communication: Synchronous & asynchronous communication, standard communication interfaces.	
Unit-IV	**10 Lecture Hours**
Pipeline and Superscalar: Linear Pipeline, Non- Linear Pipeline, Instruction Pipeline Design, Arithmetic Pipeline Design, Super Scalar & Superpipeline Design Paralle Computing Models: PRAM & VLSI models, Shared & Distributed memory multi Computers, Vector Super Computers & SIMD Super Computers	
Unit-V	**5 Lecture Hours**
Motivation: why parallel computing, Fundamentals of parallel computing, PCA components & systems, PCA architectures: Flynn's taxonomy, based on memory organization, Parallel programming models ARM Architectures, x86 Architectures, Other Sample Architectures.	

Text Books:

1. Computer Organization 1.and Design: The Hardware/Software Interface, 5th Edition by David A. Patterson and John L. Hennessy, Elsevier.
2. Computer Organization and Embedded Systems, 6th Edition by Carl Hamacher, McGraw Hill Higher Education.

Reference Books:

1. Computer Architecture and Organization, 3rd Edition by John P. Hayes, WCB/McGraw-Hill

2. Computer Organization and Architecture: Designing for Performance, 10th Edition by William Stallings, Pearson Education.
3. Computer System Design and Architecture, 2nd Edition by Vincent P. Heuring and Harry F. Jordan, Pearson Education

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11411	Computer Organization & Architecture	CO11411.1	2	3	3	1	2	3	3	-	1	-	-	3	1	2	3
		CO11411.2	3	2	2	3	2	2	3	-	3	-	-	3	3	1	2
		CO11411.3	2	2	3	2	1	3	3	-	1	-	-	2	1	3	3
		CO11411.4	3	2	3	3	2	2	2	-	3	-	-	3	3	2	1
		CO11411.5	2	2	3	3	2	3	3	-	2	-	-	3	2	3	2
		CO11411	2.4	2.2	2.8	2.4	1.8	2.6	2.8	-	2.0	-	-	2.8	2.0	2.2	2.2

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE11412	Database Management System	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	3	0	0	3
Pre-requisite/Exposure	Set Theory, Knowledge of programming language.				
Co-requisite	NIL				

Course Objectives:

1. To understand database concepts, applications, data models, schemas and instances.
2. To implement the relational database design and data modelling using entity-relationship (ER) model.
3. To demonstrate the use of constraints and relational algebra operationsand Normalization process
4. To learn the new emerging Technologies and Applications in database.

Course Outcomes:

On the completion of this course the student will be able to

1. **Describe** the characteristics of database and the architecture of Database system.
2. **Model** the elements used in Entity- Relationship diagram.
3. **Summarize** relational model concept and illustrate the relational constraints.
4. **Build** Structured Query Language (SQL) and apply to query a database and **Define** normalization for relational databases.
5. **Develop** some Standalone (Example)/ Mobile/ Web Application DBon real world case studies.

Course Description:

Databases form the backbone of all applications today – tightly or loosely coupled, intranet or internet based, financial, social, administrative, and so on. Database Management Systems (DBMS) based on relational and other models have long formed the basis for such databases. Consequently, Oracle, Microsoft SQL Server, Sybase etc. have emerged as leading commercial systems while MySQL, PostgreSQL etc. lead in open source and free domain. While DBMS's differ in the details, they share a common set of models, design paradigms and a Structured Query Language (SQL). In this background the course examines data structures, file organizations, concepts and principles of DBMS's, data analysis, database design, data modeling, database management, data & query optimization, and database implementation. More specifically, the course introduces relational data models; entity-relationship modeling, SQL, data normalization, and database design. Further it introduces query coding practices using MySQL (or any other open system) through various assignments. Design of simple multi-tier client / server architectures based and Webbased database applications is also introduced.

Course Content:

Unit-I	9 Lecture Hours
Overview of database management systems and the relational mode: Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML). Data models: Entity-relationship model, network model, relational and object-oriented data models, integrity constraints, data manipulation operations. ER models: Entity Set, Relation Ship Set, Cardinality Properties, Type of Entities, Type of Keys, Aggregation, Specialization and Generalization.	
Unit-II	**9 Lecture Hours**
Database design: E-R diagrams, constraints, normal forms Relational algebra, Fundamental Operations, Additional Operations. Select, Project, Cartesian Product, UNION, Set difference, Rename. Types of joining operations, Division, Intersection, Aggregate. Tuple and domain relational calculus, SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server.	
Unit-III	**9 Lecture Hours**
SQL: data definition, data manipulation, queries, views, constraints, triggers: Relational database design: Integrity Constraint, Domain Constrain, Referential Integrity, Functional Dependencies, Closure of Set, Cover and Canonical Cover, Types of Anomalies, Armstrong's axioms, Extended Armstrong's axioms, Assertions and Demons. Data Base Decomposition: Domain and data dependency, Normal forms: 1NF, 2 NF, 3 NF, BCNF, Dependency preservation, Lossless design.	
Unit-IV	**9 Lecture Hours**
Storage and indexing: B-trees, hashing: Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms. Storage strategies: Indices, B-trees, B+-trees, hashing, File System, Disk Organization, Physical Storage, Buffer management.	
Unit-V	**9 Lecture Hours**
Case Studies : Standalone (Example)/ Mobile/ Web Application DB: Transaction processing: Failure, Recovery from Failure, Different States of Transaction, Transaction Isolation, ACID property, Serializability of scheduling, Multi-version and optimistic Concurrency Control schemes. Concurrency control: Locking and timestamp-based schedulers, 2-Phase Locking Protocol, Dead Lock, Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection. Advanced topics: Distributed databases, Data warehousing and data mining.	

Text Books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill 2. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.

Reference Books:

1. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education
2. "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11412	Database Management System	CO11412.1	3	2	1	1	1	2	2	-	3	-	-	2	2	2	1
		CO11412.2	3	2	2	3	1	3	3	-	3	-	-	1	3	2	2
		CO11412.3	3	2	3	2	1	1	3	-	3	-	-	2	2	2	2
		CO11412.4	3	3	3	2	2	2	3	-	1	-	-	2	3	2	3
		CO11412.5	3	2	3	3	3	1	2	-	1	-	-	1	1	1	1
		CO11412	3.0	2.2	2.4	2.2	1.6	1.8	2.6	-	2.2	-	-	1.6	2.2	1.8	1.8

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE12413	Object Oriented Programming Lab	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	0	0	3	2
Pre-requisite/Exposure	Knowledge of programming basics				
Co-requisite	NIL				

Course Objectives:

To understand how to design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling, functions and object oriented approaches.

Course Outcomes:

On the completion of this course the student will be able to

CO1. **Define** classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem.
CO2. **Illustrate** object oriented modelling techniques like classes and Instances modelling techniques
CO3. **Interpret** fundamentals of object-oriented programming in Java, including defining Classes, invoking methods, using class libraries, etc.
CO4. **Construct** programming solutions with exception handling and multi-threading concept
CO5. **Solve** GUI program with proper event handling techniques.

Course Description:

This course investigates object-oriented methods including object-oriented programming methodologies and techniques. Current methodology is emphasized. The use of object-oriented features such as encapsulation, information hiding, inheritance and polymorphism is reinforced by class assignments and programming exercises. The importance of multi-threading and exception handling is introduced in this course.

Course Content:

Unit-I	**09 Lecture Hours**
Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area (). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area () that prints the area of the given shape. Write a Java program to illustrate the parameterized constructor. Write a Java program to add two numbers with int and float types using method overloading.	
Unit-II	**09 Lecture Hours**
Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num 2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception. Display the exception in a message dialog box	
Unit-III	**09 Lecture Hours**
Write a Java program to list all the files in a directory including the files present in all its subdirectories. Write a Java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (\t). It takes a name or phone number as input and prints the corresponding other value from the hash table (hint: use hash tables).	
Unit-IV	**09 Lecture Hours**
Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with “Stop” or “Ready” or “Go” should appear above the buttons in selected color. Initially, there is no message shown. Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Labels in Grid Layout. a) Develop an applet in Java that displays a simple message. b) Develop an applet in Java that receives an integer in one text field, and computes its factorial Value and returns it in another text field, when the button named “Compute” is clicked.	
Unit-V	**09 Lecture Hours**
Write a Java program that simulates a Banking GUI application with facilities of deposit, withdraw and check balance in an account. Write a Java program that implements Quick sort algorithm for sorting a list of names in ascending order Write a Java program that implements Bubble sort algorithm for sorting in descending order and also shows the number of interchanges occurred for the given set of integers.	

Text Books:

2. Java Fundamentals - A Comprehensive Introduction, Illustrated Edition ByDaleskrien, Herbert Schildt, Mcgraw-Hill Education.

Reference Books:

3. Java For Programmers, 2nd Edition By Paul Deitel And Harvey Deitel, Pearson Education.
4. Thinking In Java, Low Price Edition By Bruce Eckel, Pearson Education

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Internal	End Term
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12413	Object oriented programming lab	CO12413.1	2	2	3	3	3	3	3	-	3	-	-	3	3	1	1
		CO12413.2	3	3	1	3	2	2	2	-	1	-	-	1	2	2	2
		CO12413.3	2	2	3	2	3	2	2	-	3	-	-	3	1	1	3
		CO12413.4	2	3	2	2	3	1	3	-	2	-	-	3	3	2	1
		CO12413.5	3	2	1	3	1	3	3	-	2	-	-	1	3	3	1
		CO12413	2.4	2.4	2.0	2.6	2.4	2.2	2.6	-	2.2	-	-	2.2	2.4	1.8	1.6

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

MODEL QUESTION PAPER

ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END SEMESTER EXAMINATION** (Academic Session: 2022 – 23)		
Name of the Program:	BCA	**Semester:**	IV
Paper Title:	Object oriented programming lab	**Paper Code:**	CSE12413
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:	**05**	**Total No of Pages:**	01
(Any other information for the student may be mentioned here)	**10.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **11.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **12.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Ques No.	Question	Knowledge Level	Course Outcome
Group A : Answer ALL the questions (5 x 10= 50)			
1	Write a Java program to illustrate the parameterized constructor.	**Ap**	**CO1**
2	Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num 2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception. Display the exception in a message dialog box	**Ap**	**CO2**
3	Write a Java program to list all the files in a directory including the files present in all its subdirectories.	**Ap**	**CO3**
4	Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Labels in Grid Layout.	**Ap**	**CO4**
5	Write a Java program that implements Quick sort algorithm for sorting a list of names in ascending order	**Ap**	**CO5**

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

vii) If the COs are higher in numbers that can be managed by equating sub-divisional questions

viii) If the COs are lower in numbers, the questions can be increased by equating the number of COs

CSE12456	Data Science with Python Lab	L	T	P	C
Version 1.0	Contact Hour -45	0	0	3	2
Pre-requisites/Exposure	Knowledge of Python Language				
Co-requisites	--				

Course Objectives:

1. To **acquire** programming skills in core Python.
2. To **acquire** Object Oriented Skills in Python
3. To **develop** the skill of designing Graphical user Interfaces in Python
4. To **develop** the ability to solve and analyse mathematical problem in Python

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Classify** how to Write, Test and Debug Python Programs
CO2. **Apply**Conditionals structure Loops and various operators used in Python Programs.
CO3.**Experiment with** functions and **demonstrate** compound data using Lists, Tuples and Dictionaries
CO4. **Solve** how Read and write data from & to files in Python.
CO5. **Explain** and **develop** the concept of OOP in Python.

Catalog Description:

This course introduces basic concepts in programming language to solve numerical problems. All the lectures will be devoted on discussions of basic theories and advanced topics, focusing on practical implementation of knowledge. Classes will be conducted by lecture as well as power point presentation, audio visual virtual lab session. The tutorials will familiarize the students with practical problem-solving techniques led by the course coordinator. Students will strongly grab the basic concepts of the subject via exercise and discussions with the course coordinator.

Course Content:

Experiment 1:
a. Running instructions in Interactive interpreter and a Python Script.
b. Develop a program to purposefully to raise Indentation Error and Correct it.

Experiment 2:
Implement different data types, Operators and Expressions using Python language.

Experiment 3:
Implement the knowledge using Decision Statements(if, if-else, if-elif ladder)

Experiment 4:
Familiarize and usage of Loop & nested loop Statements (for,while, do-while)

Experiment 5:
Implement Python program using different sequential data types like List, Tuple, Dictionary Set

Experiment 6:
Understand and develop function programming, its types and function-call.

Experiment 9:
Implement the concept of data files and file handling in Python language.

Experiment 10:
Implement the concept of OOP properties with the help of Python syntax.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CSE12456	Data Science with Python Lab	CO12456.1	3	3	2	1	2	3	1	-	2	-	-	3	1	3	2
		CO12456.2	2	3	3	1	3	2	2	-	1	-	-	2	3	2	1
		CO12456.3	3	3	3	3	2	1	2	-	3	-	-	3	2	1	2
		CO12456.4	3	3	2	3	2	1	2	-	3	-	-	3	3	1	2
		CO12456.5	3	3	3	3	2	1	2	-	3	-	-	2	3	1	2
		CO12415	2.8	3.0	2.6	2.2	2.2	1.6	1.8	-	2.4	-	-	2.6	2.4	1.6	1.8

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA Semester: III Stream: CSE
PAPER TITLE: Data Science with Python Lab
PAPER CODE: CSE12456
Maximum Marks: 50 Time duration: 3 hours
Total No of questions: 5 Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Section A (Answer All the Questions) (5 x 10 = 50)			
1.	Write a program to purposefully to **Find** Indentation Error and Correct it.	**R**	**CO1**
2.	**Solve** a program to swap values of two variables with and without using third variable.	**AP**	**CO2**
3.	**Develop** a program to check whether the entered year is leap year or not (a year is leap if it is divisible by 4 and divisible by 100 or 400.)	**AP**	**CO2**
4.	**Construct** a program to create a structure named company which has name, address, phone and no Of Employee as member variables. Read name of company, its address, phone and no Of Employee. Finally display these members‟ value.	**AP**	**CO3**
5.	Write a program to **summarize** the concept of Multiple Inheritance with the help of Python syntax.	**U**	**CO5**

CSE12415	Computer Organization Lab	L	T	P	C
Version 1.0	Contact Hours-45	0	0	3	2
Prerequisites/Exposure	Digital Electronics, Microprocessor				
Co-requisites	Programming Concepts				

Course Objectives:

1. To study the basic organization and architecture of digital computers (CPU, memory, I/O, software).
2. Discussions will include digital logic and microprogramming. Such knowledge leads to better understanding and utilization of digital computers,
3. It can be used in the design and application of computer systems or as foundation for more advanced computer-related studies.

Course Outcomes:

On completion of this course, the students will be able to

CO1**. Write** VHDL & Verilog programs.
CO2. **Design** Logic circuit & ALU

Catalog Description:

The architecture of computer systems and associated software. Topics include addressing modes, interrupt systems, input/output systems, external memory systems, assemblers, loaders, multiprogramming, performance evaluation, and data security.

