

END TERM EXAMINATION

FIRST SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA101

Subject: Discrete Mathematics

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

- Q1 Attempt **any five** of the following: (5x5=25)
- Let R be the relation in the natural number N defined by the open " $(x - y)$ is divisible by 5", prove that R is an equivalence relation.
 - Write the truth table for the formula $(p \wedge q) \vee (\neg p \wedge \neg q)$
 - Consider (A, \supseteq) where $A = \{\{1\}, \{2\}, \{3\}, \{4\}, \{1,2\}, \{1, 3\}, \{1,4\}, \{2,3\}, \{2, 4\}, \{3,4\}\}$. Draw the hasse diagram of A.
 - Draw the complete bipartite graph of K24 and K33.
 - Define tautology and contradiction.
 - In a survey of 200 musicians, it was found that 40 wore gloves on the left hand and 39 wore gloves on the right hand. If 160 wore no gloves at all, how many wore a glove on (i) only the right hand? (ii) Only the right hand? (iii) On both hands

UNIT-I

- Q2 a) Prove that $(A - B) \cup (B - A) = (A \cup B) - (A \cap B)$ (6.5)
- b) Let $U = \{a, b, c, d, e\}$ $A = \{a, b, d\}$ and $B = \{b, d, e\}$
Find (1) $A \cup B$ (2) $B \cap A$ (3) $B - A$ (4) $A^c \cap B$ (5) $B^c - A^c$ (6)
- Q3 a) Write the contrapositive, converse, and inverse of the conditional statement
"The Indian Cricket wins when Sachin Tendulkar Scores 100" (6.5)
- b) Obtain PCNF of $(\neg p \rightarrow r) \wedge (q \leftrightarrow p)$ and hence obtain its PDNF. (6)

UNIT-II

- Q4 a) Prove that every chain is a distributive lattice. (6)
- b) Draw a Hasse diagram of (X, \leq) where $X = \{1,2,3,4,6,8,12,24\}$ and R be a division relation. Find the Hasse diagram of the poset (6.5)

P.T.O

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P_{1/2}

- Q5 a) Let $D_{30} = \{1, 2, 3, 5, 6, 10, 15, 30\}$ and Let the relation R be divisor on D_{30} . Find (6)
1. All lower bounds of 10 and 15.
 2. the GLB of 10 and 15,
 3. all upper bounds of 10 and 15
 4. LUB of 10 and 15
 5. Draw the Hasse Diagram.
- b) Draw the Hasse diagram representing the partial ordering $\{(A, B)/A \subseteq B\}$ on the power set $P(S)$ where $S = \{a, b, c\}$. Find the maximal, minimal, greatest and least elements of this partially ordered set. Is it complemented Lattice? Justify your answer. (6.5)

UNIT-III

- Q6 a) Find the number of integers between 1 and 250 that are divisible by any of the integers 2, 3, 5, and 7. (6)
- b) There are six men and five women in a room. Find the number of ways four persons can be drawn from the room if (1) If they can be male or female, (2) two must be men and two females (3) they must all of the same sex. (6.5)
- Q7 a) Solve recurrence relation $S(n) - 3S(n-1) = 5(3^n)$ with $S(0) = 2$. (6)
- b) There are three files of identical red, blue and green balls, where each file contains at least 10 balls. In how many ways can 10 balls be selected? (1) If there is no restriction. (2) If at least 1 red ball must be selected. (3) If at least 1 red, at least 2 blue, and at least 3 green balls must be selected (4) If at most 1 red ball is selected. (6.5)

UNIT-IV

- Q8 a) Draw the complete graph K_5 with vertices A, B, C, D, E . Draw all complete subgroups of K_5 with 4 vertices. (6)
- b) Prove that a connected graph G is Euler graph if and only if every vertex of G is of even degree. (6.5)
- Q9 a) If G is a connected simple graph with n vertices with $n \geq 3$, such that the degree of every vertex in G is at least $\frac{n}{2}$, then prove that G is a Hamilton cycle. (6)
- b) Let $(G) \Delta (G)$ denotes minimum and maximum degrees of all the vertices of G respectively. Then show that for a non-directed graph G , $(G) \leq 2|E|/|V| \leq \Delta(G)$. (6.5)

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END TERM EXAMINATION

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FIRST SEMESTER [BCA] FEBRUARY-MARCH 2023

Paper Code: BCA103

Subject: Programming Using in 'C' Language

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

- Q1 Answer the following: [5x5=25]
- a) What is the use of #define preprocessor?
 - b) Explain the usage of break, labelled break, continue & labelled continue statements?
 - c) Write example code to declare two-dimensional array.
 - d) Differentiate between Local and Global variable in C.
 - e) What is the difference between ++a and a++?

UNIT-I

- Q2 Explain various types of operators used in C with example? [12.5]
- Q3 a) What is recursion? Explain with the help of a program in C. [6]
b) Explain various looping statements in C with the help of suitable example. [6.5]

UNIT-II

- Q4 a) Differentiate between scanf() and gets() function with the help of an example? [6.5]
b) Explain the storage classes in C with example programs? [6]
- Q5 a) What are the various dynamic memory allocation functions in C? Explain with an example. [6.5]
b) What is a pointer? Explain array of pointers to function with suitable example. [6]

UNIT-III

- Q6 a) Differentiate between formatted and unformatted input and output functions? [3.5]
b) Write short notes on: [3x3=9]
i) structure and Union
ii) passing structure to functions
iii) file access modes
- Q7 a) What is the use of atoi() function? Explain with an example. [6]
b) Compare arrays and structures. Justify your comparison with an example. [6.5]

P.T.O.

UNIT-IV

- Q8 a) Explain the syntax & usage of inbuilt string functions with suitable example? [7.5]
b) Write a program to identify the largest and smallest word in a string. [5]
- Q9 a) Explain the following header files: [2.5x3=7.5]
i) Math.h ii) stdlib.h iii) time.h
b) Write a program in C to check whether the input word is a palindrome or not? [5]

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END TERM EXAMINATION

FIRST SEMESTER [BCA] FEBRUARY 2023

Paper Code: BCA-105

Subject: Fundamentals of Computers & IT

Time: 3 Hours

Maximum Marks: 75

Note: Attempt all questions as directed. Internal choice is indicated.

- Q1 Attempt **any five** questions:- (5x5=25)
- (a) List and explain five important characteristics of a computer.
 - (b) Explain the five Basic functions performed by a computer system.
 - (c) Differentiate between Multitasking and Multiprogramming.
 - (d) Distinguish between LAN, MAN, WAN.
 - (e) Define the Term byte. What is the difference between a bit and byte.
 - (f) Write full form of the following:- (a) GUI (b) CUI (c) BASIC (d) FORTRAN (e) MICR.

UNIT-I

- Q2 (a) What is generation in Computer terminology? Explain various computer generations along with key characteristics of computers of each generation. (6.5)
- (b) Explain the following:- (i) Data (ii) Information (iii) RAM (iv) ROM (v) CPU (vi) Auxillary Memory (6)

OR

- Q3 (a) Define Memory? Explain different type of Memory in Computer System with the help of diagram. (6.5)
- (b) Write short notes on the Following:- (6)
- (i) Static Memory and Dynamic Memory
 - (ii) EPROM AND EEPROM

UNIT-II

- Q4 Define Operating System? Explain the role of an operating system with respect to following Function:- (12.5)
- (a) Process Management
 - (b) Memory management
 - (c) Device Management
 - (d) Security
 - (e) Command interpretation

OR

- Q5 (a) Define the following Terms:- (8)
- (i) Multiprogramming
 - (ii) Multitasking
 - (iii) Multithreading
 - (iv) Multiprocessing
- (b) Give Difference between:- (4.5)
- (i) Assembler and Loader (ii) Interpreter and compiler (iii) Linker and Loader

UNIT-III

- Q6 Convert the following:- (2.5x5=12.5)
- (a) Convert 23 from base 10 to base 8.
 - (b) Convert 101011011 from base 2 to base 8.
 - (c) Convert 234 from base 8 to base 10.
 - (d) Convert E16 from base 16 to base 10.
 - (e) Perform binary addition of (12) +(18).