Course Content:

1. Implementation based on basic Logic Gates (AND, OR, NOT, NAND, NOR, XOR, XNOR)
2. Implementation based on Half adder and Full adder (using data flow, behavioral, structural modeling)
3. Implementation based on Half subtractor and Full subtractor (using data flow, behavioral, structural modeling)
4. Implementation based on Full adder using two half adders and Full subtractor using two half subtractors
5. Implementation based on multiplexer, demultiplexer, Encoder and Decoder
6. Implementation based on D Flip Flop, SR Flip Flop, JK Flip Flop, T Flip Flop
7. Implementation based on 4 Bit Register (using Structural modeling)
8. Implementation based on 4 Bit Comparator (using Behavioral modeling)
9. Implementation based on 4 Bit ALU
10.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12415	Computer Organization Lab	CO12415.1	3	1	2	1	2	3	1	-	2	-	-	3	1	3	2
		CO12415.2	3	1	2	1	3	2	2	-	1	-	-	3	2	2	1
		CO12415	3.0	1.0	2.0	1.0	2.5	2.5	1.5	-	1.5	-	-	3.0	1.5	2.5	1.5

1=weakly mapped 2= moderately mapped 3=strongly mapped

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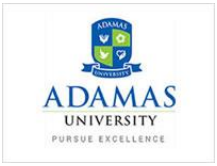
Name: **Enrolment No:**	

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION

Name of the Program: B.C.A.Semester: III
Code- CSE12415 **Stream- CSE**
Time: 03 Hrs.
Paper title– Computer Organization Lab **Total pages- 1**
Max. Marks: 40 **Total no. of questions- 5**

Instructions:
Attempt Any two Questions**.**
1. **At top of sheet, clearly mention Name, Roll No., Enrolment No., Paper Name & Code, and Date of Exam.**
2. **Assumptions made if any, should be stated clearly at the beginning of your answer.**
3. **All parts of a Question should be answered consecutively.**

1.	**Construct** a VHDL program implementation based on Full adder using two half adders and Full subtractor using two half subtractors	**C**	**CO1**
2.	**Construct** a VHDL program Implementation based on Half adder and Full adder (using data flow, behavioral, structural modeling)	**C**	**CO1**
3.	**Construct** a VHDL program Implementation based on D Flip Flop, SR Flip Flop, JK Flip Flop, T Flip Flop	**C**	**CO2**
4.	**Construct** a VHDL program Implementation based on multiplexer, demultiplexer, Encoder and Decoder	**C**	**CO1**
5.	Constructa VHDL program **Implementation based on 4 Bit ALU**	**C**	**CO1**

CSE12416	Database Management System Lab	L	T	P	C
Version 1.0	Contact Hours -45	0	0	3	2
Pre-requisites/Exposure	Set Theory, Knowledge of programming language.				
Co-requisites	--				

Objectives:

1. To understand the fundamentals of how data is stored in computer systems.
2. To know the fundamentals of Structured Query Language (SQL) and how it can be used to store and retrieve data from a relational database.
3. To be able to apply the principles used in class to build a web-based database application from the ground up.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Organize** the basic concepts of Database Systems and Applications.
CO2. **Construct** the basics of SQL query from relational algebra expressions.
CO3. **Define** a commercial relational database system (Oracle, MySQL) by writing SQL using thesystem.
CO4. **Apply**query optimize algorithms to Optimize the Query.

Catalog Description:

The primary goal of this class is to learn principles and practices of database management and database design. Over the course of the semester we will discuss the database relational database design, normalization, SQL queries, reports and other interfaces to database data, and documentation. Lectures will also cover writing ethical and privacy issues associated with database systems. In- class instruction and exercises will focus on the fundamentals for creating sophisticated, interactive, and secure database applications.

Course Content:

Experiment 1:
Familiarization of structured query language.
Experiment 2:
Table Creation.
Experiment 3:
Insertion, Updation, Deletion of tuples.
Experiment 4:
Executing different queries based on different functions.
Experiment 5:
Performing joining operations.

Experiment 6:
Nested Queries.
Experiment 7:
Use of aggregate functions.
Experiment 8:
Use of group functions.
Experiment 9:
Use of order by functions.
Experiment 10:
Arithmetic operations.
Experiment 11:
Trigger using SQL.

Experiment 12:

Introduction to PL/SQL.

Experiment 13:

Report generation of various queries.

Experiment 14:

Merging Data Bases with front end using ODBC connection.

Experiment 15:

SQL Injection on a non-harmful test page.

Text Books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill
2. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.

Reference Books:

1. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education
2. "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12416	Database Management System Lab	CO12416.1	3	3	1	1	1	2	2	-	2	-	-	3	2	3	2
		CO12416.2	2	2	2	3	3	1	3	-	1	-	-	3	2	2	2
		CO12416.3	2	3	3	3	3	1	2	-	3	-	-	2	2	2	1
		CO12416.4	2	2	2	3	1	3	2	-	2	-	-	2	2	1	3
		CO12416	2.25	2.5	2.0	2.5	2.0	1.75	2.25	-	2.0	-	-	2.5	2.0	2.0	2.0

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ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA Semester: III Stream: CSE
PAPER TITLE: Database Management Systems Lab
PAPER CODE: CSE12416
Maximum Marks: 50 Time duration: 3 hours
Total No of questions: 5 Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

Part A (1X 20=20)			
Q1.	**Create the following tables** Table Attributes Customercid,cname,loc,sex,dob Bank_brnbcode,bloc,bsate Deposit Dacno,dtype,ddate,damt Loan Lacno,ltype,ldate,lamt Accounts_inBcode,cid Depositorcid,dacno Borrower cid,lacno **Please enter at least 15 values for each table,Include necessary constraints. Please follow your query before entering your values.**	**R**	**CO1, CO2**
Part-B (4X5=20)			
Q2.	**Create** a SQL query to find out the names of all the customers.	**U**	**CO2**
Q3.	**Change** the ldate of Lacno 'L0012' to 20/05/2010.	**R**	**CO3**
Q4.	**Write** a SQL query to check the total amount of loan issued by branch code "A002".	**AP**	**CO4**
Q5.	**Select** the First name of the customers where customers last name does not exist in your table.	**R**	**CO2**

SOC14100	Community Service	L	T	P	C
Version 1.0		0	0	0	1
Pre-requisites/Exposure	Basic knowledge of English and computer applications such as Internet Explorer and MS Office				
Co-requisites	--				

Course Objectives:

1. To involve the students in working within specific communities to engage them into essential internal social structures.
2. To involve passionate students to help struggling and marginalized groups to achieve a sense of self-respect and develop confidence in each other.
3. To develop a hands-on approach for real-world experience.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Identify** the indispensable and relevant social issues of Indian as well as global context.
CO2. **Construct** a questionnaire schedule, plan and execute field work.
CO3. **Create** a report after serving the social issue.

Catalog Description:

To prepare students for ethical decision making guided by empathy, care, values and principles course on Community Service has rich potentiality. In this course the focus will be on developing psychosomatic skill, intellectual ability, leadership ability and collaboration with others along with problem solving attitude. This course includes specific activities like identifying and defining a social issue, preparing a plan for field work, collecting photographs and testimonies from the marginalized section of the society and serving the issue with utmost care. Classes will be conducted by lecture as well as power point presentation as per requirement. Students will strongly grab the basic problems of the society via field work and discussions with the course coordinator.

Course Content:

Unit-I
Introduction to the course. A brief on social issues facing the society with both global and Indian examples.

Unit II:
Minimum 24 hours of field work on a social issue and helping the marginalized / affected community / cause with photographs and testimonies.
Unit III:
Submission of individual reflection on the social service rendered.

The benefits that accrue to the students are

A.) Subjective

1. Psychosomatic benefits: Volunteering increases overall life satisfaction and also helps to relive stress and acts as an anti-depressant.
2. Intellectual benefits: Enhances knowledge through new experiences, and develops communication skills.
3. Career benefits: Enhances career prospects by acquisition of work-related skills, builds good references for employers and provides a forum to network with future potential employers. It also The experience allows gained helps students to take up leadership positions. Letters of recommendation can also be easily sought. Research shows that students who indulge in volunteer word perform better in studies as it invigorates their passion for learning
4. Personal benefits: Real world skills like leadership, problem-solving, collaboration with others, time management and communication skills, learn patience and empathy.
5. Connect learning to real world and enables deeper and lifelong learning.

B.) Community

1. Collective benefits: Strong interpersonal bonds are created, and leads to increased civic and social awareness and responsibility.

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Text Books:

1. Tadevosyan, Gohar & Schoenhuth, Michael. Participatory Research Approach : Principles, Challenges and Perspectives. http://ysu.am/files/01G_Tadevosyan_M_Schoenhuth.pdf
2. Bergold, Jarg & Thomas Stefan. Participatory Research Methods: A Methodological Approach in Motion http://www.qualitative-research.net/index.php/fqs/article/view/1801/3334

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Assessment	ETE
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
SOC14100	Community Service	CO14100.1	1	3	3	2	2	3	1	-	2	-	-	1	3	2	3
		CO14100.2	1	1	1	2	2	3	2	2	2	2	-	3	1	1	3
		CO14100.3	1	2	1	3	1	2	2	-	1	3	-	2	2	3	2
		CO14100	1.0	2.0	1.67	2.33	1.67	2.67	1.67	2.0	1.67	2.5	-	2.0	2.0	2.0	2.67

1=weakly mapped 2= moderately mapped 3=strongly mapped

IDP14001	Interdisciplinary Project	L	T	P	C
Version 1.0	Contact Hours – 45	0	0	5	3
Pre-requisites/Exposure	Knowledge of Basic English				
Co-requisites	Knowledge of Basic Computer Skills				

Course Objectives	This course will develop a student's knowledge of and appreciation for the ● interdisciplinary nature of knowledge and learning ● importance and value of integrating knowledge and perspectives from multiple disciplines as a means to evaluating and understanding complex topics, problems, issues, phenomena, and events ● competencies learned during the educational process and to apply these competencies in a real-world application
CourseOutcomes	Upon successful completion of the course, students will be able to CO1. **Explain** the unique advantages of integrative research and learning CO2. **Illustrate** the fundamentals of research methods and practices of various academic disciplines CO3. D**emonstrate** an understanding of current issues and concerns CO4. **Utilize** the importance of ethics in research process CO5. **Illustrate** the inter-disciplinary systems of research documentation
Typical Progress Roadmap	● After discussion with the Project Advisor(s), each student shall prepare an initial outline of their assigned project indicating the major sections of discussion, list the principal research sources for each section, and explain the overall objective of the project, including a justification of the interdisciplinary nature of the work. ● Each student shall meet with the Project Advisor(s) regularly as per the weekly Time-Table. Other meetings may be scheduled at the discretion of the Project Advisor(s) at mutually agreed upon timings. ● Typically, the progress will include a combination of industrial and academic mentoring , self study sessions, case studies, trend studies, presentation by students, interactive sessions, industrial visits etc. ● Regular submission of progress reports shall be required of each student-group as notified through the Project Advisor(s) from time to time.
Mode of Evaluation	Students will be evaluated by team participation and a team presentation at the end of the project. Interactive & continuous, task/assignment- based evaluation methodology will be applied for the course.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continous Assesment	End Term
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
IDP14001	**Interdisciplinary Project**	**CO14001.1**	**2**	**2**	**2**	**1**	**3**	**3**	**3**	**-**	**2**	**-**	**-**	**1**	**3**	**3**	**1**
		CO14001.2	**2**	**2**	**2**	**2**	**1**	**2**	**3**	**-**	**2**	**-**	**-**	**3**	**3**	**2**	**2**
		CO14001.3	**3**	**2**	**2**	**2**	**2**	**1**	**2**	**-**	**3**	**-**	**-**	**2**	**1**	**1**	**1**
		CO14001.4	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**-**	**2**	**-**	**-**	**1**	**1**	**2**	**3**
		CO14001.5	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**-**	**3**	**-**	**-**	**1**	**2**	**3**	**1**
		CO14001	**2.4**	**2.2**	**2.2**	**2.0**	**2.2**	**2.0**	**2.6**	**-**	**2.4**	**-**	**-**	**1.6**	**2.0**	**2.2**	**1.6**

1=weakly mapped 2= moderately mapped 3=strongly mapped

ECE11503	Data Communication & Computer Network	L	T	P	C
Version 1.0	Contact hour-45	3	0	0	3
Pre-requisites/Exposure	Computer Fundamentals				
Co-requisites	--				

Course Objectives:

1) To give a brief overview of fundamentals of computer network
2) To conceptualize understanding in transmission media and data communication.
3) To propagate a functional overview of addressing techniques and protocols
4) To analyse file transfer protocols, and concepts of secured data communication technique

Course Outcomes:

On the completion of this course the student will be able to

CO1. Explain key networking concepts, principles, design issues and techniques at all protocol layers.
CO2. Contrast between different types of networks (e.g., wide area networks vs. local area networks, wired vs. wireless) in terms of their characteristics and protocols used.
CO3. Describe different types of networked applications and what underlying network protocols are needed to meet their diverse requirements.
CO4. Distinguish between control and data planes in computer networks, and their corresponding architectures in real-world networks (including the Internet).
CO5. Illustrate reliable transport protocols and networked system architectures via implementation using Socket APIs, measurement and analysis.

Course Description:

In this course, students will study architectures, protocols, and layers in computer networks and develop client-server applications. Topics include the OSI and TCP/IP models, transmission fundamentals, flow and error control, switching and routing, network and transport layer protocols, local and wide-area networks, wireless networks, client-server models, and network security. Students will extend course topics via programming assignments, library assignments and other requirements.

Course Content:

Unit-I	**10 Lecture Hours**
Unit Heading: Idea Of Networking What Is the Internet?, Network Edge, Network Core, Delay, Loss, and Throughput in Packet-Switched Networks, Protocol Layers and Their Service Models, Networks Under Attack.Principles of Network Applications, Web and HTTP, Electronic mail in Internet, DNS—The Internet's Directory Service, Peer-to-Peer Applications. LAN Topology, Encoding Technique, Transmission Mode, layers of networking	
Unit-II	**10 Lecture Hours**
Unit Heading: Datalink layer Concept Design issues, error detection and correction, elementary data link protocols, sliding window protocols, example data link protocols - HDLC, the data link layer in the internet. THE MEDIUM ACCESS SUBLAYER: Channel allocations problem, multiple access protocols, Ethernet, Data Link Layer switching, Wireless LAN, Broadband Wireless, Bluetooth	
Unit-III	**10 Lecture Hours**
Unit Heading: Network and Transport layer Network layer design issues, routing algorithms, Congestion control algorithms, Internetworking, the network layer in the internet (IPv4 and IPv6), Quality of Service. Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP. Addressing Mode Class A,B,C,D	
Unit-IV	**10 Lecture Hours**
Unit Heading: Socket Over view Client server Model.What is socket.TCP socket over view,Socket options – getsocket and setsocket functions – generic socket options – IP socket options – ICMP socket options – TCP socket options – Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function – getservbyname and getservbyport functions	
Unit-V	**15 Lecture Hours**
Unit Heading: Application Layer Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and http. APPLICATION LAYER PROTOCOLS: Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet.Socket Programming,Network security,Leaky Bucket application,WSN concept and realtime application case study.	
Text Books: **1. . Computer Networking -Top Down Approach- James F. Kurose and Keith W. Ross-- Pearson 2013, sixth Edition** **2. 2. Data Communications and Networking- Behrouz A. Forouzan-McGraw-Hill 2007, fourth Edition.** **Reference Books:** **3. Book 1 – Author – Publisher** **4. Book 2 – Author – Publisher** **5. Book 3 – Author – Publisher**	

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ECE11503	Computer Network & Computer Networking	CO11503.1	3	3	2	2	2	1	1	-	3	-	-	1	3	1	1
		CO11503.2	3	1	2	3	3	3	1	-	2	-	-	3	1	1	2
		CO11503.3	3	1	3	3	1	2	1	-	1	-	-	1	1	3	2
		CO11503.4	2	2	3	3	2	1	2	-	2	-	-	2	1	3	1
		CO11503.5	2	1	2	2	1	3	2	-	2	-	-	3	2	2	2
		CO11503	2.6	1.6	2.4	2.6	1.8	2.0	1.4	-	2.0	-	-	2.0	1.6	2.0	1.6

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

MODEL QUESTION PAPER

ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END SEMESTER EXAMINATION** (Academic Session: 2022 – 23)		
Name of the Program:	BCA	**Semester:**	IV
Paper Title:	Computer network	**Paper Code:**	ECE11503
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:		**Total No of Pages:**	
(Any other information for the student may be mentioned here)	1) At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2) All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3) Assumptions made if any, should be stated clearly at the beginning of your answer.		

Ques No.	Question	Knowledge Level	Course Outcome
	Group A : Answer ALL the questions (5 x 1 = 5)		
1	**List** the role of sender, receiver and transmission media during data communication.	**R**	**CO1**
2	**Explain** the basic elements of Quality System	**U**	**CO2**
3	**Define** the name of all the layers of TCP/IP protocol.	**U&R**	**CO3**
4	**What** is Network Topology?	**Ap**	**CO4**
5	**List** the role of transmission media during data communication.	**An**	**CO5**
	Group B : Answer ALL the questions (5 x 2 = 10)		
6	**a) i)Describe** in details all the LAN Topologies with respective diagrams **ii)Explain** Leaky Bucket Algorithm in details **(OR)** **b) i) Explain encoding technique with example** **ii)Explain** ARP ,FTP Protocol	**R**	**CO1**
7	**a)Explain** in details the general concept of Stop and Wait Flow Control mechanism with suitable diagram. **(OR)** **b)Explain** addressing Mode	**U**	**CO2**
8	**a)Define** encoding technique**.** **(OR)** **b)Give a** functionality over view Manchestor encoding**.**	**F**	**CO3**
9	**a)Design a** FTP Model **(OR)** **b)Find the** application of UDP .	**F**	**CO4**
10	**a)Generalize** the Concept of HTTP. **(OR)**	**AP**	**CO5**

	b)Analyse Masking concept		
Group C : Answer ALL the questions (7 x 5 =35)			
11	**a) i)Define** Subnetting **ii)Discuss** super netting **(OR)** **b) i)What is** Mask bit in class A,B,C,D Newrk address**,** **ii)When to use** HTTPS protocol.	**R**	**CO1**
12	**a)What is** TCP/IP application**.** **(OR)** **b)**Which one is more secure HTTP or HTTPS suggest your answer in It	**U**	**CO2**
13	**a)Give a** functional analysis of UDP model. **(OR)** **b)Give a** Functional overview of Classical addressing	**AP**	**CO3**
14	**a)Apply** IPV6 addressing format. **(OR)** **b)Apply** IPV4 addressing format.	**AP**	**CO4**
15	**a)Give a brief** application of Super netting **(OR)** **b)Suggest a** idea in subnetting.	**AP**	**CO4**
16	**a)Analyze a** concept in Leaky bucket application **(OR)** **b)Analyze** WSN node point in communication**.**	**AN**	**CO5**
17	**a)Analyze**shortest routing protocol. **(OR)** **b)Analyze**hop to hop routing table with example**.**	**AN**	**CO5**

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

ix) If the COs are higher in numbers that can be managed by equating sub-divisional questions

x) If the COs are lower in numbers, the questions can be increased by equating the number of COs

CSE11417	Algorithm Design	L	T	P	C
Version 1.0	Contact Hours – 45	3	0	0	3
Pre-requisite/Exposure	Discrete Mathematics				
Co-requisite	Concepts on Programming, Logical Ability, Problem Solving				

Course Objectives:

1. To introduce problem solving approach through design.
2. To develop students to analyse the existing algorithms and approach for improvement.
3. To introduce the students a perspective to different design and analysis approach for algorithm(s) to solve a problem.
4. To develop students to select optimal solution to a problem by choosing the most appropriate algorithmic method.

Course Outcomes:

On the completion of this course the student will be able to

CO1: **Understand** the basics about algorithms and learn how to analyse and design algorithms

CO2: Choose brute force, divide and conquer, dynamic programming and greedy techniques methods to solve computing problems

CO3: Understand the approach for solving problems using iterative method.

CO4: Describe the solution of complex problems using backtracking, branch and bound techniques.

CO5: Classify the different Computability classes of P, NP, NP-complete and NP-hard.

Course Description:

Algorithmic study is a core part of Computer Science. This study caters to all possible applicable areas of Computer Science. This study includes observation, design, analysis and conclusion. Various types of algorithms have different notion of implementation according to their cost (in terms their time and space complexity). This study also includes refinement of one algorithm as per the applicability to real problems. Categorization of algorithms according to different method of design also includes in this course. It also compares the same algorithm using different algorithm design methods. For example, Knapsack problem can be solved in Greedy approach and Dynamic approach, both are optimization method. This course enables the students to think analytically while applying, designing an algorithm to solve a specific problem.

Course Content:

Unit-I	**09 Lecture Hours**

Introduction:
Characteristics of algorithm. Analysis of algorithm: Asymptotic analysis of complexity bounds – best, average and worst-case behaviour; Performance measurements of Algorithm, Time and space trade-offs, Analysis of recursive algorithms through recurrence relations: Substitution method, Recursion tree method and Masters' theorem.
Algorithm Design Paradigms.

Unit-II	**09 Lecture Hours**

Sorting Algorithms & Data Structures:
Selection sort, bubble sort, insertion sort, Sorting in linear time, count sort, Linear search,
Divide & Conquer:
Quick sort, worst and average case complexity, Merge sort, Matrix multiplication
Binary search, Binary search tree, Strassen's algorithm for matrix multiplication, The substitution method for solving recurrences, The recursion-tree method for solving recurrences, The master method for solving recurrences.

Unit-III	**09 Lecture Hours**

Greedy algorithms:
General Characteristics of greedy algorithms, Problem solving using Greedy Algorithm-
Activity selection problem, Minimum Spanning trees (Kruskal's algorithm, Prim's algorithm), Graphs: Shortest paths, The Knapsack Problem

Dynamic programming:
Introduction, The Principle of Optimality, Problem Solving using Dynamic Programming-
Making Change Problem, Assembly Line Scheduling, Knapsack problem, Matrix chain multiplication, Longest Common Subsequence Dynamic Programming using Memoization.

Unit-IV	**09 Lecture Hours**

Graph Algorithms :
Representations of graphs, Breadth-first search, Depth-first search, Topological sort, Strongly connected components, Minimum Spanning Trees, Growing a minimum-spanning tree, The algorithms of Kruskal and Prim, Single-Source Shortest Paths, Bellman-Ford algorithm, Single-source shortest paths in directed acyclic graphs, Dijkstra's algorithm, Difference constraints and shortest paths, Proofs of shortest-paths properties, All-Pairs Shortest Paths, Shortest paths and matrix multiplication, The Floyd-Warshall algorithm, Johnson's algorithm for sparse graphs, Maximum Flow, Flow-networks, The Ford-Fulkerson method,

Unit-V	**09 Lecture Hours**

String Matching
The naive string-matching algorithm, The Rabin-Karp algorithm, String matching with finite automata, The Knuth-Morris-Pratt algorithm
Approximation Algorithms:
The vertex-cover problem, The traveling-salesman problem, The set-covering problem, Randomization and linear programming
NP-Completeness:
Polynomial time, Polynomial-time verification, NP-completeness and reducibility,
NP-completeness proofs , NP-complete problems.

Text Books:

1. Introduction to Algorithms, 4TH Edition, Thomas H Cormen, Charles E Lieserson, Ronald L Rivest And Clifford Stein, MIT Press/ Mcgraw-Hill.
2. Fundamentals of Algorithms – E. Horowitz Et Al.
3. Algorithm Design, 1ST Edition, Jon Kleinberg and Évatardos, Pearson.
4. Book 3 – Author – Publisher

Reference Books:

1. Algorithm Design: Foundations, Analysis, And Internet Examples, Second Edition, Michael T Goodrich And Roberto Tamassia, Wiley.
2. Algorithms -- A Creative Approach, 3RD Edition, Udimanber, Addison-Wesley, Reading, MA.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11417	Algorithm design	CO11417.1	3	3	2	2	2	2	2	-	3	-	-	2	2	3	1
		CO11417.2	3	3	3	3	1	2	2	-	1	-	-	3	2	1	2
		CO11417.3	3	2	1	2	1	1	1	-	2	-	-	3	2	2	3
		CO11417.4	2	2	1	2	3	3	3	-	1	-	-	3	3	2	2
		CO11417.5	3	2	1	2	2	1	1	-	1	-	-	3	3	1	3
		CO11417	2.8	2.4	1.6	2.2	1.8	1.8	1.8	-	1.6	-	-	2.8	2.4	1.8	2.2

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE11418	Operating System	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	3	0	0	3
Pre-requisite/Exposure	Data structures, Programming Languages, and Computer Architecture.				
Co-requisite	NIL				

Course Objectives:

1. To understand the students to study the basic principles and functionality of operating systems
2. To provide the students to identify the concepts of CPU scheduling, concurrent processes, deadlock
3. To allow the students to identify the significance of memory management and virtual memory.
4. To enhance the skill of students to identify the disk scheduling, file systems, and device management.
5. To understand the students to explain the performance trade-offs inherent in advance OS implementation.

Course Outcomes:

On the completion of this course the student will be able to

CO1. **Understand** functionalities and features of Operating System

CO2. **Analyzing** various scheduling algorithms and threading concepts to identify a suitable algorithm for a
   i. Given criteria.

CO3. **Assessing** various solutions for critical Section problem. Applying deadlock avoidance principles and
   i. Check for the occurrence of deadlock.

CO4. **Explain** different memory management techniques and its uses. Structuring an overview of file
   i. Systems and mass storage

CO5. **Understand** the functionalities of modern operating system like Android, oxygen, Windows11etc.

Course Description:

The course will begin with an overview of the structure of computer operating systems. The purpose of this course is to provide students basic knowledge of operating systems, difference between the kernel and user modes, concepts of application program interfaces, methods and implementations of interrupts. Students are introduced to the schedulers, policies, processes, threads, memory management, virtual memory, protection, access control, and authentication. Students learn system calls in different popular operating systems used in the industry. Particular emphasis will be given to three major OS subsystems: process management (processes, threads, CPU scheduling, synchronization, and deadlock), memory management (segmentation, paging, swapping), and file systems; and on modern operating system architecture.

Course Content:

Unit-I	**09 Lecture Hours**
Introduction to operating System: Introduction: Concept of Operating Systems, Operating Systems Objectives and Functions, Generations of Operating systems, Types of Operating Systems, OS Services, System Calls, Structure of an OS - Layered, Protection and Security, Case study on UNIX and WINDOWS Operating System.	
Unit-II	**09 Lecture Hours**
Introduction to Process and Process Scheduling : Process Management – Process concept- process scheduling, operations, Inter process communication. Multi Thread programming models. Process scheduling criteria and algorithms (FCFS, SJF, Priority, RR, Multilevel queue Scheduling), and their evaluation.	
Unit-III	**09 Lecture Hours**
Inter-process Communication and Deadlock : Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Producer Consumer problem, Readers & Writers Problem, Dining Philosopher Problem . Deadlocks: Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, and Deadlock Avoidance: Banker's algorithm, Deadlock detection and Recovery.	
Unit-IV	**09 Lecture Hours**
Memory and File Management : Memory Management : Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, Virtual memory, demand paging, page-Replacement, algorithms, Allocation of Frames, Thrashing. File Management: Concept of File, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed),Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table), efficiency and performance.	
Unit-V	**09 Lecture Hours**
Modern OS Architectures : Case Study on: Android, Windows 11, Mac, oxygen OS and other contemporary Operating system.	
Text Books: **3.** Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 9th Edition, John Wiley publishers, 2012 **4.** Operating Systems' – Internal and Design Principles, Stallings, Sixth Edition, Pearson education, 2005. **Reference Books:** **6.** Operating System a Design Approach-Crowley, 3 rd Edition, Tata Mcgraw Hill, 2009. **7.** Operating systems- A Concept based Approach-D.M.Dhamdhere, 2nd Edition, Tata Mcgraw Hill, 2012 **8.** Modern Operating Systems, Andrew S Tanenbaum 3rd edition Prentice-Hall, Inc, 2008	

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11418	Operating System	CO11418.1	3	3	1	3	2	3	3	-	2	-	-	3	1	1	2
		CO11418.2	2	3	3	3	3	3	3	-	2	-	-	2	2	3	2
		CO11418.3	2	3	2	3	3	1	1	-	2	-	-	1	2	1	3
		CO11418.4	3	2	1	2	2	1	1	-	2	-	-	2	2	2	3
		CO11418.5	3	3	2	3	3	1	2	-	1	-	-	3	1	2	3
		CO11418	2.6	2.8	1.8	2.8	2.6	1.8	2.0	-	1.8	-	-	2.2	1.6	1.8	2.6

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE11457	Introduction to Cloud Computing	L	T	P	C
Version 1.0	Contact Hours -45	3	0	0	3
Pre-requisites/Exposure	DBMS, Java, Python, Computer Networking				
Co-requisites	--				

Course Objectives:

- To introduce cloud computing-based programming techniques and cloud services.
- To introduce concepts and security issues of cloud paradigm.
- To impart the fundamentals of virtualization techniques.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **How** to provide Flexible and scalable infrastructures.
CO2. **Organize** process to reduce implementation and maintenance costs.
CO3. The case studies will help us to **understand** more of practice of cloud computing in the market.
CO4. **Determine** flexible and scalable infrastructure suitable to the organizational need.
CO5. **Comparison** of cost-wise solution to the problem and selecting the best solution for the problem suggested to the organization.

Catalog Description:

This course focuses on concepts of cloud, fundamental building blocks like Resource Consolidation, Hypervisor, VM etc. and the cloud service models. It gives students the insight into how to build clouds. And provides practices on building the cloud. It also gives exposure to Public and Privacy Clouds. It gives students the future directions in cloud domain.

Course Content:

Unit I: 08 lecture hours

Data communication Components: Overview, Roots of Cloud Computing, Layers and Types of Cloud, Desired Features of a Cloud, Benefits and Disadvantages of Cloud Computing, Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Risks.

Unit II: 10 lecture hours

Working with Cloud- Infrastructure as a Service: conceptual model and working Platform as a Service: conceptual model and functionalities Software as a Service: conceptual model and working Technologies and Trends in Service provisioning with clouds.
Service management, Computing on demand, Identity as a Service, Compliance as a Service

Unit III: 6 lecture hours

Abstraction and Virtualization: Introduction to Virtualization Technologies, Load Balancing and Virtualization, Understanding Hyper visors, Understanding Machine Imaging, Porting Applications, Virtual Machines Provisioning and Manageability, Virtual Machines Manageability, Virtual Machine Migration Services, Virtual Machine Provisioning and Migration in Action, Provisioning in the Cloud Context.

Unit IV: 10 lecture hours

Cloud Infrastructure and Cloud Resource: Management Architectural Design of Compute and Storage Clouds, Layered Cloud Architecture Development, Design Challenges, Inter Cloud Resource Management, Resource Provisioning and Platform Deployment, Global Exchange of Cloud Resources., Administrating the Cloud, Cloud Management Products, Emerging Cloud Management Standards.

Unit V: 11 lecture hours

Cloud Security: Security Overview, Cloud Security Challenges and Risks, Software-as-a Service Security, Cloud computing security architecture: Architectural Considerations, General Issues Securing the Cloud, Securing Data, Data Security, Application Security, Virtual Machine Security, Identity and Presence, Identity Management and Access Control, Autonomic Security, Storage Area Networks, Disaster Recovery in Clouds.

Text Books:

1. Rajkumar Buyya et. el., Cloud Computing: Principles and Paradigms, Wiley India Edition
2. Sosinsky B., "Cloud Computing Bible", Wiley India

Reference Books:

1. Mastering Cloud Computing by Rajkumar Buyya, C. Vecchiola & S. Thamarai SelviMcGRAW Hill Publication
2. Miller Michael, "Cloud Computing: Web Based Applications that Change the Way You Work and Collaborate Online", Pearson Education India
3. Velte T., Velte A., Elsenpeter R., "Cloud Computing – A practical Approach", Tata McGrawHill

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Attendance	Internal Assessment	MTE	ETE
Weightage (%)	10	30	20	40

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CSE11457	Introduction to Cloud Computing	CO11457.1	3	3	1	3	1	3	1	-	2	-	-	3	1	1	2
		CO11457.2	2	3	3	3	3	1	2	-	3	-	-	2	1	2	3
		CO11457.3	2	3	1	2	3	2	2	-	3	-	-	2	1	2	2
		CO11457.4	1	3	2	3	2	2	3	-	3	-	-	3	2	1	1
		CO11457.5	2	2	3	2	1	2	2	-	1	-	-	2	1	1	1
		CO11457	2.0	2.8	2.0	2.6	2.0	2.0	2.0	-	2.4	-	-	2.4	1.2	1.4	1.8

1=weakly mapped 2= moderately mapped 3=strongly mapped

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA Semester: III Stream: CSE
PAPER TITLE: Introduction to Cloud Computing
PAPER CODE: CSE11457
Maximum Marks: 40 Time duration: 3 hours
Total No of questions: 12 Total No of Pages: 02

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 1 = 5)		
1.	**What** is meant Scale-Up scale-Down?	**U**	**CO2**
2.	**Express** data center with example.	**U**	**CO3**
3.	**What is** Hardware Virtualization?	**R**	**CO1**
4.	**Define** is cloud computing with example?	**R**	**CO3**
5.	**List** the main characteristics of cloud computing?	**R**	**CO5**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**Describe** in detail about Deployment Models in cloud computing.	**U**	**CO4**
7.	**Distinguish** three major differencesthat separate cloud architecture from the tradition one?	**An**	**CO5**
8.	**Describe** Distributed computing?	**R**	**CO2**
9.	**List** the pros and cons of cloud computing.	**U**	**CO2**
	SECTION C(Answer Any Two Questions) (2 x 10 = 20)		
10.	**Illustrate** the following in detail i. Demand-Driven Resource Provisioning ii. Event-Driven Resource Provisioning iii. Popularity-Driven Resource Provisioning	**U**	**CO3**
11.	What is the difference between recovery time objective and recovery point objective? How do they depend on each other? **Justify** your answer with appropriate examples.	**E**	**CO4**
12.	**Demonstrate** thee architectural design of compute and storage clouds.	**AP**	**CO2**

ECE12504	Computer Network Lab	L	T	P	C
Version 1.0	Contact Hours – 15 Hours	0	0	3	2
Pre-requisite/Exposure	Fundamental of Computer and LAN				
Co-requisite	NIL				

Course Objectives:

1. To introduce the idea of Network components like router, switch ,gateway
2. To develop a Network topology in packet tracer
3. To inculcate a concept of addressing mode and subnetting
4. To analyse socket concept between client and server

Course Outcomes:

On the completion of this course the student will be able to

CO1. Design a LAN Topology in Packet tracer with example

CO2. Develop a network using distance vector routing protocol

CO3. Apply the understanding in LAN Topology in Packet tracer with example

CO4. Connectionless Iterative Echo-server, date and time, character generation using user-defined port

CO5. Functional Overview of Client server model

Course Description:

Use Networking-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and Networking tools including network design prediction and modelling to complex networking Ing activities with an understanding of the limitations

Course Content:

Suggested assignments to be framed based on the following Programming Language such as Network topology, PacketTracer, Socket programming In C

Experiment 1:
Explain different type of network cables and their Usage with diagram

Experiment 2:
Explain the LAN Topology in Packet tracer with example

Experiment 3:
Study the Basic of Network commands and their Usage Windows/UNIX

Experiment 4:

Configure a network using distance vector routing protocol

Experiment 5:

Understanding and using of commands like ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, whois

Experiment 6:

Socket Programming: Implementation of Connection-Oriented Service using standard ports.