UNIT-IV

- Q7 (a) What is Computer Network? Explain. (2.5)
- (b) Discuss the various Network topologies along with their advantages and disadvantages. (10)
- OR
- Q8 (a) Discuss various data transmission media. (6)
- (b) Differentiate between Digital and Analog Transmission. (6.5)

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END TERM EXAMINATION

FIRST SEMESTER [BCA] FEBRUARY 2023

Paper Code: BCA-107	Subject: Web Technologies
Time: 3 Hours	Maximum Marks: 75
Note: Attempt five questions in all including Q.No.1. which is compulsory. Select one questions from each unit.	

- Q1. Attempt **any five** of following: (5x5=25)
- (a) Differentiate between Java & JavaScript
 - (b) Explain Document structure tags.
 - (c) What do you understand by the term container in Bootstrap?
 - (d) Write a note on WWW & Domain Name.
 - (e) Differentiate between HTML & XML
 - (f) Differences between GET & POST method.
 - (g) Explain the Document Structure Model.

UNIT-I

- Q2. (a) What is hotspot? Explain different type of hotspot by considering and image map of your choice. (6.5)
(b) Explain the client-server architecture with diagram. (6)
- Q3. (a) Explain the following HTML tags with their attributes: (6)
- <link>
 - <audio>
 - <video>
 - <style>
 - <a>
 -
- (b) Create a Quiz related to any topic of your choice by using form elements. (6.5)

UNIT-II

- Q4. (a) What are Cascading Style Sheets? Explain different types of style sheets with the help of example. (6.5)
(b) Create the webpage containing a background image and apply all the background styling attributes. (6)
- Q5. (a) What is Responsive Web Design? Explain the key components of Bootstrap? (6.5)
(b) Explain Bootstrap Grid System. Explain how to link Bootstrap in html document. (6)

UNIT-III

- Q6. (a) Write a program in Java Script that receives a no. from the user & check whether the given no. is Armstrong or not. (6)
(b) Briefly explain various built in Objects in Java Script by giving a suitable example of each. (6.5)

P.T.O.

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- Q7. (a) Write a program to show the various events in Java Script with the help of code. (6)
(b) What is Variable? Explain different datatypes available in Java Script. (6.5)

UNIT-IV

- Q8. (a) What is web hosting? Explain different hosting types & components. (6.5)
(b) What do you mean by WYSIWYG Design Tools. Explain the role of Dream Weaver Tool in Website development. (6)
- Q9. (a) Explain the different building blocks of XML. (6)
(b) Explain various XML parsers in detail. (6.5)

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END TERM EXAMINATION

FIRST SEMESTER [BCA] FEBRUARY 2023

Paper Code: BCA-109	Subject:- Technical Communication
Time: 3 Hours	Maximum Marks: 75
Note: Attempt five questions in all including Q.No.1.which is compulsory. Select one questions from each unit.	

- Q1. Write short notes of the following (any five): (5x5=25)
- (a) Define Technical Communication. Explain any one of the Technical Communication Skills.
 - (b) Write down the features of communication.
 - (c) While introducing yourself to an individual, what are the things to be kept in mind?
 - (d) What is group discussion? State the techniques for conducting group discussions.
 - (e) Define Note Making and state its advantages.
 - (f) What is interpersonal skill? How do you develop them?

UNIT-I

- Q2. What is communication? State the need and importance of communication (12.5)
- Q3. (a) Explain the various characteristics of language. (6.5)
(b) Elaborate on computer-aided technical communication. (6.0)

UNIT-II

- Q4. Define oral communication and list out the principles of effective oral communication. (12.5)
- Q5. Define interview and state the most essential factors to be considered when preparing for an interview. (12.5)

UNIT-III

- Q6. Explain report writing and show how to make a quality report appealing and easy to skim. (12.5)
- Q7. (a) Clarify various steps involved in writing an application letter. (6.5)
(b) Write a sample application letter showing your interest to join in the position of marketing associate for XYZ company. (6.0)

UNIT IV

- Q8. (a) What is Paralanguage? Elaborate. (6.5)
(b) Explain Kinesics and Proxemics. (6.0)
- Q9. List out some of the common errors and misappropriation in English. (12.5)

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END TERM EXAMINATION

SECOND SEMESTER [BCA] July 2023

Paper Code: BCA-102

[Batch 2021 Onwards]

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q. No. 1 which is compulsory. Select one question from each unit. Scientific Calculator is allowed.

Q1 Answer the following:-

- (a) Determine the binomial distribution for which mean is 4 and variance is 3. (2.5)
- (b) The probabilities that students A, B, C and D solve a problem are $1/3$, $2/5$, $1/5$ and $1/4$, respectively. If all of them try to solve the problem, what is the probability that the problem will be solved? (2.5)
- (c) Construct forward difference table from the values of x and y given below: (2.5)

X	0	1	2	3	4	5
y	5	11	22	18	27	2

- (d) Prove that $\Delta^2 V = \Delta - V$, where Δ and V are forward and backward difference operators. (2.5)
- (e) Using Lagrange interpolation, find the unique polynomial of degree 2, such that $f(0) = 1$, $f(1) = 3$, $f(3) = 55$. (2.5)
- (f) What do you mean by Numerical Integration? (2.5)
- (g) Calculate $\int_0^5 5 \sin x \, dx$ correct to four decimal places with $h = 1$. (2.5)
- (h) Define basic feasible solution in Linear Programming Problem (LPP). (2.5)
- (i) Write a note on unbounded solution of LPP. (2.5)
- (j) Write a note on slack and surplus variables in LPP. (2.5)

UNIT-1

- Q2 (a) An insurance company insured 2000 scooter drivers, 4000 car drivers and 6000 truck drivers. The probability of an accident involving a scooter driver, car driver and truck driver is 0.01, 0.03 and 0.15 respectively. One of the insured person meets with an accident. What is the probability that he is a truck driver? (6.5)
- (b) If X is a Poisson variate such that $P\{X=2\} = 9P\{X=4\} + 90P\{X=6\}$. Find the mean and variance of X . (6)

- Q3 (a) If the heights of 500 students are normally distributed with mean 68 inches and standard deviation 3 inches. How many students have heights (i) greater than 72 inches (ii) less than equal to 64 inches (iii) between 65 and 71 inches? Given $P\{Z \leq 1.33\} = 0.4082$, $P\{Z \leq 1\} = 0.3413$. (6.5)
- (b) A continuous random variable X has probability density function. (6)

$$f(x) = \begin{cases} k & -\infty < x < \infty \\ 1 + x^2 & \text{otherwise} \\ 0 & \end{cases}$$

Determine the value of k and evaluate $P\{X \geq 0\}$.

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P.1/2

- Q4 (a) Find the missing value of the following table. Explain why the result differs from 16? (6)

X	1	2	3	4	5	6	7
Y	2	4	8	-	32	64	128

- (b) Find a real root of the equation $x^3 - x = 1$ using False Position method upto fifth iteration. (6.5)

- Q5 (a) Obtain a formula to calculate cube root of a natural number N and use it to evaluate cube root of 28. (6)

- (b) Estimate by suitable method of interpolation the number of persons whose daily income is Rs. 19 but not exceed Rs. 25 from the following data. (6.5)

Income (in Thousands)	0-9	9-19	19-28	28-37	37-46
No. of persons	50	70	203	406	304

UNIT-III

- Q6 (a) Find the LU decomposition of the matrix $A = \begin{bmatrix} 3 & 2 & 7 \\ 2 & 3 & 1 \\ 3 & 4 & 1 \end{bmatrix}$. (6.5)

- (b) From the following table of values of x and y, obtain dy/dx at $x = 4$ and d^2y/dx^2 at $x = 5$. (6)

x	0	1	2	3	4	5
y	4	8	15	7	6	2

- Q7 (a) Solve the following system using the Gauss - Seidel iterative method. Perform three iterations only. (6.5)

$$5x - y + 3z = 3$$

$$4x + 7y - 2z = 2$$

$$6x - 3y + 9z = 9$$

- (b) Evaluate $\int_0^1 \frac{dx}{1+x^2}$ by using Simpson's 1/3 rule and hence obtain the approximate value of π . (6)