Experiment 7:

Implementation of Connectionless Iterative Echo-server, date and time, character generation using user-defined port

Experiment 8:

Implementation of Connection-Oriented Concurrent Echo-server, date and time, character generation using user-defined ports

Experiment 9:

Program for connection-oriented Iterative Service in which server reverses the string sent by the client and sends it back

Experiment 10:

Program for connection-oriented Iterative service in which server changes the case of the strings sent by the client and sends back (Case Server).

Experiment 11:

Program for Connection-Oriented Iterative service in which server calculates the Net-salary of an Employee based on the following details sent by the

Experiment 12:

Program for Remote Command Execution using sockets

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Class Assessment	End Term
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ECE12504	Computer Network Lab	CO12504.1	3	3	2	1	1	3	2	-	2	-	-	2	2	2	1
		CO12504.2	3	2	3	1	3	3	2	-	2	-	-	1	2	1	3
		CO12504.3	2	2	1	2	1	2	2	-	2	-	-	2	2	2	1
		CO12504.4	3	3	3	3	3	2	3	-	1	-	-	2	2	2	3
		CO12504.5	2	3	3	1	3	2	1	-	1	-	-	3	2	3	2
		CO12504	2.6	2.6	2.4	1.6	2.2	2.4	2.0	-	1.6	-	-	2.0	2.0	2.0	2.0

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

MODEL QUESTION PAPER

Name: **Enrolment No:**	

ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION

Name of the Program: BCA **Semester: IV**

Code- Stream- CSE

Time: 03 Hrs.

Paper title– Computer Network Lab **Total pages- 1**

Max. Marks: 50 **Total no. of questions- 5**

Instructions:

Attempt All Questions from Section A (Each Carrying 10 Marks);

1. At top of sheet, clearly mention Name, Roll No., Enrolment No., Paper Name & Code, and Date of Exam.

2. Assumptions made if any, should be stated clearly at the beginning of your answer.

3. **All parts of a Question should be answered consecutively**

SECTION A (Answer All questions)(5 x 10=50)

1.	**Develop** the Ring Topology in packet tracer.	**Ap**	**CO4**
2.	**Define** router concept in packet tracer?	**R**	**CO1**
3.	**Construct** a client server socket for data communication.	**Ap**	**CO4**
4.	**Build** a network with Remote Command Execution using sockets	**Ap**	**CO5**

5.	**Illustrate** the use of Connection-Oriented Iterative service in which server calculates the Net-salary of an Employee based on the following details sent by the .	**U**	**CO1**

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

xi) If the COs are higher in numbers that can be managed by equating sub-divisional questions

xii) If the COs are lower in numbers, the questions can be increased by equating the number of COs

CSE12420	Algorithm Design Lab	L	T	P	C
Version 1.0	Contact Hours – 48 Hours	0	0	3	2
Pre-requisite/Exposure	C				
Co-requisite	Programming Concepts & Logical Ability				

Course Objectives:

1. To develop a problem and design the solution for the problem.
2. To design and implement efficient algorithms for a specified application.
3. To provide the ability to identify and apply the suitable algorithm for the given real world problem.

Course Outcomes:

On the completion of this course the student will be able to

CO1: **Formulation** of different algorithms

CO2: **Identify** the problem given and design the algorithm using various algorithm design techniques

CO3: **Analyze** the performance of various algorithms.

CO4: **Compare** the performance of different algorithms for same problem.

CO5: **Implement** various algorithms in a high level language

Course Description:

Algorithmic study is a core part of Computer Science. This study caters to all possible applicable areas of Computer Science. This study includes observation, design, analysis and conclusion. Various types of algorithms have different notion of implementation according to their cost (in terms their time and space complexity). This study also includes refinement of one algorithm as per the applicability to real problems. Categorization of algorithms according to different method of design also includes in this course. It also compares the same algorithm using different algorithm design methods. For example, Knapsack problem can be solved in Greedy approach and Dynamic approach, both are optimization method. This course enables the students to think analytically while applying, designing an algorithm to solve a specific problem.

Course Content:

Unit-I	**4*3 = 12 Lab Hours**
Revision of Data Structures: Different problem statements which includes th e concept of Queue, Stack, Queue using two Stacks, Stack using two Queues and Linked List **Some Basic Algorithms:** a. Finding Factorial – Iterative Approach b. Finding Factorial – Recursive Approach c. Printing Fibonacci Series – Iterative Approach d. Euclids Algorithm e. Multiplication & Division Algorithm. Other related programs in view of recaptulating the concepts of Data Structures & Programming.	
Unit-II	**4*3 = 12 Lab Hours**
Basic Sorting and Searching Techniques: Design an algorithm and implement a program for: a. Insertion Sort b. Selection Sort c. Bubble Sort d. Count Sort e. Linear Search **Divide and Conquer Approach:** Design an algorithm and implement a program for: a. Merge Sort b. Quick Sort c. Binary Search	
Unit-III	**4*3 = 12 Lab Hours**
Dynamic Programming: Design an algorithm and implement a program to solve: a. Making Change Problem b. Knapsack Problem c. Finding Optimal Matrix Chain Order Problem d. Longest Common Subsequence Problem e. Finding Optimal Matrix Chain Order Problem using Memoization f. Any formulated problems.	
Unit-IV	**4*3 = 12 Lab Hours**
Greedy Approach: Design an algorithm and implement a program to solve: a. Making Change Problem b. Knapsack Problem c. Task Scheduling / Activity Scheduling d. Huffman Codes	
Unit-V	**4*3 = 12 Lab Hours**
Graph Algorithms: Design an algorithm and write a program to implement: a. Depth First Search of a graph b. Breadth First Search of a graph c. Kruskal's method of finding Minimum Spanning Tree d. Prim's method of finding Minimum Spanning Tree e. Dijkstra's method of finding Single Source Shortest Paths	

Trees:
a. B*- Tree
b. AVL Tree
c. Red Black Tree
d. 2-3 Tree

Text Books:

1. Introduction to Algorithms, 4TH Edition, Thomas H Cormen, Charles E Lieserson, Ronald L Rivest And Clifford Stein, MIT Press/ Mcgraw-Hill.
2. Fundamentals of Algorithms – E. Horowitz Et Al.
3. Algorithm Design, 1ST Edition, Jon Kleinberg and Évatardos, Pearson.
4. Book 3 – Author – Publisher

Reference Books:

1. Algorithm Design: Foundations, Analysis, And Internet Examples, Second Edition, Michael T Goodrich And Roberto Tamassia, Wiley.
2. Algorithms -- A Creative Approach, 3RD Edition, Udimanber, Addison-Wesley, Reading, MA.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12420	Algorithm Design Lab	CO12420.1	2	3	2	2	1	2	3	-	3	-	-	3	1	3	3
		CO12420.2	2	2	2	2	3	1	1	-	2	-	-	3	3	2	1
		CO12420.3	3	3	3	3	1	1	3	-	1	-	-	2	1	2	1
		CO12420.4	3	2	1	2	1	2	2	-	2	-	-	1	1	1	1
		CO12420.5	2	2	3	2	2	1	3	-	2	-	-	1	1	2	1

		CO12420	2.4	2.4	2.2	2.2	1.6	1.4	2.4	-	2.0	-	-	2.0	1.4	2.0	1.4

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE12421	Operating System Lab	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	0	0	3	2
Pre-requisite/Exposure	Data structures, Programming Languages, and Computer Architecture.				
Co-requisite	NIL				

Course Objectives:

1. To introduce basic Unix commands, system call interface for process management, interprocess communication and I/O in Unix.
2. To understand the students to study the basic principles and functionality of operating systems.
3. To provide the students to identify the concepts of CPU scheduling, concurrent processes, deadlock
4. To allow the students to identify the significance of memory management and virtual memory.
5. To enhance the skill of students to identify the disk scheduling, file systems, and device management.

.

Course Outcomes:

On the completion of this course the student will be able to

CO1. **Understand** and implement basic services and functionalities of the operating system using system calls and shell script.

CO2. **Analyze** and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.

CO3. **Assessing** various solutions for critical Section problem. Applying deadlock avoidance principles and Check for the occurrence of deadlock.

CO4. **Implement** memory management schemes and page replacement schemes.

CO5. **Simulate** file allocation and organization techniques.

Course Description:

The goal of this course is to have students understand and appreciate the principles in the design and implementation of operating systems software.The course will cover the concepts of operating systems,

process management, memory management, file systems. Experiments on process scheduling and other operating system duties will be conducted through simulation/implementation in the laboratory.

Course Content:

Unit-I	09 Lecture Hours

Linux Commands/Shell Programming:

1. To study about the basics of Linux commands.
2. Implementation of shell scripting using conditional/branching statement.
3. Implementation of shell scripting using Loop statement.
4. Implementation of shell scripting using Array.
5. Implementation of shell scripting using String.
6. Implementation of shell scripting using Function and recursion.

Unit-II	09 Lecture Hours

Process Scheduling Algorithm:

1. Simulate the following non-preemptive CPUscheduling algorithms to find turnaround time and waiting time.
   a) FCFS b) SJF c) Priority
2. Simulate the following non-preemptive CPUscheduling algorithms to find turnaround time and waiting time.
   a) Shortest Remaining Time First b) Round Robin c) Priority
3. Simulate multi-level queue scheduling algorithm considering the following scenario. All the processes in the system are divided into two categories – system processes and user processes.System processes are to be given higher priority than user processes. UseFCFS scheduling for the processes in each queue.

Unit-III	09 Lecture Hours

Process Synchronization Problems /Deadlock:

1. Simulate producer-consumer problem using semaphores.
2. Simulate the concept of Dining-Philosophers problem.
3. Simulate Bankers algorithm for the purpose of deadlock avoidance.

Unit-IV	09 Lecture Hours

Memory Management Techniques:

1. Simulate page replacement algorithms
   a) FIFO b) LRU c) Optimal
2. Simulate disk scheduling algorithms
   a) FCFS b) SCAN c) C-SCAN
3. Simulate selection partition algorithm
   a). Best Fit b). First Fit c). Worst Fit

Unit-V	09 Lecture Hours

File Organization Techniques:

1. simulate the following file organization techniques
   a) Single level directory b) Two level directory c) Hierarchical

Text Books:

5. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 9th Edition, John Wiley publishers, 2012
6. Operating Systems' – Internal and Design Principles, Stallings, Sixth Edition, Pearson education, 2005.

Reference Books:

9. Operating System a Design Approach-Crowley, 3 rd Edition, Tata Mcgraw Hill, 2009.
10. Operating systems- A Concept based Approach-D.M.Dhamdhere, 2nd Edition, Tata Mcgraw Hill, 2012
11. Modern Operating Systems, Andrew S Tanenbaum 3rd edition Prentice-Hall, Inc, 2008

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12421	Operating system lab	CO12421.1	3	1	2	3	1	1	1	-	3	-	-	2	2	3	3
		CO12421.2	3	2	3	2	1	2	3	-	2	-	-	3	2	1	1
		CO12421.3	3	3	1	3	3	2	3	-	3	-	-	1	1	3	3
		CO12421.4	2	2	1	2	2	2	2	-	2	-	-	3	3	1	1
		CO12421.5	2	3	1	3	1	1	2	-	1	-	-	2	3	1	3
		CO12421	2.6	2.2	1.6	2.6	1.6	1.6	2.2	-	2.2	-	-	2.2	2.2	1.8	2.2

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE12458	Cloud Computing Lab	L	T	P	C
Version 1.0	Contact Hours -45	0	0	3	2
Pre-requisites/Exposure	DBMS, Java, Python				
Co-requisites	--				

Course Objectives:

1. To understand the installation of hypervisors.
2. To understand the installation of different cloud simulation tools and cloud setup tools.
3. To deploy cloud services.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Describe** the key concepts and technologies in cloud computing.
CO2. **Evaluate** cloud computing technologies and platforms in the context of the needs of a specific application
CO3. **Design** data storage components for cloud-based software systems.
CO4**. Assess** and monitor resource use of applications in virtualized environments
CO5. **Design, implement, and deploy** cloud applications for current cloud platforms
CO6. **Evaluate** privacy and security issues for cloud infrastructure and cloud applications

Catalog Description:
This course introduces students to fundamentals of cloud computing and software development for cloud platforms. It covers topics such as virtualization, architecture of cloud systems, programming for the cloud, resource management, as well as privacy and security issues. Students gain practical experience developing applications for cloud platforms through a series of hands-on assignments.

Course Content:

Experiment 1:
Introduction to cloud computing
Experiment 2:
Hands on creation of virtual machine using computer server.
Experiment 3:
Design virtual machine
Experiment 4:
Key based authentication and login virtual machine from the host machine
Experiment 5:
Create Backend logic to communication with frontend app using Ajax
Experiment 6:
Using Backend logic setup communication with frontend app using Ajax
Experiment 7:
1. Create SQL DB and design schema for user session
2. Login using username and password and validate in SQL

Experiment 8:
1. Procedure to setup one Hadoop Cluster
2. Access the Hadoop using API's from the application and show the data

Experiment 9:
1. Demonstrate the use of map/reduce using simple program
2. AWS Free Tier Account Creation

Experiment 10:

1. In AWS account enabling Multi-Factor Authentication to Secure Your Access and create your First Linux Instance
2. In AWS create your First EC2 windows instance In AWS assign Elastic IP Addresses to Instance (Static IP Address)

Text Books:

1. Barrie Sosinsky, "Cloud Computing Bible", Wiley India Edition.
2. Anthony Velte, tobyVelte, Robert Elsenpeter, "Cloud Computing – A Practical Approach", Tata McGraw-Hill Edition.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Attendance	Internal Assessment	MTE	ETE
Weightage (%)	10	30	20	40

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12458	Cloud Computing Lab	CO12458.1	2	2	1	3	2	2	3	-	3	-	-	2	2	2	1
		CO12458.2	2	3	1	1	1	2	2	-	2	-	-	2	3	2	3
		CO12458.3	3	2	3	2	1	3	3	-	2	-	-	1	1	2	2
		CO12458.4	3	3	1	2	2	1	3	-	3	-	-	3	3	2	3
		CO12458.5	3	3	1	2	3	1	3	-	3	-	-	2	3	1	1
		CO12458.6	2	3	2	1	1	3	2	-	2	-	-	3	2	3	1
		CO12458	2.5	2.67	1.5	1.83	1.67	2.0	2.67	-	2.5	-	-	2.17	2.33	2.0	1.83

1=weakly mapped 2= moderately mapped 3=strongly mapped

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA | Semester: IV | Stream: CSE
PAPER TITLE: Cloud Computing Lab
PAPER CODE: CSE12458
Maximum Marks: 50 | Time duration: 3 hours
Total No of questions: 5 | Total No of Pages: 01

Instruction for the Candidate:

1.At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam.
2.All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3.Assumptions made if any, should be stated clearly at the beginning of your answer.