UNIT-IV

- Q8 Solve the following linear programming problem by using simplex method: (12.5)

$$\text{Min } Z = x_1 + 2x_2 + 3x_3$$

subject to

$$2x_1 - x_2 + x_3 \geq 4$$

$$x_1 + x_2 + 2x_3 \leq 8$$

$$x_2 - x_3 \geq 2$$

$$\text{and } x_1, x_2, x_3 \geq 0$$

- Q9 (a) Find the optimal solution of the following minimization transportation problem. (6.5)

	D1	D2	D3	D4	Supply
S1	11	13	17	14	250
S2	16	18	14	10	300
S3	21	24	13	10	400
Demand	200	225	275	250	

- (b) A computer centre has 4 expert programmers. The centre wants 3 application programmes to be developed. The head of the computer centre, after studying carefully the programmes to be developed, estimates the computer time in minutes required by the experts for the application programmes as follows: (6)

	Application Programmes		
	A	B	C
	1	15	18
	2	14	17
Programmers	3	16	19
	4	20	14
			17

How should the application programmes must be allocated, one per programmer, so as to minimize the total time?

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P₂/3

BCA-102
P₃/3

END TERM EXAMINATION

SECOND SEMESTER (BCA) JULY-2023

Paper Code: BCA-104

Subject: Web Based Programming

Time: 3 Hours

Maximum Marks :75

Note: Attempt five questions in all including Q.no.1 which is compulsory.. Select one question from each unit.

- Q1 Attempt **Any ten** of following: (10x2.5=25)
- What are the different types of errors in PHP?
 - How can we find out the name of the current executing file?
 - Why we use \$_REQUEST variable?
 - What is the difference b/w isset and empty?
 - What are the differences between Print & echo statements?
 - What is juggling in PHP?
 - What is the variable-naming rules you should follow in PHP?
 - Difference between GET, POST and REQUEST method.
 - What is Open-Source Software?
 - What are the differences between Print & echo statements?
 - What is the difference between ""&'?
 - What is a lexical structure of PHP?

UNIT-I

- Q2
- What is variable & constant in PHP? Explain the scope of variables in PHP with example. (6.5)
 - Explain the Super Global Variables in PHP? (6)
- Q3
- Difference between include (), include once (),required (), required once () and header('Location'). (6)
 - What are the different types of Arrays? Explain its benefits. (6.5)

UNIT-II

- Q4
- Explain Session and Write a PHP script to count the number of visits of web page by the user using session. (6.5)
 - What are the differences between Cookies & Sessions? (6)
- Q5
- Differentiate Call by Value & Call by Reference concept with suitable example. (6.5)
 - Write a PHP code to design Contact Us form & provide validation on email & name. (6)

UNIT-III

- Q6
- What is File handling in PHP? Write a PHP script to open, close, read & write into a file. (6)
 - Briefly explain the concept of OOPs and how can you say that PHP is an object-oriented language? (6.5)

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P_{1/2}

P.T.O.

- Q7 a) Write a program using PHP to upload a file. (6)
b) Define Classes & Objects. What are the access modifiers? (6.5)

UNIT-IV

- Q8 a) What is MYSQL? Explain datatypes of MYSQL. Write the various constraints of SQL and Write the steps to design a table using PhyMyadmin. (6.5)
b) Write a program to select all the records and display it in table. (6)
- Q9 a) Write a PHP script to create a database employee and create a employee table with in the database with field name i.e. emp_id, emp_name, emp_salary and emp_designation. Insert a record and select all records of employee table and display in tabular format. (6)
b) In how many ways we can retrieve the data in the result set of MySQL using PHP? (6.5)

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P2/2

END TERM EXAMINATION

SECOND SEMESTER [BCA] JULY 2023

Paper Code: BCA-106

Subject: Digital Electronics

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q. No.1 which is compulsory. Select one question from each unit.

- Q1 Attempt **any five** from the following:- (5x5=25)
- (a) Define Fan-in, Fan-out, of-current, voltage parameter.
 - (b) Perform the following:
 $(BC7.1AE)_{16} = ()_{10}$
 $(574.03)_8 = ()_{16}$
 - (c) Design Full Adder circuit using two Half Adders.
 - (d) Why NAND and NOR Gates are called Universal Gates? How OR gate can be implemented using NOR and NAND?
 - (e) Differentiate between RAM and ROM.
 - (f) What is T-type flip flop and convert SR flip flop to T-type flip flop?
 - (g) Explain the working of Serial-in Parallel-out shift left register.

UNIT-I

- Q2 (a) Realize: (i) $Y = ((A+B)C)'D$ using NOR gate only. (2x2=4)
(ii) $Y = A \odot B \odot C$
- (b) Explain how transistor works as a switch? Give its use in logic circuits. (4)
- (c) Explain the operation and advantages of CMOS. (4.5)
- Q3 (a) Simplify the following Boolean expression using Boolean Algebra Laws: (4)
 $XY + X(Y+Z) + Y(Y+Z) = Y+XZ.$
- (b) Simplify the expression $F = \sum m(0,1,5,9,13,14,15) + d(3,4,7,10,11)$ using the K-Map method. (4)
- (c) Express the function $Y = AB + A'BC + A'B' + A'B' + AC'$ in both (4.5)
(i) Canonical SOP form
(ii) Canonical POS form

UNIT-II

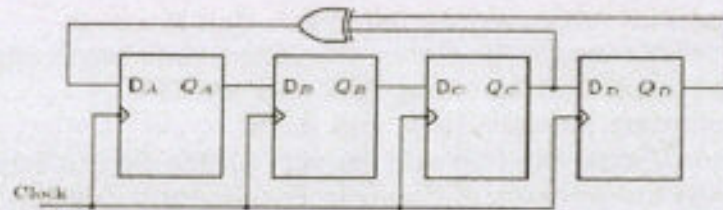
- Q4 (a) Differentiate between De-Multiplexer and Decoder. (4)
- (b) Define Grey Codes and Excess-3 codes. How to convert gray code to binary and vice versa. (4)
- (c) Implement the following expression using 8:1 mux (4.5)
 $F(ABCD) = \sum m(0,1,3,5,7,10,11,13,14,15)$
- Q5 (a) Design a 4-bit Parallel Adder/Subtractor with controlled inverter and explain its working. (6)
- (b) Draw a logic diagram of parity checker and generator/checker. Explain its operation with the help of truth table. (6.5)

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P1/2

UNIT-III

- Q6 (a) Differentiate between Combinational and Sequential Circuits. What is Edge triggering in flip flops? (6.5)
 (b) Explain JK flip flop. What is race around condition and how it is rectified? (6)
- Q7 (a) Explain the Universal Shift Register with diagram, truth table and clock pulse. Give their applications. (6)
 (b) What is Shift Register? The below figure shows four D-type flip-flops connected as a shift register using a XOR gate. The initial state and three subsequent states for three clock pulses are also given. (6.5)



State	QA	QB	QC	QD
Initial	1	1	1	1
After the first clock	0	1	1	1
After the second clock	0	0	1	1
After the third clock	0	0	0	1

What will be the state of QA QB QC QD after the fourth clock pulse?

UNIT-IV

- Q8 (a) Explain Johnson's counter with truth table and clock pulses. Differentiate between asynchronous and synchronous counters. (6.5)
 (b) Design a combinational circuit with PLA, having three inputs, four product terms and two outputs: (6)
 $F1(A,B,C) = \Sigma(0,1,3,4)$, $F2(A,B,C) = \Sigma(1,2,3,4,5)$
- Q9 (a) Explain the concept of PLA and its applications. (4)
 (b) Design Modulo 10 counter with truth table and waveform. (4.5)
 (c) Differentiate between Static and Dynamic RAM. (4)

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P2/2

END TERM EXAMINATION

SECOND SEMESTER [BCA] JULY 2023

Paper Code: BCA-110

Subject: Environmental Studies

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q. No.1 which is compulsory. Select one question from each unit.

- Q1 Write short notes on the following (Any Five):- (5x5=25)
- (a) Importance of Environmental Studies.
 - (b) Components of environment.
 - (c) Sustainability.
 - (d) Ecosystem preservation and conservation strategies.
 - (e) Acid rain.
 - (f) Environmental Management System.

UNIT-I

- Q2 (a) What are the components of environment? Explain by giving suitable illustrations/examples. (6.5)
- (b) Discuss the multidisciplinary nature of environmental studies. (6)
- Q3 (a) Discuss the different components of the atmosphere. (6.5)
- (b) Briefly discuss the following:- (6)
- (i) Climate Change
 - (ii) Earth Summit

UNIT-II

- Q4 (a) What do you understand by 'eco system'? (6.5)
- (b) Elaborate upon the different ecosystem services. (6)
- Q5 (a) What are renewable and non-renewable energy sources. Explain giving suitable examples. (6.5)
- (b) Briefly discuss the following:- (6)
- (i) Food Chain
 - (ii) Ecological succession

UNIT-III

- Q6 (a) Explain the term 'Biodiversity'. (6)
- (b) Elaborate upon the endemic and endangered species of India by giving suitable examples. (6.5)
- Q7 Discuss the following:-
- (a) Value of biodiversity (6.5)
 - (b) Biodiversity conservation strategies (6)

UNIT-IV

- Q8 (a) Discuss the different types of environmental pollution by citing its mitigation strategies. (8.5)
- (b) What are the harmful effects on human health associated with nuclear emissions. (4)
- Q9 (a) Discuss the control measures for various types of wastes. (6.5)
- (b) Write a note on the following:- (6)
- (i) Air quality index
 - (ii) Waste segregation

END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA201

Subject: Computer Networks

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

- Q1 Write short notes of the following (Any five): (5×5=25)
- a) What is the use of topologies in networking?
 - b) What do you understand by Line Configuration?
 - c) Explain Attenuation and Distortion.
 - d) How Synchronous TDM is different from Asynchronous TDM?
 - e) Differentiate between "packet switching" & "circuit switching".
 - f) How IPV4 is different from IPV6?
 - g) What is the difference between single bit error & burst error?

UNIT-I

- Q2 a) Describe the components of Data Communication along with diagram. (5)
b) Explain OSI model. Write the functions and protocols of each layer. (7.5)
- Q3 a) Define networking and its goals. (5)
b) Explain Transmission Impairment in detail. (7.5)

UNIT-II

- Q4 a) What do you understand by Multiplexing? Describe WDM & FDM. (5)
b) Explain Hamming Code with the help of an example. (7.5)
- Q5 a) Define Bit-Stuffing. How it is different from character stuffing? (5)
b) Explain any three error detection methods? (7.5)

UNIT-III

- Q6 a) What do you understand by Routing? Differentiate between adaptive and non-adaptive routing. (5)
b) Describe repeater, router, switch, hub, bridge & gateway. (7.5)
- Q7 a) Differentiate between Distance Vector Routing & Link State Routing. (5)
b) What is subnetting? Describe Unicast Routing Protocols. (7.5)

UNIT-IV

- Q8 a) Compare the TCP header with UDP header. (5)
b) Explain Connection Management with the help of a diagram. (7.5)
- Q9 a) Discuss the design issue of session layer. (5)
b) Describe any five protocols present on application layer with their functionality. (7.5)

END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA-203

**Subject: COMPUTER ORGANIZATION
AND ARCHITECTURE**

Time: 3 Hours

Maximum Marks: 75

**Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit**

- Q1. Attempt the following (**any five**) **[5x5=25]**
- (a) Why are NAND and NOR gates known as Universal Gates? Realize Ex-OR function using only NAND gates.
 - (b) Differentiate De-Multiplexer and decoder.
 - (c) What is instruction cycle? Draw a flowchart for instruction cycle of a basic computer?
 - (d) What is virtual memory and how does it works?
 - (e) Explain the advantage of SIPO over SISO. Discuss their applications.
 - (f) Design 4-bit Adder-Subtractor.

UNIT-I

- Q2. (a) Draw K-Map and simplify the following expression:
- $$f(P, Q, R, S) = \sum m(0, 1, 4, 5, 7, 8, 9, 12, 13, 15) \quad [6.5]$$
- (b) Design a full adder using two half adder and OR gate. **[6]**
- Q3. (a) Reduce the following Boolean expression using Boolean laws.
- $$Y = AB + A'B + AB' + (AB)' \text{ and also design using basic logic gates. } [6.5]$$
- (b) Design a 3:8 decoder using basic logic gates. **[6]**

UNIT-II

- Q4. (a) What is shortcoming in J-K flip flop? Explain how its shortcoming is removed. Describe its operating principle. **[6.5]**
- (b) Design 3-bit synchronous counter and draw output waveform. **[6]**
- Q5. (a) Describe the operation of 4-bit bidirectional shift register with the help of block diagram. **[6.5]**
- (b) Realize D type flip-flop using J-K flip flop. **[6]**

UNIT-III

- Q6. (a) Explain instruction formats and its types using the following expression: $X = (A+B) - (C+D)$. **[6.5]**
- (b) What is register transfer language? Explain with the help of example. **[6]**

P.T.O.

BCA-203
P/2

Q7. (a) Explain the different types of addressing modes in basic computer. [6.5]

(b) What is meant by micro-operation? Explain the term selective set, selective compliment, selective clear micro operation? [6]

UNIT-IV

Q8. (a) What is asynchronous data transfer? Explain different methods of asynchronous data transfer. [6.5]

(b) What is DMA? Draw and explain the DMA controller in details. [6]

Q9. Write short notes on the following:- [12.5]

1. Cache Memory
2. Auxiliary Memory
3. Associative Memory
4. EPROM
5. RAM

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END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA 205 Subject: Object Oriented Programming with C++

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

- Q1. Write the short note on the following:- (2.5X10=25)
- (a) Inline function
 - (b) Describe the various benefits of OOP.
 - (c) New Vs Delete
 - (d) Static data member
 - (e) Copy constructor
 - (f) Virtual base class
 - (g) Friend function
 - (h) Class template
 - (i) This pointer
 - (j) Early Vs Late binding

UNIT-I

- Q2. (a) Explain the following terms: (4)
(i) Literals (ii) Implicit conversion
(b) Write a program that will find out whether the given number is even or odd.
If it is odd number then find out whether it is prime or not? (3.5+5=8.5)
- Q3. (a) Illustrate the comparison between C and C++. (4.5)
(b) Describe the concepts of parameter passing by value, reference and pointer with the help of an example. (8)

UNIT-II

- Q4. (a) Explain the concept of constructor overloading and function overloading. (6)
(b) What do you understand by access specifiers? What are these access specifiers? (6.5)
- Q5. (a) Define a class Teacher with the following specifications: (10)
Private members:
Name 20 characters
Subject 10 characters
Basic, DA, HRA float
Salary float
Calculate () function computes the salary and returns it. Salary is sum of Basic, DA and HRA

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Public members:

Readdata () function accepts the data values and invokes the calculate function.

Displaydata () function prints the data on the screen.

(b) What are the special properties of a constructor? (2.5)

UNIT-III

Q6. (a) How can a data member and member function present in public mode in class be accessed through pointer object? Explain it by taking an example. (6)

(b) Create class COMPLEX and overload binary + operator to add objects. Using friend functions. (6.5)

Q7. Define an inheritance and its advantage? Explain the types of inheritance. (2.5+10=12.5)

UNIT-IV

Q8. (a) What do you mean by generic programming? Write a program to swap the any two different types of variables using function template. (2+4=6)

(b) Create a class Stack that throws Overflow and Underflow exceptions. (6.5)

Q9. (a) Explain the following terms: (6)

(i) seekg () (ii) getline () (iii) write ()

(b) What is the file access mode? Describe the various file modes. (6.5)

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END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA-207

Subject: Principles Of Accounting

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.