Section A (Answer All the Questions) (5 x 10 = 50)			
1.	A. **Demonstrate** the use of map/reduce using simple program B. AWS Free Tier Account Creation	**AP**	**CO2**
2.	A. Procedure to setup one Hadoop Cluster B. **Access** the Hadoop using API's from the application and show the data	**U**	**CO3**
3.	A. **Create** SQL DB and design schema for user session B. Login using username and password and validate in SQL	**U**	**CO4**
4.	A. Using Backend logic setup communication with frontend app using Ajax B. **Create** Backend logic to communication with frontend app using Ajax	**U**	**CO5, CO6**
5.	A. **Design** virtual machine B. Key based authentication and login virtual machine from the host machine	**AP**	**CO1**

CSE12459	Applied Computing Lab	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	0	0	3	2
Pre-requisite/Exposure	Knowledge of programming basics & algorithms				
Co-requisite	NIL				

Course Objectives:

1. To enable students to equip them with adequate programming skills.
2. To enable students to analyze a programming problem
3. To explain the benefits of one algorithm over another
4. To construct efficient solutions to solve real life problems.

Course Outcomes:

CO1. On the completion of this course the student will be able to
CO2. Understand the applications of array and strings to solve problems effectively.

CO3. Apply search and sort techniques using recursion

CO4. Analyze the outcome of applying fundamental data structures to various use cases.

CO5. Apply advanced algorithms to solve real life problems effectively

CO6. Understand the implications of using algorithms to solve use cases.

Course Description:

This course of Applied Computing Lab helps to equip students with adequate programming skills and application of the concepts and algorithms that they learnt till now. They become able to analyse problems efficiently and design effective solution to real world problems.

Course Content:

Unit-I	**09 Lecture Hours**
Write a program to find the first repeating element in an array of integers. Write a program to find the factorial of a large number. Given a array of N strings, find the longest common prefix among all strings present in the array.	
Unit-II	**09 Lecture Hours**
Write a program to implement recursive bubble sort. Write a program to implement recursive insertion sort. Write a program to find the length of a string using Recursion.	
Unit-III	**09 Lecture Hours**
Write a program to reverse a stack using recursion. Write a program to delete a linked list using recursion. Write a program to print all the leaf nodes of a binary tree from left to right.	
Unit-IV	**09 Lecture Hours**
Write a program to print all longest common sub-sequences in lexicographic order. Write a recursive program for Tower of Hanoi.	
Unit-V	**09 Lecture Hours**
Write a program to print all possible permutations of a given string. Write a program to print all solutions in a N-Queen problem. Write a program to construct full binary tree from given preorder and postorder traversals.	

Text Books:

3. Bjrane Stroustrup, "C++ Programming language" , Pearson education Asia
4. Java Fundamentals - A Comprehensive Introduction, Illustrated Edition ByDaleskrien, Herbert Schildt, Mcgraw-Hill Education.

Reference Books:

5. Yashwant Kenetkar,"Let us C++",Oxford University Press
6. B.A. Forouzan and R.F. Gilberg,CompilerScience,"A structured approach using C++" Cengage Learning, New Delhi.

3. Java For Programmers, 2nd Edition By Paul Deitel And Harvey Deitel, Pearson Education.
4.Thinking In Java", Low Price Edition By Bruce Eckel, Pearson Education

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Internal	End Term
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12459	Applied computing lab	CO12459.1	3	3	2	2	3	1	1	-	1	-	-	3	1	1	1
		CO12459.2	3	2	3	3	3	3	3	-	3	-	-	3	1	1	1
		CO12459.3	2	2	3	3	1	1	3	-	1	-	-	2	2	2	2
		CO12459.4	3	2	2	3	1	2	1	-	2	-	-	3	3	1	1
		CO12459.5	2	3	2	1	1	1	3	-	2	-	-	3	3	1	1
		CO12459	2.6	2.4	2.4	2.4	1.8	1.6	2.2	-	1.8	-	-	2.8	2.0	1.2	1.2

1 = Weakly Mapped2 = Moderately Mapped3 = Strongly Mapped

MODEL QUESTION PAPER

	ADAMAS UNIVERSITY **END SEMESTER EXAMINATION** (Academic Session: 2022 – 23)		
Name of the Program:	BCA	**Semester:**	V
Paper Title:	Applied Computing Lab	**Paper Code:**	CSE12459
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:	**05**	**Total No of Pages:**	01
(Any other information for the student may be mentioned here)	1) At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2) All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3) Assumptions made if any, should be stated clearly at the beginning of your answer.		

Ques No.	Question	Knowledge Level	Course Outcome
Group A : Answer ALL the questions (5 x 10 = 50)			
1	Write a program to find the factorial of a large number.	**Ap**	**CO1**
2	Write a program to implement recursive insertion sort.	**Ap**	**CO2**
3	Write a program to delete a linked list using recursion.	**Ap**	**CO3**
4	Write a recursive program for Tower of Hanoi.	**Ap**	**CO4**
5	Write a program to print all possible permutations of a given string.	**Ap**	**CO5**

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

xiii) If the COs are higher in numbers that can be managed by equating sub-divisional questions

xiv) If the COs are lower in numbers, the questions can be increased by equating the number of COs

PSG11021	Human Values and Professional Ethics	L	T	P	C
Version 1.0	Contact Hours -30	2	0	0	2
Pre-requisites/Exposure	Basic human ethics				
Co-requisites	--				

Course Objectives:

1. To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
2. To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Value based living in a natural way.
3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behaviour and mutually enriching interaction with Nature.

Course Outcomes:

On the successful completion of the course, students will be able to

CO1. **Explain** the morals, values, ethics, and the law and to explore how they impact professional practice;
CO2. **Develop** an increased personal understanding of issues related to ethics.
CO3. **Develop** an increased personal understanding of issues related the law
CO4. **Analyze** one's own ethical decision-making processes.
CO5. **Plan** guidelines for enhancing one's ability to generate ethical behavior and solutions to conflicts arising in the practice.

Catalog Description:

This course offers an introduction to graph theory, with an emphasis on applications and modelling. Graph theory is a study of graphs, trees and networks. Topics that will be discussed include Euler formula, Hamilton paths, planar graphs and coloring problem; the use of trees in sorting and prefix codes; useful algorithms on networks such as shortest path algorithm, minimal spanning tree algorithm and min-flow max-cut algorithm.

Course Content:

Unit I: 9 lecture hours

Ethics, morals and values: The meaning of ethics, morals and values, The relevance of ethics, morals and values in the promotion of scientific temper, Theories of right action, Kohlberg's and Gilligan's theory of moral development, Ethical theories and their applications.

Unit II: 9 lecture hours

Ethics in Engineering Practice and Research: Overview of engineering ethics, Rights and obligations in engineering, The NPSE, IEEE and ECI codes, Violation of codes and their consequences, Conflicts of interest, Whistle blowing, Whistle blowing cases.

Unit III: 9 lecture hours

Sustainable Engineering and Sustainable Development: Meaning of sustainable engineering, Principles of sustainable engineering, Safety and risk assessment, Sustainable development, Sustainable engineering v. engineering negligence.

Unit IV: 9 lecture hours

Engineering Negligence: The elements of engineering negligence, The standard duty of care, Liability in negligence cases, Defenses Negligence Cases (Engineering, medical and others).

Unit V: **9 lecture hours**

Rights and obligations of Engineers under Various Indian Laws: The Indian adjuratory system, Constitutional laws governing engineering professionals, Contractual obligations of engineers Environment protection laws, Arbitration and conciliation laws, Intellectual property laws, Information technology laws.

Text Books:

1.AroraVibha, AroraKunwar, Laws for Engineers, Central Law Publications, 1st Edition, 2017.
2.Fledderman Charles B., Engineering Ethics, Pearson Education Inc., 4th Edition, 2012
3.Govindarajan M., Natarajan S., Senthilkumar V. S., Engineering Ethics Includes Human Values, PHI Learning Private Limited, 1st Edition, 2010

Reference Books:

1.Govindarajan M., Natarajan S., Senthilkumar V. S., Professional Ethics and Human Values, PHI Learning Private Limited, 1st Edition, 2017.
2.Harris Charles E., Jr., Pritchard Michael S., Rabins Michael J., Engineering Ethics, Wadsworth Cengage Learning, 4th Edition, 2009

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

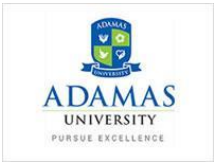
Components	Attendance	Class Assessment	Mid Term	End Term
Weightage (%)	10	30	20	40

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
PSG11021	Human Values and Professional Ethics	CO11021.1	3	2	2	1	1	1	2	2	3	-	-	1	3	3	2
		CO11021.2	1	1	3	2	2	3	2	3	1	-	-	1	2	3	2
		CO11021.3	2	2	3	2	1	2	1	-	3	-	-	2	3	2	3
		CO11021.4	1	2	3	1	1	3	3	-	3	-	3	3	1	3	3
		CO11021.5	3	1	2	1	1	2	2	-	3	-	-	1	2	1	3
		CO11021	2.0	1.6	2.6	1.4	1.2	2.2	2.0	2.5	2.6	-	3.0	1.6	2.2	2.4	2.6

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name: **Enrolment No:**	

Course: PSG11021- Human Values and Professional Ethics
Program: BCA Semester: IV
Time: 03 hrs. Max. Marks:40

Instructions:
Attempt all questions from **Section A** (each carrying 1 marks); any Three Questions from **Section B** (each carrying 5 marks) any two questions from **Section C** (each carrying 10 marks).

	SECTION A (Attempt all the questions) (5x1=5)		
1.	**Define** the criteria required for a profession?	**R**	**CO1**
2.	**What** are the models of a professional society?	**U**	**CO2**
3.	**Which** chapter of the Constitution of India, lays down fundamental duties?	**U&R**	**CO2**
4.	**How** many fundamental duties are there in the Constitution of India?	**R**	**CO1, CO2**
5.	**What** are the 5 human values?	**U**	**CO1, CO2**
	SECTION B (Attempt any **Two Questions)**		
6.	**What** does the term "due care" mean?	**U**	**CO3**
7.	**Explain** the fundamental duty relating to protection of women.	**U**	**CO2, CO6**
8.	**Which** fundamental duty gives emphasis on individual and national growth?	**An**	**CO5**
9.	**Discuss** on caring and sharing.		
	SECTION C is Compulsory		
10.	**When** looking at confidentiality, explain what it is and when can it be breached?	**An & R**	**CO4, CO1, CO2**
11.	**Define** the relevance of fundamental duties in the today's India?	**R & U**	**CO5**
12.	**What** are Human values? Explain briefly.	**R & U**	**CO3**

CSE11406	Web Designing	L	T	P	C
Version 1.0	Contact hour -45	3	0	0	3
Pre-requisites/Exposure	Browser compatibility knowledge /HTML				
Co-requisites	--				

Course Objectives:

1. To help the pupils to develop an understanding of client /server model.
2. To enable students a precise understanding of web protocol.
3. To give the students a perspective of web design language for designing a web site.
4. To enable students design a structure of web page model for any organization.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Understanding** of E- Mail, Telnet, FTP, E-Commerce, Video Conferencing, E-Business.
CO2. **Formalize**HTML Tag Reference, Global Attributes, Event Handlers, Document Structure.
CO3. **Classify** a detailed analysis of form, frame and CSS in HTML.
CO4. **Demonstrate** effectively a web page with HTML/JavaScript/XML style.
CO5. **Create** rich internet application using XML

Course Description:

The methods by which computers communicate with each other through the use of markup languages and multimedia packages is known as web technology. In the past few decades, web technology has undergone a dramatic transition, from a few marked-up web pages to the ability to do very specific work on a network without interruption. Let's look at some examples of web technology. Being a web developer gives you the power to create new cool things. If you can imagine it you can build it (or kind of). You don't need any kind of material - just your knowledge about web development.

Course Content:

Unit-I	08 Lecture Hours

Unit Heading: Internet And WWW: Introduction, E- Mail, Telnet, FTP, E-Commerce, Video Conferencing, E-Business. Internet Service Providers, Domain Name Server, Internet Address, World Wide Web (WWW): World Wide Web And Its Evolution, Uniform Resource Locator (URL), Browsers - Internet Explorer, Netscape Navigator, Opera, Firefox, Chrome, Mozilla. Search Engine, Web Server - Apache, IIS, Proxy Server, HTTP Protocol. Case Study of E-Business website like (Myntra,Jabong,Amazon)

Unit-II	12 Lecture Hours

Unit Heading: HTML And Graphics: HTML Tag Reference, Global Attributes, Event Handlers, Document Structure Tags, Formatting Tags, Text Level Formatting, Block Level Formatting, List Tags, Hyperlink Tags, Image And Image Maps, Table Tags, Form Tags, Frame Tags, Executable Content Tags.

Imagemaps: Introduction, Client-Side Imagemaps, Server-Side Imagemaps, Using Server-Side And Client-Side Imagempas Together, Alternative Text For Imagemaps, Tables : Introduction To HTML Tables And Their Structure, The Table Tags, Alignment, Aligning Entire Table, Alignment Within A Row, Alignment Within A Cell, Attributes, Content Summary, Background Colour, Adding A Caption, Setting The Width, Adding A Border, Spacing Within A Cell, Spacing Between The Cells, Spanning Multiple Rows Or Columns, Elements That Can Be Placed In A Table, Table Sections And Column Properties, Tables As A Design Tool.

Frames: Introduction To Frames, Applications, Frames Document, The Tag, Nesting Tag, Placing Content In Frames With The Tag, Targeting Named Frames, Creating Floating Frames, Using Hidden Frames,Frame analysis in Online Job portal.

Forms: Creating Forms, The<FORM>Tag, Named Input Fields, The <INPUT> Tag, Multiple Lines Text Windows, Drop Down And List Boxes, Hidden Text, Text Area, Password, File Upload, Button, Submit, Reset, Radio, Checkbox, Select, Option, Forms And Scripting, Action Buttons, Labelling Input Files, Grouping Related Fields, Disabled And Read-Only Fields, Form Field Event Handlers Passing **Form Data Style Sheets:**Introduction, Different Approaches To Style Sheets, Using Multiple Approaches, Linking To Style Information In Separate File, Setting Up Style Information, Using The <LINK>Tag, Embedded Style Information, Using <STYLE> Tag, Inline Style Information. Real life case study analysis of E-Ticket booking, with suitable linking of travel destination.

Unit-III	08 Lecture Hours

Unit Heading: Java Script: Introduction, Client-Side Javascript, Server-Side Javascript, Javascript Objects, Javascript Security.

Operators: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++ (Increment), -- (Decrement), -(Unary Negation), Logical Operators, Short.

Java Script: Introduction, Client-Side Javascript, Server-Side Javascript, Javascript Objects, Javascript Security.