- Q1. Attempt any three parts: (3x5=15)
- (a) Explain how Accounting is different from Book -Keeping.
 - (b) What is contra Entry and how it is different from other entries. Give Example.
 - (c) Explain the relevance of accounting information from the perspective of its users.
 - (d) Distinguish Between periodic and perpetual systems of inventory valuation.
 - (e) What is depreciation? What are the contributory factors for decline in fixed assets?
- Q2. What is meant by "Basic Principles of Accounting"? Enumerate the five basic principles of accounting with example? (15)
- Q3. Pass the Journal Entry for the given transactions: (2.5x6=15)
- (a) Started business with cash Rs. 2, 00,000, Goods Rs. 1,00,000, Furniture Rs.50,000.
 - (b) Goods withdrawn by the owner for personal use (Cost Price : Rs. 1000 ,Sale Price :Rs. 1200).
 - (c) Received Rs.1,975 from Ram Manohar in full settlement of his account of Rs. 2,000.
 - (d) Purchased from Hari Lal goods worth Rs. 55,000 at 20% trade discount and 5 % cash Discount terms and paid him half the amount immediately.
 - (e) Received a first and final dividend of 60 paisa in a rupee from the official receiver of Mr. Shankar who owed us Rs.2000.
 - (f) Received Commission of Rs. 2,000 half of which is in advance.
- Q4. On 1st April 2014, Moon Ltd .Purchased a plant for Rs. 10,00,000. On 1st October 2014, an additional plant was purchased costing Rs. 5,00,000. On 1st October ,2015 ,the plant purchased on 1 st April 2014 was sold off for Rs.4,00,000.On 1st Oct 2016 , a new plant was purchased for Rs.12,00,000 and the plant purchased on 1st October ,2014 was sold for Rs.4,20,000 on the same date. (15)

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- Q5. The Following Balances are drawn from the books of M/s Arivnd Mills as on 31-12-2017. (15)

Account	Amount(in Rs)	Account	Amount(In Rs)
Land	1,00,000	Sales	3,00,000
Building	2,00,000	Purchases	1,75,000
Sales returns	10,000	Stock(1-1-17)	25000
Purchase returns	5,000	Debtors	50,000
Bank Overdraft	15,000	Cash in hand	5,000
Creditors	20,000	Salaries	10,000
Wages	12,000	Goodwill	15,000
General Expenses	5,000	Selling Expense	12,000
Bad Debt	1,000	Insurance	1,000
Capital	2,81,000		

Adjustments:

- i) Closing Stock is Rs.30,000.
- ii) Provide for Depreciation @10% on building.
- iii) Salaries yet to be paid Rs. 3,000.
- iv) Write off further bad debt -Rs.1,000.

You are required to prepare a trading and Profit & Loss account and Balance sheet of M/s Arvind Mills.

- Q6. (a) X ltd furnishes the following store transactions for July, 2017:-

1 st July	Opening Balance	200 units Value Rs.2000.
4 th July	Purchase from B & Co.	300 units @ Rs.12 per unit.
7 th July	Issued	400 units
10 th July	Purchased from M & Co.	400units @ Rs 14 per unit.
19 th July	Issued	300 units
22 nd July	Purchased from N & Co.	200units @ Rs 16 per unit.
28 th July	Issued	300 units.
30 th July	Issued	20 units.

Calculate Cost of closing inventory and Cost of goods sold under perpetual system using FIFO and Weighted Average method. (10)

- (b) Define "Inventory "Why proper valuation of inventory important? (5)

- Q7. Explain the Following: **(Attempt any three)** (3x5=15)

- a) Branches of accounting
- b) Objectives and Limitations of Accounting
- c) Voucher system
- d) Depreciation, depletion and Amortization with example.

- Q8. Distinguish between the following :**(Attempt any three)** (3x5=15)

- a) Trading and Profit & loss Account.
- b) FIFO and LIFO method of inventory valuation.
- c) Straight line and Written down value method of Depreciation.
- d) Cash Discount and Trade Discount.

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END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCAT-211 Subject: Basics of Python Programming

Time: 3 Hours Maximum Marks: 75

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

Q1 Answer any five the following: (5x5=25)

- a) Explain the key features of Python?
- b) Explain Mutable and Immutable Data types with example.
- c) Consider a list $L = [10, 20, 30, 40]$. Find the output of following statements.
 - a. $L[0] = L[0] + 2$
 - b. $L = L + 2$
 - c. $L = L * 2$
 - d. $L[1] = 50$
 - e. $L = L[1:-1]$
- d) Explain the following functions with example.
 - i) update() ii) copy()
- e) Explain the Dynamic Typing feature of Python with example.
- f) Write the difference between indexing and slicing with example.

UNIT-I

- Q2 a) Explain the following terms:- (3½)
- (i) Pass (ii) Continue
- b) Write a python script to print Fibonacci series for first 20 elements. (4)
- c) Explain Entry - Controlled loops in Python with the help of programs. (5)

OR

- Q3 a) What is the difference between interactive mode and script mode in python? (3)
- b) Write a program that reads a string and check whether it is a Palindrome or not. (5)
- c) Explain the following functions with example. (4½)
- 1. lstrip() 2. swapcase() 3. ispace()

UNIT-II

- Q4 a) What is Tuple? How to define and access the elements of Tuple? Explain it with a code. (6)

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b) What is the output of the following code snippets? (4)

```

1. t1 = (3)
   t2 = (4,5,6)
   t3 = t1 + t2
   print(t3)
2. d = dict()
   d['left'] = '<'
   d['right'] = '>'
   print(d['left'] and d['right'] or d['right'] and d['left'])
   print(d['left'] and d['right'] and d['right'] and d['left'] and d['end'])

```

c) How are Dictionaries different from lists? (2%)

OR

a) What is Dictionary? What are the different ways to create Dictionary? (5)

b) Explain the following methods of lists with example: (4)

1. extend()
2. insert()

c) Given a tuple namely City storing cities names ('Tokoyo', 'Delhi', 'Seoul', 'Jaipur', 'Paris', 'Luxembourg', 'Berlin', 'London', 'Moscow') as elements. Write a program to print names of the cities as well as their index in the index range 2 to 6, both inclusive. (3%)

UNIT-III

Q6 a) What is function? Explain the different types of arguments in function in Python. Illustrate with the help of programs. (6%)

b) Predict the output of the following code snippet: (2)

```

def add(a,b,c):
    print(x+y+z)
c = add(6,16,26)

```

c) Write a program to find factorial of a number using recursion. (4)

OR

a) What is the difference between Package and Module? What are the different ways to import a module in a program? (5)

b) Write a program that reads a number, then converts it into octal and hexadecimal equivalent using built-in functions of Python. (3%)

c) Differentiate between local and global variables in python with the help of a program. (4)

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UNIT-IV

Q8 a) Explain the following built-in methods of file. (6)

- (i) read(n)
- (ii) seek()
- (iii) write(lines)
- (iv) tell()

b) List the advantages of NumPy Arrays over nested python list. (3%)

c) Explain the following functions with respect to Matplotlib. (3)

1. barh()
2. legend()

OR

Q9 a) Explain the different file opening modes with example. (8)

b) Explain the following function with respect to NumPy (4%)

- (i) reshape()
- (ii) ndim()

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(Please write your Exam Roll No.)

Exam Roll No.¹².....

END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCAT-213

Subject: Cyber Security

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit.

- Q1. Write short notes on the following (Any Five): (5x5=25)
- Explain the concept of Data Security Council of India.
 - Define main techniques hackers can use to get hold on your password.
 - Define Digital Signature algorithm.
 - Write down the steps involved in computer forensic investigation.
 - Explain the differences between Virus, Worms, and Trojan horse.
 - Compare between Symmetric key encryption and Asymmetric key encryption.
 - What are the categories of Computer Society?
 - Explain the concept of IPC 1980.