Operators: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++ (Increment), -- (Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ? (Conditional Operator), ,(Comma Operator), Delete, New, This, Void

Statements: Break, Comment, Continue, Delete, Do … While, Export, For, For…In, Function, If…Else, Import, Labelled, Return, Switch, Var, While, With,

Core Javascript: Array, Boolean, Date, Function, Math, Number, Object, String, Regexp

Document And Its Associated Objects: Document, Link, Area, Anchor, Image, Applet, Layer

Events And Event Handlers: General Information About Events, Defining Event Handlers: Onabort, Onblur, Onchange, Onclick, Ondblclick, Ondragdrop, Onerror, Onfocus, Onkeydown, Onkeypress, Onkeyup, Onload, Onmousedown, Onmousemove, Onmouseout, Onmouseover, Onmouseup, Onmove, Onreset, Onresize, Onselect, Onsubmit, Onunload,Case study analysis of E-commerce website in transaction processing of client order

Unit-IV	10 Lecture Hours
Unit Heading: Introduction Client-Side JavaScript, Server-Side Javascript, Javascript Objects, Javascript Security. **Operators:** Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++ (Increment), -- (Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ? (Conditional Operator), ,(Comma Operator), Delete, New, This, Void **Statements:** Break, Comment, Continue, Delete, Do … While, Export, For, For…In, Function, If…Else, Import, Labelled, Return, Switch, Var, While, With, **Core Javascript:** Array, Boolean, Date, Function, Math, Number, Object, String, Regexp **Document And Its Associated Objects:**Document, Link, Area, Anchor, Image, Applet, Layer	
Unit-V	**07 Lecture Hours**
Unit Heading: XML: Introduction, Anatomy, Document, Creating XML Documents, Creating XML Dtds, XML Schemas, XSL, Mapping of XML ontology for a web site. **PHP:** Introduction, Server-Side Web Scripting, Installing PHP, Adding PHP To HTML, Syntax And Variables, Passing Information Between Pages, Strings, Arrays And Array Functions, Numbers, Basic PHP Errors / Problems	
Text Books: **7. "Web Design The Complete Reference", Thomas Powell, Tata Mcgrawhill** **8. Book 2 – Author – Publisher** **9. Book 3 – Author – Publisher** **Reference Books:** **12. HTML And XHTML The Complete Reference", Thomas Powell,Pearson education.** **13. Book 2 – Author – Publisher** **14. Book 3 – Author – Publisher**	

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	MTE	ETE
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11406	Web Designing	CO11406.1	2	2	3	1	2	2	1	2	2	-	-	2	1	1	2
		CO11406.2	3	3	3	2	1	1	1	2	2	-	-	2	3	1	1
		CO11406.3	2	2	2	2	3	1	2	-	1	-	-	2	1	1	2

		CO11406.4	**2**	**1**	**2**	**2**	**3**	**1**	**1**	**2**	**3**	**-**	**-**	**2**	**2**	**2**	**3**
		CO11406.5	**2**	**3**	**2**	**1**	**2**	**1**	**1**	**3**	**2**	**-**	**-**	**2**	**3**	**3**	**2**
		CO11406	**2.2**	**2.2**	**2.4**	**1.6**	**2.2**	**1.2**	**1.2**	**2.25**	**2.0**	**-**	**-**	**2.0**	**2.0**	**1.6**	**2.0**

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA Semester: III Stream: CSE
PAPER TITLE: Web Designing PAPER CODE:
Maximum Marks: 50 Time duration: 3 hours
Total No of questions: 12 Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 2 = 10)		
1.	**List** the steps involved in Architecture of of server with suitable example	**U**	**CO1**
2.	**Enumerate** the basic elements of application layer protocol and their use in message communication.	**U**	**CO2**
3.	**Define** brief history of internet)?	**R**	**CO3**
4.	**What** is multicast DNS (mDNS),?	**R**	**CO4**
5.	**Give** the the essential components of URL.	**U**	**CO3**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**Describe** the characteristics of Java script arithmetic operator)? .	**U**	**CO1**
7.	 **Examine** the frame with HTML tag	**U, Ap**	**CO1, CO2**
8.	**Elucidate** the factors influencing Javascript security.	**Ap**	**CO3**
9.	**Explain** with Example: i) FTP ii) DNS.	**U**	**CO4 /CO5**
	SECTION C (Answer Any Two Questions) (2 x 12.5 = 25)		
10.	**Explain** in detail about Table in HTML.	**U**	**CO4**
11.	**Write** a list in HTML?with suitable example .	**R**	**CO4**
12.	**Distinguish** XML DTD by taking suitable example?	**An**	**CO5**

CSE11460	AI and Machine Learning	L	T	P	C
Version 1.0	Contact Hours – 45 Hours	3	0	0	3
Pre-requisite/Exposure	Probability & Statistics				
Co-requisite	NIL				

Course Objectives:

1. This course is an introduction to the modern AI and ML with equal emphasis on foundational concepts and practice on real world problems.
2. Learn and understandtheconcepts of various techniques and modelsofmachinelearning.
3. Studytheneuralnetworksystemsformachinelearning.
4. Course will expose foundations of modern AI along with enough attention to the recent explosion of machine learning techniques such as deep learning.
5. The content of the course is split into five modules which is delivered in the form lectures, hands-on session, case-studies and real world projects.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Solve basic AI based problems.

CO2: Define the concept of Artificial Intelligence.
CO3: Develop an understanding what is involved in learning models from data.

CO4: Understand a wide variety of learning algorithms

CO5: Apply principles and algorithms to evaluate models generated from data.

Course Description:

This subject aims to introduce undergraduate students to the world of various application of artificial intelligence and Machine Learning. The course introduces the motivation for machine learning and other cognitive techniques by different learning methods. It emphasizes on different categories of machine learning like supervised, unsupervised learning. Each of these categories is further described in detail through several problems in each class.The course is designed to give the students enough exposure to the variety of applications that can be built using techniques covered under this program. The students shall be exploring fields such as neural networks, natural language processing, robotics, deep learning, and computer vision, reasoning and problem-solving

Course Content:

Unit-I	**9 Lecture Hours**
Artificial Intelligence Introduction, Agents, Problem formulation, Uninformed search strategies, Heuristics, Informed search strategies, Satisfyingconstraints Logical agents, Propositional logic, Inference rules, First-order logic, Inferences in first order logic	
Unit-II	**10 Lecture Hours**
Planning with state-space search, Partial-order planning, Planning graphs, Planning and acting in the real worldForward and backward chaining, Unification, Resolution	
Unit-III	**10 Lecture Hours**
Machine Learning **Introduction:** Overview of machine learning, related areas, applications, software tools, course objectives. **Regression:** Linear Regression, Polynomial Regression,Gradient Descent, Logistic Regression, Case Study on Logistic Regression	
Unit-IV	**6 Lecture Hours**
Neural networks: the perceptron algorithm, various activation functions and their differentiability, multilayer perceptrons, back-propagation, nonlinear regression, multiclass discrimination, training procedures, Case Study Bayesian Learning, Decision Tree	
Unit-V	**10Lecture Hours**
Support vector machines: Functional and geometric margins, optimum margin classifier, constrained optimization, Lagrange multipliers, KKT conditions, soft margins, kernels. **Dimensionality Reduction:** Feature Selection, Principle Component Analysis (PCA).	

Text Books:

10. Kevin P. Murphy, Machine Learning: A Probabilistic Perspective, MIT Press, 2012.
11. Tom Mitchell,*"MachineLearning"*,McGraw-Hill,1997.
12. Ethem Alpaydin, Introduction to Machine Learning, 3rd Ed., MIT Press, 2014.

Reference Books:

1. LaureneFausett,*"FundamentalsofNeuralNetworks,Architectures,AlgorithmsandApplication*, PearsonEducation,2008.
2. Peter Flach, Machine Learning: The Art and Science of Algorithms that Make Sense of Data, CUP, 2012.
3. S Kulkarni, G Harman, An Elementary Introduction to Statistical Learning Theory, Wiley, 2011.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CSE11460	AI and Machine Learning	CO11460.1	3	1	2	2	2	1	2	-	2	-	-	3	2	3	1
		CO11460.2	3	3	1	3	1	3	2	-	2	-	-	1	1	2	2
		CO11460.3	3	3	2	3	3	2	1	-	3	-	-	3	3	1	3
		CO11460.4	2	3	2	2	2	3	2	-	1	-	-	3	3	1	2
		CO11460.5	3	3	2	2	2	3	3	-	2	-	-	3	2	1	2
		CO11460	2.8	2.6	1.8	2.4	2.0	2.4	2.0	-	2.0	-	-	2.6	2.2	1.6	2.0

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE11424	Software Engineering	L	T	P	C
Version 1.0	Contact hour-45	3	0	0	3
Pre-requisites/Exposure	Software/Hardware evolution at basic level				
Co-requisites	--				

Course Objectives:

1. To help the student to acquire knowledge of software evolution process.
2. To enable students modelling software project with appropriate metric and precision at workplace.
3. To give the students a perspective to software design process variables by exposing them to software specification document; and also, to enrich their software testing ability.
4. To enable students, acquire testing and quality assessment of model required for their profession.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Understand** the impact of software engineering.
CO2**. Communicate** with proper software model paradigm to pupils.
CO3**. Enhancement** of software metric engineering application in industry.
CO4. **Compare** Effectively testing and maintenance of software project.
CO5. **Classify** software metric analysis for an effective model.

Catalog Description:

There is a growing need for talented software developers across every industry. As technology advances, the ability to build quality software while considering design, development, security, and maintenance is sought after amongst all kinds of companies, from finance and banking to healthcare and national security.
Software Engineering applies the knowledge and theoretical understanding gained through computer science to building high-quality software products. As a maturing discipline, software is becoming more and more important in our everyday lives. Our software development and engineering professional program is Pace University's response to the tremendous growth of the software development industry.

Course Content:

Unit I: 8 lecture hours

Software - Evolving role of it, a crisis on the Horizon and its Myths, Software process models: linear sequential model, prototyping model, RAD model, Evolutionary model, Formal methods model, Component based development, fourth generation techniques, Software development and requirement analysis using Agile, Scrum framework.

Unit II: 10 lecture hours

Management spectrum, people, problem, process, project and few Critical approach,

Software Process and project metrics: Measure, Metrics and Indicators, Process and Project Domain related metrics, Software Measurement, Reconciling of Different, Metrics Approaches, Software quality metrics, Validation management, **Software project planning:** Observations on estimation, Objectives of Project planning.

Unit III: 8 lecture hours

Resources: Software project estimation, Empirical models for estimation, Automated estimation tools, Risk management and Software risks: Identification, Risk projection, safety risks and hazards; RMMM plans, Risk management

Unit IV: 9 lecture hours

Project scheduling and tracking: Definition of task set and task network, Scheduling, earned value analysis, Tracking of Errors, Project planning, **Software quality assurance:** Concepts of Software Quality, Quality movement, Review of software quality assurance, Software reliability, Software quality metrics (MTTF, MTTR, MTBF ETC.)

Unit V: 10 lecture hours

Software configuration management: Object identification in software configuration, Configuring audit-SCM standards, **Analysis concepts and principles:** Requirement analysis, Software prototyping, Specification Review Analysis modeling, Data modeling, Functional modeling, Behavioral modeling, **Software design, Software testing techniques:** White box and black box testing, Software testing strategies - Unit testing, Integrating testing, System testing.

Text Books:

1. Software Engineering: A practitioner's approach, 8th Edition, Roger S. Pressman, McGraw Hill
2. An integrated approach to Software Engineering, Springer/Narosa Edition, PankajJalote.

Reference Books:

1. Fundamentals of Software Engineering, 4th Edition, Rajib Mall, Prentice Hall, India.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE11424	Software Engineering	CO11424.1	2	2	2	3	3	2	3	-	1	-	-	3	1	3	2
		CO11424.2	2	3	2	2	3	2	3	-	2	-	3	1	3	3	2
		CO11424.3	3	3	3	1	3	3	3	-	1	-	-	2	1	1	1
		CO11424.4	2	1	3	2	3	2	1	2	2	-	-	3	2	2	1
		CO11424.5	2	1	3	2	2	1	1	-	3	-	-	3	3	1	1
		CO11424	2.2	2.0	2.6	2.0	2.8	2.0	2.2	2.0	1.8	-	3.0	2.4	2.0	2.0	1.4

1=weakly mapped 2= moderately mapped 3=strongly mapped

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SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program:BCA | Semester: V | Stream: CSE
PAPER TITLE:Software Engineering | PAPER CODE: CSE11424
Maximum Marks: 50 | Time duration: 3 hours
Total No of questions: 12 | Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 2 = 10)		
1.	**List** the steps involved in Software development life cycle? Write a note on it.	**U**	**CO1**
2.	**Enumerate** the basic elements of Software requirement specification.	**U**	**CO2**
3.	**Define**Data coupling.	**R**	**CO3**
4.	**What** is Software configuration management?	**R**	**CO4**
5.	**Give** the principles of functional cohesion.	**U**	**CO4**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**Describe**the stages of evolutionary model?	**U**	**CO1**
7.	**Examine**the essential phases of iterative water fall model then what is the expected performance over traditional water fall model?	**Ap**	**CO2**
8.	**Elucidate** the Black box testing and White box testing with suitable example.	**Ap**	**CO3**
9.	**Explain**Scrum and agile application briefly explain it with proper example?	**U**	**CO4 /CO2**
	SECTION C (Answer Any Two Questions) (2 x 12.5 = 25)		
10.	**Explain** in detail about V-model from end user point of view how it is useful in project design.	**U**	**CO4**
11.	**Write** a Project estimation technique and estimation issues in project progress line.?Explain with a Case Study	**U**	**CO4**
12.	**Distinguish**features of the factors i) Product metric, ii) Function point metric?	**U**	**CO5**

	Business Communication	L	T	P	C
Version 1.0	**Contact hour-45**	**3**	**0**	**0**	**3**
Pre-requisites/Exposure	**Knowledge of basic communication skills**				
Co-requisites	--				

Course Objectives:

1. To help the students to learn about good communication skills.
2. To enable students to prepare for group discussion and interview.
3. To give the students a perspective to the usage of ICT for business communication.
4. To enable students acquire knowledge about different business letter drafting.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Understand** the importance of effective communication skills.
CO2. **Describe** the various skills for group discussion and interview.
CO3. **Explain** the different types of ICT techniques for business communication.
CO4. **Evaluate** the importance of business letter drafting.

Catalog Description:

Business communication is an integral course for preparing the students for interviews and group discussion. This course explains the importance and objective of Information and Communication Technology in business communication. It explains the different types of business letter drafting. It gives a detailed overview of benefits and advantages of business letter drafting.

Course Content:

Unit I: 8 lecture hours

Definition, Objectives, Stages of Communication, Essentials of Good/Effective Communication, Benefits of Good Communication, Gaps in Communication, Communication and Information Technology

Unit II: 14 lecture hours

Grammar: Sentence Structure, Idiomatic Usage of Language, Tenses, Direct & Indirect Parts of Speech, Active & Passive Voice, Vocabulary. Selected Short Stories: 2-3 classic short stories, 2-3 great short stories by Indian writers. Preparation for Job: Writing Applications for Jobs, Preparing Curriculum Vitae, Preparing for Interviews, Preparing for Group Discussions.

Unit III: 12 lecture hours

ICT for business communication, Word Processor, Telex, Fax (Facsimile),E-mail,(Electronic-mail),Voicemail,Internet,Multimedia &Advantages of Teleconferencing, Mobile Phone Conversation, Video Conferencing, SMS-answering machine, Telephone Answering Machine 'Advantages and limitations of these types of communication

Unit IV: **11 lecture hours**

Drafting of business letter,Inquiries and replies, Placing and fulfilling orders, Complaints and follow-up Sales letters, Circular letters, Business Correspondence: Structure of a Letter, Inquiry Letter, Sales Letter, Order Letter, Complaints, Complaint Handling, and Telemarketing.

Government Correspondence: Noting, Routine Letter, Demo-Official Letter Memorandum, Circular, Telegrams, Newsletter.

Text Books:

1. Organizations - Structures, Processes and Outcomes; Richard h Hall; Prentice Hall India.

Reference Books:

1. Human Behavior at Work; John W New storm & Keith Davis; Tata McGraw Hill.
2. Business Communication: R.K. Madhukar; Vikas Publication

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
	Business Communication	CO.1	3	3	1	2	2	2	2	-	3	2	-	3	2	1	3
		CO.2	1	1	2	2	2	3	2	-	3	3	-	3	2	3	1
		CO.3	2	3	2	2	1	3	1	-	2	2	-	2	2	3	1
		CO.4	3	1	1	3	3	2	1	-	1	3	-	3	2	3	1
		CO	2.25	2.0	1.5	2.25	2.0	2.5	1.5	-	2.25	2.5	-	2.75	2.0	2.5	1.5

1=weakly mapped 2= moderately mapped 3=strongly mapped

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END-SEMESTER EXAMINATION: JULY 2020

Name of the Program: BCA | Semester: V | Stream: CSE
PAPER TITLE: Business Communication | PAPER CODE:CSE11425
Maximum Marks: 50 | Time duration: 3 hours
Total No of questions: 12 | Total No of Pages: 01

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 1 = 5)		
1.	**What** is Business Communication?	**R**	**CO1**
2.	**Enumerate** the benefits of good communication.	**R**	**CO1**
3.	**Define** Telex.	**R**	**CO3**
4.	**What** is the role of ICT in business communication?	**R**	**CO3**
5.	**Define** Tele-marketing.	**R**	**CO4**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**Describe** the gaps in communication.	**U**	**CO1**
7.	**Examine** the necessary ICT tools for business communication.	**U**	**CO3**
8.	**Explain** any one type of business letter.	**U**	**CO4**
9.	**Explain** with Example: i) Sales letter ii) Order letter	**U**	**CO4**
	SECTION C(Answer Any Two Questions) (2 x 10 = 20)		
10.	**Explain** in detail about advantages and limitations of ICT type of communication.	**U**	**CO3**
11.	**Write** short notes on Newsletter drafting.	**U**	**CO4**
12.	**Write** short notes on Complaint handling and its techniques. What are the rules for an effective group discussion?	**U**	**CO4, CO2**

CSE12461	AI and Machine Learning Lab	L	T	P	C
Version 1.0	Contact Hours – 45	0	0	3	2
Pre-requisite/Exposure	Probability & Statistics				
Co-requisite	NIL				

Course Objectives:

1.Understand the overview of the various machine learning techniques and can able to demonstrate those using python.