UNIT-I

- Q2. (a) What is Cybercrime? How it is classified? What are the different types of cybercrimes towards an individual? (6.5)
(b) Explain various criminal attacks in detail? (6)
- Q3. (a) What is the data security consideration? Explain in this reference Data Backup security, Data archival security and Data disposal consideration. (6.5)
(b) Elaborate the concept of cyberstalking in detail. (6)

UNIT-II

- Q4. (a) Define DoS and DDoS Attacks in brief. What are the techniques behind such attacks? (6.5)
(b) Explain the term Hacking. What are the various classifications of hackers? (6)
- Q5. (a) What is password cracking? List four guidelines that need to be followed to avoid password cracking. (6.5)
(b) Explain the term Phishing. Write down various methods or activities which constitute phishing. (6)

UNIT-III

- Q6. (a) Explain the architecture of firewall. What are the various characteristics of firewall? (6.5)
(b) Explain the S-MIME protocol for secure E-Mail. (6)

P.T.O.

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P.V.

- Q7. (a) Explain the concept of cryptography by using the diagrammatical approach of it? Define the transformation method of it. (6.5)
(b) Explain the following terms: (6)
(a) Bit-stream image
(b) Chain of custody
(c) Evidence custody form

UNIT-IV

- Q8. (a) Explain Software piracy. Write down various activities that constitute software piracy. (6.5)
(b) What are the requirements to set up a workstation for computer forensics? (6)
- Q9. (a) What are the different acquisition tools in forensics? Explain. (6.5)
(b) Explain the legal process to conduct computer investigation for potential criminal violations of law. (6)

UNIT I

Q1. Explain the concept of digital evidence. What are the different types of digital evidence? (6.5)

Q2. Explain the concept of digital evidence. What are the different types of digital evidence? (6.5)

UNIT II

Q3. Explain the concept of digital evidence. What are the different types of digital evidence? (6.5)

Q4. Explain the concept of digital evidence. What are the different types of digital evidence? (6.5)

UNIT III

Q5. Explain the concept of digital evidence. What are the different types of digital evidence? (6.5)

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END TERM EXAMINATION

THIRD SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA 221

Subject: Principles of Management & Organizational Behaviour

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

- Q1. Write short notes of the following (Any Five): (5x5=25)
- (a) Define self-learning.
 - (b) Discuss different roles and function of a Manager.
 - (c) Differentiate between authority and responsibility.
 - (d) Stereotyping.
 - (e) Describe theory of cognitive dissonance.
 - (f) Halo effect.

UNIT-I

- Q2. (a) "Management is the art of getting things done". Do you agree? Give reasons. (6)
- (b) Explain the Managerial Levels in an organization. (6.5)
- Q3. (a) How pertinent today is Taylor's assumption that management and labour had a common cause. Explain your view with justification. (7.5)
- (b) Differentiate between Effectiveness Vs Efficiency. (5)

UNIT-II

- Q4. (a) 'Decision making is the essence of managing.' Comment and explain the features of a rational decision. (7)
- (b) "Planning is mere ritual in the fast-changing environment." How far do you agree with this statement? Why? (5.5)
- Q5. (a) "Planning is nothing without control and control is aimless without planning". Explain the statement with examples. (6.5)
- (b) Differentiate between Long term planning and short term planning. (6)

UNIT-III

- Q6. (a) "Organizational Behavior represents interactions among individuals, groups and the organization. Elucidate. (6)
- (b) A large unit manufacturing goods which has been known for its HR policies and fringe benefits is facing the problem of low productivity and high absenteeism. How should the management improve the organizational climate? (6.5)
- Q7. (a) "Motivation is the core of management". What are the suggestion would you offer to the management to motivate its staff? (5.5)

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- (b) Distinction between Maslow and Herzberg theories of motivation. What is the role of money/monetary benefits in motivating the managers? (7)

UNIT-IV

- Q8. (a) Define Organizational Behavior and explain the need of understanding human behavior in organizations. (6)
(b) Explain the concept of personality. Discuss personality traits that affect the human behavior. (6.5)
- Q9. (a) 'If organizational change is to be real change, it has to happen at the level of culture.' Elaborate this statement. (6.5)
(b) "Perception is a process of input- throughput- output Analysis". Comment and examples of perceptual sets from work settings. (6)

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END TERM EXAMINATION

FOURTH SEMESTER [BCA] JULY 2023

Paper Code: BCA-204

Subject: Software Engineering

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

- Q1 Answer the following questions briefly: (5x5=25)
- a) What are the characteristics of software?
 - b) What is software re-engineering?
 - c) Write short notes on DFD and ER diagrams.
 - d) What is software review and software inspection?
 - e) What is the difference between validation and verification?

UNIT-I

- Q2 a) What do you mean by requirements elicitation? Discuss in brief different requirements elicitation techniques. (6)
- b) Explain Agile Model with its advantages and disadvantages? (6.5)

OR

- Q3 a) Draw and label well described Use Case Diagram and level 1 DFD for hotel management system. Make assumptions as required. (6)
- b) What is SRS? Describe the nature and characteristics of SRS. Why is it important? (6.5)

UNIT-II

- Q4 a) Explain Halstead Software Science metrics? (6)
- b) Compute the function point value for a project with the following domain (6.5)

Number of user inputs	=	32
Number of user outputs	=	60
Number of user inquiries	=	24
Number of files	=	08
Number of external interfaces	=	2

Assume that all complexity adjustment values are average. Assume that 14 algorithms have been counted.

OR

- Q5 a) For a program with the number of unique operator's $n1=40$ and number of unique operands $n2=60$, $N1=16$ and $N2=21$ compare the followings: (6)
- i) Program Volume
 - ii) Potential Volume
 - iii) Program Level
 - iv) Program Difficulty
 - v) Effort
 - vi) Time
- b) Explain different models of COCOMO Model. (6.5)

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UNIT-III

- Q6 a) Explain different types of coupling. (6)
b) Explain software quality assurance and its activities. (6.5)
OR
Q7 a) Explain different types of Cohesion. (6)
b) What do you understand by Configuration Management? (6.5)

UNIT-IV

- Q8 a) What is software maintenance? Describe different categories of software maintenance. (6)
b) Explain Functional Testing with example. (6.5)
OR
Q9 a) Explain maintenance tools and its techniques (6)
b) Explain Structural Testing using example. (6.5)

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END TERM EXAMINATION

FOURTH SEMESTER [BCA] JULY 2023

Paper Code: BCA-206

Subject: Introduction to Management
and Entrepreneurship

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five question in all including Q No 1 which is compulsory.
Select one question from each unit.

- Q1 Attempt **any ten** of the following: (2.5x10=25)
- Differentiate between Entrepreneur and Manager.
 - How would you define an Entrepreneurship?
 - What are the challenges faced by an entrepreneur?
 - Briefly describe the state of entrepreneurship in India in early years of independence.
 - Define the role of an entrepreneur as a mentor and role model.
 - Who is an Intrapreneur and how is it different from an entrepreneur?
 - Specify the factors that affect the growth of economic development of a country.
 - Can Creativity and Innovation be cultivated. Comment.
 - What are the hindrances to innovation in entrepreneurship?
 - Explain key principles of creative problem solving.
 - Who in your opinion are modern entrepreneurs? Justify your answer through real world modern entrepreneur.

UNIT-I

- Q2
- Explain in detail various types of Entrepreneurs? Write an example of each type of Entrepreneur. Also, classify the types of Entrepreneurs specified by Clarence Danhof. (8)
 - What are the general characteristics and personality traits of an entrepreneur? (4.5)
- Q3
- Give description of any 5 agencies that support Entrepreneurship development in India. (6)
 - Explain various types of Entrepreneurships. Also state an example of each. (6.5)

UNIT-II

- Q4
- What is creativity? Explain the process and steps of creativity. (6)
 - What is SWOT analysis? Perform SWOT taking any example from the industry. (6.5)
- Q5
- What is innovation? Explain the process and steps of innovation. (6)
 - What is creative problem solving? Explain the techniques of creative problem solving. (6.5)

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UNIT-III

- Q6 a) What is out-of-box thinking? How can it be developed in an individual? (6)
b) What is the role of global entrepreneurs in the development of the country? Identify any two Indian global entrepreneurs and describe their journey to success. (6.5)
- Q7 a) Explain the roles and responsibilities of an Entrepreneur as an Influencer. Identify any three Indian Entrepreneurs who are also the influencers. (6)
b) Define Design Thinking? Explain the stages of Design Thinking and specify the examples of design thinking. (6.5)

UNIT-IV

- Q8 a) Explain the role and importance of Leadership in entrepreneurship. Can Leadership be developed? Justify. (6)
b) What is the difference between Leadership and Management? Identify key factors that clearly explain the difference between the two. (6.5)
- Q9 a) Differentiate between entrepreneurship and business. (5)
b) Define business plan. What is its significance in entrepreneurship? Explain the process and factors important to consider while creating a business plan for your startup. (7.5)

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END TERM EXAMINATION

FOURTH SEMESTER (BCA) JULY-2023

Paper Code: BCA-222

Subject: Digital Marketing

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q. no.1 which is compulsory. Select one question from each unit.

- Q1 Attempt **any five** of the following:-- (5x5=25)
- a) How do digital marketing differ from traditional marketing?
 - b) Examine the channels of digital marketing?
 - c) Describe the role of Influencer marketing in social media marketing?
 - d) What do you mean by pay-per-click?
 - e) State the meaning of content marketing with suitable examples.
 - f) Explain the role of keywords in SEO.
 - g) What do you mean by Google Adwords.
 - h) What are key performance indicators in Web analytics?

UNIT- I

- Q2 Explain the concept of Digital Marketing. What are the key characteristics and benefits of Digital Marketing. How has digital marketing evolved till date. (12.5)

OR

Explain in detail the POEM framework in Digital Marketing strategy. Explain its benefits and challenges? (12.5)

UNIT- II

- Q3. Identify the strengths and capabilities of the different digital and social media platforms which can help in marketing a new venture. (12.5)

OR

Discuss the role and importance of social media marketing in online branding. Explain with the help of an example. (12.5)

UNIT- III

- Q4 What is SEO? Explain SEO phases or life cycle of SEO? Explain the difference between on-page and off-page SEO. (12.5)

OR

Explain the following: (12.5)

- a) Paid marketing
- b) Blog marketing
- c) Types of campaigns in digital marketing

UNIT- IV

- Q5 What is Web analytics? How it contributes and benefits Digital Marketing? Why is web analytics is important for company performance? (12.5)

OR

Write short note on: (12.5)

- a) Canva or Hootsuite
- b) Google analytics or Behavior analytics

END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA301

Subject: Operating System

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit.

- Q1. Answer the following (Do **any ten** parts): (2.5x10=25)
- a) Explain context switching. How can context switching time be reduced?
 - b) What is Throughput, Turnaround time, waiting time and Response time?
 - c) What are the tradeoffs in handheld systems?
 - d) Explain multithreading models.
 - e) Why do we say that the operating is a resource manager?
 - f) What is an address space? Differentiate between memory address space and I/O address space.
 - g) What is a lightweight process, and why is it called so?
 - h) What is the difference between *starvation* and *deadlock*? Does one necessarily imply the other?
 - i) Differentiate between SCAN and C-SCAN disk scheduling algorithm.
 - j) What is the need of virtual memory?
 - k) What is the principle of page replacement policy?
 - l) Explain general model of file system.
 - m) What are the contents of Process Control Block?

UNIT-I

- Q2 i) Define the properties of the following operating systems. (8)
- a) Batch
 - b) Time sharing
 - c) Real time systems
 - d) Parallel systems
- ii) What is the difference between paging and Segmentation? (4.5)
- Q3 Consider the following reference string: (12.5)
- 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6
- How many page faults will occur for a. FIFO b. LRU and c. OPT page replacement algorithms?
- Assuming four and five frames. (All frames are initially empty).

UNIT-II

- Q4 Consider the following set of processes, with their CPU-burst time and arrival time given in milliseconds: (12.5)

Process	Arrival Time	Burst Time	Priority
P1	0	4	4
P2	3	6	2
P3	5	5	1
P4	8	6	3

P.T.O.

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P 1/2

- a) Draw four Gantt charts illustrating the execution of these processes using FCFS, SRTN, RR (Time Slice=2) and preemptive priority scheduling.
- b) What is the turnaround and waiting time of each process for each of the scheduling algorithms in part (a)?
- c) Which of the schedules in part (a) results in the minimal average waiting time?
- Q5 a) Explain producer consumer problem with the help of algorithm. (6.5)
- b) Give a monitor based solution for dining philosopher's problem. (6)

UNIT-III

- Q6 i) Distinguish between: (6)
- a) Multiplexing and buffering
- b) Channels and Control Units
- c) Dedicated and Shared Devices
- ii) What is the way to recover from deadlock? (6.5)
- Q7 Consider the following current resource allocation state: (12.5)

Process	Allocation			Max			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	2	2	3	3	6	8	7	7	10
P2	2	0	3	4	3	3			
P3	1	2	4	3	4	4			

- i) Is the current allocation state safe?
- ii) Would the following requests be granted in the current state?
- Process P1 requests (1, 1, 0)

UNIT-IV

- Q8 a) Explain directory structures in detail. (6)
- b) Differentiate between contiguous and linked allocation methods of a file. (6.5)
- Q9 a) What is the use of Access matrix in protection? (4)
- b) Explain different threats on systems in detail. (8.5)

END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA305

Subject: E-Commerce

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

- Q1 Attempt any five: (5x5=25)
- SSL Protocol
 - Steps in setting up business on Internet
 - Extranet
 - Types of Security attacks
 - Call Centre operations
 - EDI enabled procurement process.

UNIT-I

- Q2 a) What do you understand by the term Trade Cycle? Explain its various types with the help of an example. (7.5)
- b) How is traditional commerce different from e-commerce? Also explain the operational and strategic benefits of E-commerce. (5)

OR

- Q3 a) Define EDI. Give its layered architecture. (7.5)
- b) Explain how web traffic analysis can be helpful for a website owner in increasing the number of visitors. (5)

UNIT-II

- Q4 a) Explain the various types of Electronic Payment systems with the help of examples. (7.5)
- b) Explain digital signatures and its usage. (5)

OR

- Q5 a) Distinguish between Public and Private Key cryptography taking help of suitable examples. (7.5)
- b) What is the significance of having VPN? Also, state its architecture. (5)

UNIT-III

- Q6 a) What do we understand by the term Business Process Reengineering? State the various steps involved in Business Process Reengineering in detail. (7.5)
- b) Explain Business Process Management. (5)

P.T.O.

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P_{1/2}

OR

- Q7 a) Explain the significance of supply chain management with the help of suitable examples. State the various types of supply chain. **(7.5)**
- b) Explain Porter's value chain model in detail. **(5)**

UNIT-IV

Q8 Discuss the major provisions contained in the IT Act 2000. How are they important in the current era? **(12.5)**

OR

Q9 How E-commerce can contribute in enhancing user satisfaction? Explain by taking the example of Airline Reservation. **(12.5)**

BCA-305
P_{2/2}

END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA313

Subject: Web Based Programming

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

- Q1 Attempt **any ten** of the following (2.5x10=25)
- a) What is a web server?
 - b) Difference between static and dynamic web page.
 - c) Explain split() in PHP
 - d) Difference between GET(), POST() and REQUEST()
 - e) How can you send a mail in PHP? Explain with example.
 - f) Site suitable differences between WAMP, MAMP and LAMP
 - g) What is Juggling in PHP
 - h) Explain with example- Isarray(), Shuffle, End, explode()
 - i) Differentiate between PHP and Javascript.
 - j) What is the difference \$Test and \$\$Test?
 - k) Difference between Strongly typed and Loosely typed language.
 - l) What is an open source software? Give atleast 3 examples.