2.Make use of Data sets in implementing the machine learning algorithms.

3.Implement the machine learning concepts and algorithms in any suitable language of choice.Learnandunderstandthelinearlearningmodelsinmachinelearning.

4.Studythetree basedmachinelearningtechniquesandtoappreciatetheircapability.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Solve basic AI based problems.

CO2: Define the concept of Artificial Intelligence.

CO3: Develop an understanding what is involved in learning models from data.

CO4: Understand a wide variety of learning algorithms

CO5: Apply principles and algorithms to evaluate models generated from data.

Course Description:

1. The programs can be implemented in either JAVA or Python.

2. For Problems 1 to 6 and 10, programs are to be developed without using the builtin classes or APIs ofJava/Python.

3. Data sets can be taken from standard repositories (https://archive.ics.uci.edu/ml/datasets.html) or constructedby the students.

Course Content:

Unit-I	**9 Lecture Hours**

Introduction:

1. The probability that it is Friday and that a student is absent is 3 %. Since there are 5 school days in a week, the probability that it is Friday is 20 %. What is theprobability that a student is absent given that today is Friday? Apply Bayes rule in python to get the result. (Ans: 15%)

2. Extract the data from database using python

3. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.

4. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithmto output a description of the set of all hypotheses consistent with the training examples.

5. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge toclassify a new sample.

Unit-II	**9 Lecture Hours**

Clustering Approaches:

1. Implement k-nearest neighbours classification using python

2. Given the following data, which specify classifications for nine combinations of VAR1 and VAR2 predict a classification for a case where VAR1=0.906 and VAR2=0.606, using the result of kmeans clustering with 3 means (i.e., 3 centroids)

VAR1	VAR2	CLASS
1.713	1.586	0
0.180	1.786	1
0.353	1.240	1
0.940	1.566	0
1.486	0.759	1
1.266	1.106	0
1.540	0.419	1
0.459	1.799	1
0.773	0.186	1

3. Implement Naïve Bayes theorem to classify the English text

4. Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering

using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.

5. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.

Unit-III	**6 Lecture Hours**

Neural Networks:

1. Implement the finite words classification system using Back-propagation algorithm

2. Build an Artificial Neural Network by implementing the Backpropagationalgorithm and test the same using appropriate data sets.

3. Implement an algorithm to demonstrate the significance of genetic algorithm.

Unit-IV	**9 Lecture Hours**

Linear Models:

1. Implement linear regression using python.

2. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.

3. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.

4. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
10. Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.

Unit-V	**12 Lecture Hours**

Case studies:

Mini project on **Supply chain optimization or any other real life example.**

Text Books:

13. Kevin P. Murphy, Machine Learning: A Probabilistic Perspective, MIT Press, 2012.
14. Tom Mitchell,*"MachineLearning"*,McGraw-Hill,1997.
15. Ethem Alpaydin, Introduction to Machine Learning, 3rd Ed., MIT Press, 2014.

Reference Books:

4. LaureneFausett,*"FundamentalsofNeuralNetworks,Architectures,AlgorithmsandApplication*, PearsonEducation,2008.
5. Peter Flach, Machine Learning: The Art and Science of Algorithms that Make Sense of Data, CUP, 2012.
6. S Kulkarni, G Harman, An Elementary Introduction to Statistical Learning Theory, Wiley, 2011.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CSE12461	AI and Machine Learning Lab	CO12461.1	3	3	3	1	3	3	1	-	1	-	-	2	3	3	1
		CO12461.2	2	3	3	3	1	2	2	-	1	-	-	3	3	2	2
		CO12461.3	3	2	1	3	1	3	3	-	2	-	-	2	2	1	2
		CO12461.4	3	3	2	3	2	3	1	-	2	-	-	1	2	3	2
		CO12461.5	2	2	1	2	1	1	3	-	1	-	-	2	1	2	2
		CO12461	2.6	2.6	2.0	2.4	1.6	2.4	2.0	-	1.4	-	-	2.0	2.2	2.2	1.8

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

CSE12408	Web Designing Lab	L	T	P	C
Version 1.0	Contact Hours -15	0	0	3	2
Pre-requisites/Exposure	Basic Knowledge of Coding				
Co-requisites	---				

Course Objectives:

1. To introduce students how to design static webpage using HTML and CSS
2. To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services
3. To provide skills to design interactive and dynamic web sites
4. To develop students knowledge for implementing web applications using PhP

Course Outcomes:

On completion of this course, the students will be able to

CO1: **Design** a static webpage by applying HTML elements
CO2: **Apply** CSS concepts for designing HTML web pages.
CO3: **Develop** DHTML pages by using JavaScript with DOM events
CO4**:** **Implement** a webpage with database connectivity using PhP
CO5: **Create** rich internet application using XML.

Course Description:

The main objective of this course is on the World Wide Web as a platform for interactive applications, content publishing and social services. The development of web-based applications requires knowledge about the underlying technology and the formats and standards the web is based upon. In this course you will learn about the HTTP communication protocol, the markup languages HTML, XHTML and XML, the CSS and XSLT standards for formatting and transforming web content, interactive graphics and multimedia content on the web, client-side programming using JavaScript.

Course Content:

Suggested assignments to be framed based on the following Programming Language such as

HTML, CSS, Java script, XML and PH

Experiment 1:
Introduction to web page design, attributes and concept by taking an example of online job-portal

Experiment 2:
Explain the logic of HTML and its feature, heading, color, background color, (h1 to h6).

Experiment 3:
Design a preliminary web page by using HTML table, create, row, header, data insertion.

Experiment 4:

Design a web page by using HTML form tag and explore its features by taking reference of some

E-commerce web site (Mantra, Zabong etc)

Experiment 5:

Design a web page by using HTML form attributes (Radio button, submit button, drop down menu, check box etc) in Online Ticket booking

Experiment 6:

Design a List in HTML (Ordered list and Un-ordered list).

Experiment 7:

Design an event page by using JavaScript in E-commerce website.

Experiment 8:

Design a web page by using JavaScript for arithmetic and logical operation.

Experiment 9:

Design a page enabling idea of Java string, Java switch, DOM model. By taking an online movie ticket booking

Experiment 10:

Design a web repository knowledge base by using XML-ontology.

Experiment 11:

Write a PHP class that sorts an ordered integer array with the help of sort () function.

Experiment 12:

Write a PHP Calculator class which will accept two values as arguments, then add them, subtract them, multiply them together, or divide them on request

Text Books:

1."Web Design The Complete Reference", Thomas Powell, Tata McGraw-Hill
2."Web Design The Complete Reference", Thomas Powell, Tata McGraw-Hill.

Reference Books:

1."PHP : The Complete Reference", Steven Holzner, Tata McGraw-Hill The Easy Guide to Operating Systems, Larry Miller, 2012.
2."Javascript 2.0 : The Complete Reference", Second Edition By Thomas Powell And Fritz Schneider

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	ETE
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE12408	Web Designing Lab	CO12408.1	2	3	2	2	2	3	1	-	1	-	-	3	1	1	3
		CO12408.2	2	2	2	2	3	1	3	-	1	-	-	3	1	1	2
		CO12408.3	3	1	2	2	2	3	3	-	2	-	-	2	2	1	1
		CO12408.4	2	3	2	2	2	2	3	-	1	-	-	2	2	2	3
		CO12408.5	3	3	3	3	3	2	1	-	1	-	-	3	2	1	2
		CO12408	2.4	2.4	2.2	2.2	2.4	2.2	2.2	-	1.2	-	-	2.6	1.6	1.2	2.2

1=weakly mapped 2= moderately mapped 3=strongly mapped

[redacted]

Name: **Enrolment No:**	

ADAMAS UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

END-SEMESTER EXAMINATION

Name of the Program: **Semester: III**

Code- CSEStream- CSE

Time: 03 Hrs.

Paper title– Web Technology Lab **Total pages- 1**

Max. Marks: 50 **Total no. of questions- 5**

Instructions:

Attempt All Questions from Section A (Each Carrying 10 Marks);

SECTION A (Answer All questions)(5 x 10=50)

1.	**Develop** the web page for Student database.	**Ap**	**CO4**
2.	**Define** Imagemap? Design a webpage to display the cricket player's information using Imagemap.	**R**	**CO1**
3.	**Construct** a webpage for creating a registration form using HTML &CSS.	**Ap**	**CO4**
4.	**Build** a webpage in such a way that display MCA course Details with Routine	**Ap**	**CO5**
5.	**Illustrate** the use of <form> tag and action Attribute with an example.	**U**	**CO1**

Course Objectives:

1. To be able to design, develop, document, and test software using current techniques.
2. To understand the fundamentals of computer architecture and computing theory.
3. To be able to solve problems working in group settings.
4. To demonstrate the ability to give presentations and write technical reports.
5. To demonstrate understanding of the importance of social and ethical issues related to the profession.

CSE14428	PROJECT -I	L	T	P	C
Version 1.0	Contact Hours -60	0	0	6	4
Pre-requisites/Exposure	Basic idea of the required subjects				
Co-requisites					

Course Outcomes: On completion of this course, the students will be able to

CO1**. Identify** a real world problem
CO2. **Utilize** the modern tools to solve the problems
CO3. **Discuss** in a group to promote team spirit and leadership quality among the students
CO4. **Plan** a projects involving both technological aspects and finance
CO5. **Identify** newer areas of in-depth study and research and lifelong learning

Catalog Description:

The course encourages students to take project works that are based on current trends and technologies in various subjects, which will augment the theory subjects. The students will form a group to do their project work. This teaming is to encourage team spirit and to insist the importance of team work. The students typically undergo group formation, finalization of area of work, testing, generation and verification of results, and possible research publication procedure.

Course Content:

The Evaluation of the project work are to be carried out in the following way:
1. In-depth study of a topic proposed by the supervisor
2. Continuous Evaluation through guide.
3. An open pre-submission seminar by the student.
4. End-semester University Examination (An open seminar followed by a Vivavoce)

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE14428	Project - I	CO14428.1	1	3	3	2	2	2	1	-	3	-	-	2	3	2	3
		CO14428.2	2	2	3	1	2	3	3	-	2	-	-	3	3	2	3
		CO14428.3	2	2	3	1	1	3	1	-	3	-	-	2	2	2	2
		CO14428.4	3	2	2	3	3	3	1	-	3	-	2	3	1	3	1
		CO14428.5	3	3	2	3	1	3	1	-	1	-	-	2	1	2	1
		CO14428	2.2	2.4	2.6	2.0	1.8	2.8	1.4	-	2.4	-	2.0	2.4	2.0	2.2	2.0

MKT12403	E-commerce & Applications	L	T	P	C
Version 1.0	Contact Hours -45	3	0	0	3
Pre-requisites/Exposure	Web-Technology				
Co-requisites	--				

Course Objectives:

1. To understand terms related to database design and management.
2. To understand the objectives of data and information management.
3. To assess data and information requirements.
4. To understand the economic structure for selling items.

Course Outcomes:

On completion of this course, the students will be able to

CO1. **Describe** the characteristics of database and the architecture of Database system.
CO2. **Design** Entity-Relationship Model for enterprise level databases
CO3**. Develop** the database and provide restricted access to different users of database
CO4**. Analyze** various patterns of user procurement patterns

Catalog Description:

E-Commerce (electronic commerce) is an area which is used in various fields of business like wholesale, retail as well as manufacturing unit. eCommerce is a subset of the e-business that concerns commerce. The activity of the exchange of goods and services with some of the other kind of payment methods can be intended as commerce. eCommerce world is an application of information sharing among business trading basically online commercial transaction with clients. Now eCommerce modules or plugins are included in all types wordpress development company.

Course Content:

Unit I: 07 lecture hours

E-commerce: The revolution is just beginning, Ecommerce : A Brief History, Understanding E-commerce: organizing Themes

Unit II: 16 lecture hours

E-commerce Business Models, Major Business to Consumer (B2C) business models, Major Business to Business (B2B) business models, Business models in emerging E-commerce areas, How the Internet and the web change business: strategy, structure and process, The Internet: Technology Background, The Internet Today, Internet II- The Future Infrastructure, The World Wide Web, The Internet and the Web : Features

Unit III: 10 lecture hours

Building an E-commerce Web Site: A systematic Approach, The e-commerce security environment, Security threats in the e-commerce environment, Technology solution, Management policies, Business procedures, and public laws, Payment system, E-commerce payment system, Electronic billing presentment and payment.

Unit IV: 12 lecture hours

Consumer online: The Internet Audience and Consumer Behaviour, Basic Marketing Concepts, Internet Marketing Technologies, B2C and B2B E-commerce marketing and business strategies, The Retail sector, Analyzing the viability of online firms, E-commerce in action: E-tailing Business Models, Common Themes

in online retailing, The service sector: offline and online, Online financial services, Online Travel Services, Online career services.

Text Books:

1. " S. J. Joseph, E-Commerce: an Indian perspective" PHI
2. " . Kenneth C. Laudon, E-Commerce : Business, Technology, Society" 4th Edition, Pearson

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Internal Assessment	Mid Semester Examination	End Semester Examination
Weightage (%)	30	20	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
MKT12403	E-commerce & Applications	CO12403.1	3	3	1	2	3	3	1	3	3	-	-	2	2	1	1
		CO12403.2	3	2	2	3	3	1	3	-	1	-	-	1	2	2	3
		CO12403.3	2	3	3	2	1	2	2	-	2	-	-	3	3	1	2
		CO12403.4	1	1	2	3	3	3	3	-	3	-	-	3	3	2	3
		CO12403	2.25	2.25	2.0	2.5	2.5	2.25	2.25	3.0	2.25	-	-	2.25	2.5	1.5	2.25

1=weakly mapped 2= moderately mapped 3=strongly mapped

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING AND TECHNOLOGY
END-SEMESTER EXAMINATION: JULY 2020

Name of the Program:BCA
Semester: VI
Stream: CSE

PAPER TITLE:E-commerce &Applications
PAPER CODE: MKT12403
Maximum Marks: 40
Time duration: 3 hours
Total No of questions: 12
Total No of Pages: 02

Instruction for the Candidate:

1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, and Date of Exam.
2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

	Section A (Answer All the Questions) (5 x 1 = 5)		
1.	**What** are the various components of electronic commerce applications?	**R**	**CO1**
2.	**What** are the various components of electronic commerce applications?	**R**	**CO2**
3.	**What** are the characteristics of internet-based EDI?	**R**	**CO4**
4.	**What** are the classifications of E-commerce field by the nature of the transactions?	**R**	**CO3**
5.	**Why** do the companies usually choose to implement SAP?	**R**	**CO3**
	SECTION B (Attempt any **Three Questions) (3 x 5 = 15)**		
6.	**What** are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.	**R**	**CO2**
7.	**Describe** the functional requirements for online selling and what specialized services and servers perform these functions.	**U**	**CO3**
8.	**Who** are the stakeholders in E-Commerce information system? Explain the benefits and limitations of E-commerce.	**R**	**CO4**
9	**Explain** the concept of "Business Content" in SAP Business Information Warehouse.	**U**	**CO1**
	SECTION C (Answer Any Two Questions) (2 x 10 = 20)		
10.	a. Once a company has acquired customer, the key to maximizing revenue is keeping them. **Explain** how e-commerce is helpful in customer retention? b. **What** are the security issues of E-commerce? 5+5=10	**Ap & U**	**CO2**
11.	a. **Explain** the concept of business process reengineering and its relationship with the productivity paradox and ERP. b. **What** is E-shopping? What are the advantages and disadvantages of e-shopping?5+5=10	**U & R**	**CO3**
12.	a. **What** is EDI? Discuss its layered structure? b. **What** is e-payment? Why is orientation and standardization required for e-payment businesses? 5+5=10	**R**	**CO4**

CSE11429	**Cyber Security**	**L**	**T**	**P**	**C**
Version 1.0	**Contact Hours – 45 Hours**	**3**	**0**	**0**	**3**

Pre-requisite/Exposure	**Computer Network**
Co-requisite	**NIL**

Course Objectives:

1. To understand basics of Cyber Security.
2. To be able to secure a message over insecure channel by various means.
3. To learn about how to maintain the Confidentiality, Integrity and Availability of a data.
4. To understand various protocols for cyber security to protect against the threats in the cyber space.

Course Outcomes:

On the completion of this course the student will be able to

CO1. **Define** the basics of Cyber security and types of existing malware.
CO2. **Understand** and identify the cyber security breaches and cyber attacks.
CO3. **Explain** the preventive measures for cyber fraud
CO4. **Examine** the basics concept of Social Network Security and Web Security.
CO5. **Appraise** the recent threats and attacks against the technical world and design some effective prevention scheme.

Course Description:

Effective network communication is an integral part of technical life. Cyber Security and Cryptography is a process of securing the data communication, all the algorithms, messages etc. In this course you will learn the basics of cyber security and how to prevent and detect any sort of cyber attacks. The course begins with a detailed discussion of different types of malware, cyber security breaches and cyber attacks. Throughout the course participants will be exposed to many exciting open problems in the field and work on fun (optional) programming projects. In the course cyber security we will cover more advanced security tasks such as zero-day vulnerability, privacy mechanisms, and other forms of defense against hackers.

Course Content:

Unit-I	**09 Lecture Hours**
Cyber security fundamentals: Definition of cyber space, cyber security, importance of cyber security, hacker, related case studies **Types of malware:** Worm, virus, spyware, Trojan, related case studies	
Unit-II	**09 Lecture Hours**
Cyber security breaches: Phishing, identity theft, harassment, cyber stalking, related case studies **Types of cyber attacks:** Password attacks, Denial of service attacks, Passive attack, Penetration testing, related case studies	
Unit-III	**09 Lecture Hours**
Prevention tips: Design a strong password, Two-step verification, Question validity of web-sites, related case studies **Mobile protection:** No credit card numbers, place lock on phone, don't save passwords, related case studies	
Unit-IV	**09 Lecture Hours**
Social network security: Security measures like not revealing location, keeping birth-date hidden, having private profile, not linking accounts, related case study **Prevention software:** Firewalls, Virtual private network, Anti-virus & anti-spyware, Routine updates, related case study	
Unit-V	**09 Lecture Hours**
Critical cyber threats: Critical cyber threats, cyber terrorism, cyber-warfare, cyber-espionage, **Defense against hackers:** Cryptography, digital forensics, intrusion detection, legal recourse, related course study	

Text Books:

1. "Network Security: Private Communication in Public World", Charlie Kaufman, RadiaPerman, Mike Speciner, 2nd Edition, Pearson Education, 2011.

Reference Books:

1. "Cryptography and Network Security", Atulkahate, TMH, 2003.
2. "Cyber Security", Nina Godbole, WILEY, 2003.

Modes of Evaluation: Quiz/Assignment/Presentation/Extempore/ Written Examination

Examination Scheme:

Components	Mid Term	Class Assessment	End Term
Weightage (%)	20	30	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CSE11429	cyber security	CO11429.1	2	2	2	2	1	2	3	-	1	-	-	2	3	1	3
		CO11429.2	2	2	2	2	3	1	2	-	1	-	-	1	1	3	2
		CO11429.3	2	3	2	3	3	1	2	-	3	-	-	3	2	3	2
		CO11429.4	2	2	2	3	1	1	1	-	2	-	-	2	2	2	2
		CO11429.5	2	2	3	3	2	3	2	-	2	-	-	3	3	2	1
		CO11429	2.0	2.2	2.2	2.6	2.0	1.6	2.0	-	1.8	-	-	2.2	2.2	2.2	2.0

1 = Weakly Mapped 2 = Moderately Mapped 3 = Strongly Mapped

Name of the Program:	BCA	**Semester:**	VI
Paper Title:	Cyber Security	**Paper Code:**	
Maximum Marks:	50	**Time Duration:**	3 Hrs
Total No. of Questions:	**17**	**Total No of Pages:**	02
(Any other information for the student may be mentioned here)	**13.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **14.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **15.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

MODEL QUESTION PAPER

Ques No.	Question	Knowledge Level	Course Outcome
	Group A : Answer ALL the questions (5 x 1 = 5)		
1	Define cyber security.	**U**	**CO1**
2	Explain briefly about phishing.	**An**	**CO2**
3	Define cyberspace.	**U**	**CO3**
4	Elucidate VPN?	**U**	**CO4**
5	What is cyber espionage?	**R**	**CO5**
	Group B : Answer ALL the questions (5 x 2 = 10)		
6	**a)** Explain global perspective on cyber crime. **(OR)** **b)** Explain about different types of malware.	**U**	**CO1**
7	**a)** Explain a use case scenario about identity theft. **(OR)** **a)** Explain a use case scenario about denial of service attack.	**An**	**CO2**
8	**a)** Discuss about the significance of two-step verification. **(OR)** **b)** Explain how you will protect a mobile's security with basic precautionary steps.	**U**	**CO3**
9	**a)** Discuss the various social network security measures to protect a social media account from getting compromised. **(OR)** **b)** Compare and contrast anti-virus and anti-spyware.	**An**	**CO4**
10	**a)** Write short notes on cyber warfare. **(OR)** **b)** Elucidate about the problem of intrusion detection.	**U**	**CO5**
	Group C : Answer ALL the questions (7 x 5 =35)		
11	**a)** Explain password sniffing with an example. **(OR)** **b)** Explain the classification of cyber crimes.	**U**	**CO1**
12	**a)** Define attack and explain it with the help of an example. **(OR)** **b)** Discuss cyber stalking and how it impacts the security of an individual.	**U**	**CO2**
13	**a)** Mention the tips for safety and security measures to be followed in a cyber cafe.	**U**	**CO3**

	(OR)		
	b) What are the threats through lost and stolen devices?		
14	**a)** What are the steps to be followed for protection against Trojan horse and backdoors?	**An**	**CO4**
	(OR)		
	b) How does tunnelling take place in VPN? Explain the advantages of VPN.		
15	**a)** How can Firewall be used as an effective security measure in an organization?	**Ap**	**CO4**
	(OR)		
	b) Discuss about the benefits of having a private profile in social media.		
16	**a)** Write short notes on cyber espionage.	**U**	**CO5**
	(OR)		
	b) Discuss the significance of digital forensics.		
17	**a)** Elucidate the characteristics of cryptography.	**U**	**CO5**
	(OR)		
	b) Explain the importance of Intrusion detection system in cyber security.		

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

xv) If the COs are higher in numbers that can be managed by equating sub-divisional questions

xvi) If the COs are lower in numbers, the questions can be increased by equating the number of COs

CSE15430	Comprehensive Viva Voce	L	T	P	C
Version 1.0	Contact hour -45	0	0	3	2
Pre-requisites/Exposure	Willing to knowledge acquisition				
Co-requisites	--				

Course Objectives:

1. To Give an overview of emerging technology and relate to subject.
2. To enable students to improve their reasoning ability.
3. To give the students a outline of technical question.
4. To expound idea dissemination for a new technology by assessment of pupilknowledge.

Course Outcomes:

On completion of this course, the students will be able to

CO1**. Understand** importance of knowledge acquisition.
CO2**. Compare** the real-life scenario, based on viva question.
CO3. **Classify** the practical implementation with emerging application.
CO4**. Analyse** understanding in technology up gradation.

Catalog Description:

The course tests the technical knowledge acquired during the study, spoken skills, and the ability to think logically under time pressure. The course proves extremely useful for placement interviews

Course Content:

Scientific approach to resolve open end question, Theoretical Vs Practical exploration, in research paradigms, epistemology and ontology in management research, positivism vs. interpretivism, subjectivism vs. objectivism. Foundations of confidence building in answering question, Categories of theory, theory building vs. theory testing, conceptualization and hypothesis testing. Analyze the conformity of the system to the functional requirements Appreciate importance of fundamental knowledge and its application.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE15430	Comprehensive	CO15430.1	2	3	3	3	2	2	3	-	2	-	-	2	1	1	2

	Viva Voce	**CO15430.2**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**-**	**3**	**2**	**-**	**3**	**3**	**2**	**3**
		CO15430.3	**2**	**2**	**3**	**1**	**2**	**1**	**3**	**-**	**3**	**-**	**3**	**3**	**1**	**2**	**2**
		CO15430.4	**2**	**2**	**2**	**3**	**3**	**1**	**3**	**-**	**1**	**-**	**-**	**1**	**1**	**2**	**1**
		CO15430	**2.25**	**2.25**	**2.75**	**2.25**	**2.5**	**1.75**	**3.0**	**-**	**2.25**	**2.0**	**3.0**	**2.25**	**1.5**	**1.75**	**2.0**

1=weakly mapped 2= moderately mapped 3=strongly mapped

CSE14431	PROJECT -II	L	T	P	C
Version 1.0	Contact Hours - 120	0	0	12	8
Pre-requisites/Exposure	Basic idea of the required subjects				
Co-requisites					

Course Objectives:

1. To be able to design, develop, document, and test software using current techniques.
2. To understand the fundamentals of computer architecture and computing theory.
3. To be able to solve problems working in group settings.
4. To demonstrate the ability to give presentations and write technical reports.
5. To demonstrate understanding of the importance of social and ethical issues related to the profession.

Course Outcomes:

On completion of this course, the students will be able to

CO1**. Identify** a real world problem
CO2. **Utilize** the modern tools to solve the problems
CO3. **Discuss** in a group to promote team spirit and leadership quality among the students
CO4. **Plan** a projects involving both technological aspects and finance
CO5. **Identify** newer areas of in depth study and research and lifelong learning

Catalog Description:

The course encourages students to take project works that are based on current trends and technologies in various subjects, which will augment the theory subjects. The students will form a group to do their project work. This teaming is to encourage team spirit and to insist the importance of team work. The students typically undergo group formation, finalization of area of work, testing, generation and verification of results, and possible research publication procedure.

Course Content:

The Evaluation of the project work are to be carried out in the following way:
1. In-depth study of a topic proposed by the supervisor
2. Continuous Evaluation through guide.
3. An open pre-submission seminar by the student.
4. End-semester University Examination (An open seminar followed by a Vivavoce)

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Continuous Evaluation	End Semester Examination
Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Course Code	Course Name	COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE14431	Project - II	CO14431.1	1	2	2	2	1	2	3	-	3	-	-	1	1	3	3
		CO14431.2	2	3	2	3	2	2	2	-	1	-	-	1	1	1	3
		CO14431.3	2	2	1	3	2	1	1	-	3	3	-	2	1	1	3
		CO14431.4	2	1	2	3	2	2	2	-	3	2	-	1	2	2	2
		CO14431.5	3	2	1	2	2	3	2	-	2	-	-	3	1	1	1
		CO14431	2.0	2.0	1.6	2.6	1.8	2.0	2.0	-	2.4	2.5	-	1.6	1.2	1.6	2.4

1=weakly mapped 2= moderately mapped 3=strongly mapped

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CO – PO & PSO MAPPING

Name of the Programme: BCA

Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
MTH 11221	Mathematics-I	3	3	-	2	2	-	-	-	3	-	-	-	2	-	-
CSE11401	Introduction to Programming	3	3	2	2	-	-	-	-	-	-	-	-	3	-	-
ENG11055	English Communication	-	-	-	-	3	3	-	2	-	-	3	-	-	-	2
CSE11402	Computer Fundamentals	3	2	-	2	-	-	-	-	-	-	-	2	2	-	-
EVS11103	Environmental Science	-	2	-	-	2	2	-	-	2	-	1	1	-	-	1
CSE12403	Programming Lab	3	3	2	3	-	-	2	-	-	-	-	-	3	-	-
DGS11001	Design Thinking	3	-	1	2	-	-	1	-	-	-	1	-	-	-	-
MTH11507	Mathematics-II	3	3	-	-	-	-	-	-	3	-	-	2	-	3	-
CSE11404	Programming &Data Structures	2	3	-	3	-	-	-	-	-	-	-	2	3	2	3
ECE11501	Digital Electronics	3	3	-	2	3	-	-	-	-	-	-	3	-	2	3
CSE11405	Design of Logic Circuits	-	3	3	3	-	-	-	-	-	-	-	-	3	-	3

CSE11453	Principles of Programming	3	3	3	-	-	-	-	-	-	-	-	3	3	-	3
CSE12407	Data Structures Lab	3	3	2	3	-	-	-	-	-	-	-	-	3	3	3
ECE12502	Digital Electronics Lab	3	2	3	-	-	3	-	-	-	2	-	-	2	2	3
CSE12454	Principles of Programming Lab	3	3	3	-	3	-	-	-	-	-	-	-	3	-	3
EIC11001	Venture Ideation	-	-	-	-	3	-	-	2	3	-	3	-	-	-	2
CSE11409	Object Oriented Programming with JAVA	3	3	-	3	-	-	-	-	-	-	-	-	3	3	3
CSE11455	Data Science with Python	3	2	2	3	-	-	-	-	-	-	-	-	3	-	-
CSE11411	Computer Organization & Architecture	3	2	3	-	2	3	-	-	-	-	-	3	3	2	3
CSE11412	Database Management System	3	3	2	2	-	-	2	-	-	-	-	2	3	2	3
CSE12413	Object Oriented Programming Lab	3	3	3	-	2	-	-	-	-	-	-	3	3	3	3
CSE12456	Data Science with Python Lab	3	3	3	3	-	-	-	-	-	-	-	-	3	-	-
CSE12415	Computer Organiz	3	-	3	-	3	-	-	-	-	-	-	3	3	3	-

	ation Lab															
CSE12416	Database Management System Lab	3	3	2	3	-	-	2	-	-	-	-	2	2	2	3
SOC14100	Community Service#	-	-	-	2	2	2	-	2	2	2	-	-	-	-	-
IDP14001	Interdisciplinary Project	3	3	3	3	-	-	3	-	-	-	-	-	3	3	-
ECE11503	Data Communication & Computer Network	3	3	2	3	2	-	3	-	-	-	-	-	3	-	-
CSE11417	Algorithm Design	2	2	3	2	3	-	-	-	-	-	-	3	3	3	3
CSE11418	Operating System	3	3	-	3	-	-	-	-	-	-	-	-	3	3	-
CSE11457	Introduction to Cloud Computing	3	3	-	3	-	-	-	-	-	-	-	-	3	3	3
ECE12504	Computer Network Lab	3	3	3	-	2	-	3	-	-	-	-	-	3	-	-
CSE12420	Algorithm Design Lab	2	2	3	2	3	-	-	-	-	-	-	-	3	3	-
CSE12421	Operating System Lab	3	2	3	2	2	-	-	-	-	-	-	3	2	3	3
CSE12458	Cloud Computing Lab	3	3	-	3	-	-	3	-	-	-	-	-	3	-	3
CSE12459	Applied Computing Lab	3	3	-	3	-	-	3	-	-	-	-	3	3	-	1
PSG11021	Human Values	-	-		2	-	-	-	3	2	-	2				

	and Professional Ethics												3	2	2	2
CSE11406	Web Designing	-	3	3	-	3	2	-	-	-	2	-	2	3	3	-
CSE11460	AI and Machine Learning	3	3	-	3	-	-	-	-	-	-	-	-	3	3	3
CSE11424	Software Engineering	3	2	2	2	-	-	2	-	-	-	-	2	3	3	2
TBD	Business Communication	-	2	-	-	-	3	-	-	-	3	-	3	-	-	-
CSE12461	AI and Machine Learning Lab	3	3	-	3	-	-	-	-	-	-	-	-	3	3	3
CSE12408	Web Designing Lab	3	2	3	2	-	-	2	-	-	-	-	2	2	3	2
CSE14428	Project-I	3	3	3	-	-	-	-	-	2	-	2	2	3	2	-
MKT12403	E-commerce & Applications	3	2	3	3	-	-	-	2	-	-	-	-	3	2	-
CSE11429	Cyber Security	3	-	2	-	2	3	-	2	-	-	-	-	-	-	-
CSE15430	Comprehensive Viva Voce	3	3	3	2	3	-	-	-	-	2	-	-	3	3	2
CSE14431	Project-II	3	3	3	2	-	-	2	-	-	-	-	3	3	2	-
Average of CO-PO Mapping		2.923077	2.717949	2.633333	2.545455	2.555556	2.714286	2.384615	2.142857	2.571429	2.2	2.2	2.55	2.815789	2.607143	2.692308