UNIT-I

- Q2 a) Write down the steps for installation of Apache, IIS and PWS in windows operating system. (6.5)
- b) Differentiate between (6)
- i. Echo and print
 - ii. == and === in PHP

OR

- Q3 a) What is a web application? What is the difference between traditional web application and AJAX application? (6.5)
- b) Differentiate between local and remote server. (6)

UNIT-II

- Q4 a) What are the different control statements in PHP? Explain with the help of suitable examples. Differentiate between while and do while statement. (7.5)
- b) Write a program using function to input 100 numbers from users and display the prime numbers. (5)

OR

- Q5 a) What are the different types of arrays? Create an associative array using countries as keys, states as values, and transform it into 2-D array. Display the data as a table. (7.5)
- b) Explain call by value and call by reference with suitable examples. (5)

P.T.O

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UNIT-III

- Q6 a) What are cookies? How do you create and delete a cookie? Create a cookie BCA_313 and set the time to 12:00pm of any date. Delete the cookie passing the using date time parameter. **(6.5)**
- b) Create a bank registration form with the following fields-Name, Date of Birth, Address, mobile No and email. The bank portal and session should expire if the system is idle for more than 2 mins. **(6)**
- OR**
- Q7 a) Define constants in PHP. Explain implicit and explicit casting with the help of example. What are the different types of error in PHP? **(6)**
- b) What is file handling in PHP? Write a PHP script to open, close, read and write in a file. **(6.5)**

UNIT-IV

- Q8 a) Write a PHP database Employee and create the table emp_details with the following fields-emp_name, emp_desig, emp_sal, emp_dob and perform the following
- i) Add atleast 5 records
 - ii) Display the records
 - iii) Modify the second record with salary Rs 20,000/-
- (8)**
- b) Write the connectivity and selecting database statement which is used to connect PHP and MySQL. **(4.5)**
- OR**
- Q9 a) What is MySQL? Explain different data types in MySQL with the help of suitable example. **(6.5)**
- b) What is the difference between mysql_fetch_object and mysql_fetch_array **(6)**

UNIT V

BCA-313
P2/2

END TERM EXAMINATION

SIXTH SEMESTER [BCA] JULY 2023

Paper Code: BCA-302

Subject: Data Warehouse and Data Mining

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

- Q1 Answer any ten of the following. (2.5x10=25)
- a) A dimension table is wide; the fact table is deep. Justify.
 - b) Define the term support and confidence used in association rule mining.
 - c) What is meant by spatial database?
 - d) Why data transformation is essential in the process of knowledge discovery?
 - e) List and describe the five primitives for specifying a data mining task.
 - f) Data warehouse is the only viable means to resolve the information crisis and to provide strategic information. Justify
 - g) What is meant by slice and dice in context of OLAP, with example?
 - h) How operational system makes the wheels of the business turn? Comment.
 - i) Compare OLTP and OLAP systems.
 - j) Define support and confidence
 - k) What is meta data? Explain the use of meta data in data warehouse?
 - l) Differentiate between supervised and unsupervised learning.

UNIT-I

- Q2 a) Explain the steps involved in data mining when viewed as a process in knowledge discovery. (6.5)
 b) Imaging that you need to analyze 'All Electronics' sales and customer data (Data related to the sales of electronic items). You note that many tuples have no recorded value for several attributes such as customer income. How can you go about filling in the missing values for this attribute? Explain some of the methods to handle the problem. (6)
- OR**
- Q3 a) Discuss data integration and data transformation in detail. (6.5)
 c) What are the major issues and challenges faced in data mining? How do these issues impact the accuracy, efficiency, and reliability of the results obtained from data mining? (6)

P.T.O.

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UNIT-II

- Q4 a) Draw and explain various components of three tier data warehouse architecture. (6.5)
 b) What is OLAP (Online Analytical Processing) and how does it relate to data warehousing? How does OLAP enable interactive and multidimensional analysis of data stored in a data warehouse? (6)

OR
 Q5 Consider the following transactional data. Find frequent item sets using Apriori and FP growth. Apply the association rule mining to get the association rules with min support of 2 and confidence of 50%. (12.5)

T.ID.	List of Items IDs
T100	11, 12, 15
T200	12, 14
T300	12, 13
T400	11, 12, 14
T500	11, 13
T600	12, 13
T700	11, 13
T800	11, 12, 13, 15
T900	11, 12, 13

UNIT-III

- Q6 a) What is cluster analysis? Discuss major clustering methods. (6.5)
 b) What is prediction accuracy and how is it measured in classification and prediction tasks? Can you explain different accuracy measures, such as accuracy, precision, recall, F-measure, and ROC curve? How do these measures help in evaluating the performance of classification models? (6)

OR

- Q7 a) What is classification by back propagation and how does it apply to neural networks? Can you explain the concept of feed-forward neural networks and the training process using back propagation algorithm? What are the benefits and challenges of using neural networks for classification tasks? (6.5)
 b) Can you explain the concept of partitioning methods in cluster analysis? How do algorithms like k-means, k-medoids, and CLARA divide the dataset into distinct partitions or clusters based on similarity or distance measures? What are the advantages and limitations of partitioning methods? (6)

P.T.O.

BCA-302
 P2/3

UNIT-IV

- Q8 a) How does data mining enable multidimensional analysis and descriptive mining of complex data objects? Can you explain how data mining techniques can be applied to analyze data with multiple dimensions, such as time, geography, and product, and uncover meaningful patterns and insights? (6.5)

b) What is the process of mining spatial databases? Can you discuss how spatial data, such as geographic coordinates and spatial relationships, can be analyzed using data mining techniques to discover patterns, trends, and relationships in spatial datasets? What are some common algorithms and methods used for mining spatial databases? (6)

OR

- Q9 a) What are some real-world applications of data mining across various industries and domains? Can you provide examples of how data mining has been successfully applied in areas such as finance, healthcare, marketing, fraud detection, and customer relationship management? How has data mining contributed to decision-making and improving business processes in these applications? (6.5)

b) How does data mining apply to multimedia databases? Can you explain how data mining techniques can be used to analyze multimedia data, including images, videos, and audio files, and extract meaningful patterns and knowledge from these complex data types? What are the challenges and opportunities in mining multimedia databases? (6)

BCA-302
 P3/3

END TERM EXAMINATION

SIXTH SEMESTER [BCA] JULY 2023

Paper Code: BCA-304

Subject: Mobile Computing

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q.No. 1 which is compulsory. Select one question from each unit.

- Q1 Attempts all parts of the following: (5x5=25)
- a) What are the main obstacles that occurred in mobile communications?
 - b) Briefly describe DAMA, PRMA, and MACA.
 - c) Explain in detail about GSM services.
 - d) Explain the challenges and pitfalls in the making of WAP.
 - e) Using Current Web Technologies for Wireless Application.

UNIT-I

- Q2 a) Discuss the multipath propagation during wireless transmission. (5)
b) What is modulation? Explain with Amplitude Shift Keying, Frequency Shift Keying and Phase Shift Keying. (7.5)
- Q3 a) What is additional signal propagation effects? (5)
b) Define Direct Sequence Spread Spectrum and Frequency Hopping Spread Spectrum. (7.5)

UNIT-II

- Q4 Explain the following:
- i) What is Pure ALOHA and Slotted ALOHA? (4.5)
 - ii) Difference between Hidden and Exposed. (4)
 - iii) Terminal Near and Far Terminals. (4)
- Q5 a) Briefly describe multi path propagation mechanism in mobile Communication. What are its effects? (5)
b) Explain the term interference in the space, time, frequency and code domain. What are the counter measures in FDMA and CDMA systems? (7.5)

UNIT-III

- Q6 a) What services for the mobile internet? Explain its business opportunities. (6.5)
b) Explain the following : (i) <anchor> (ii) <option> (iii) <head>. (6)
- Q7 a) Explain the WBMP Image Format with suitable example. (6.5)
b) What is the difference between Template and Card? (6)

UNIT-IV

- Q8 How many types of operators used in WML Script? Explain all with suitable example. (12.5)
- Q9 a) Discuss the elementary knowledge of libraries using String, WML Browser & Dialogs. (6.5)
b) What is WML script program? Explain access pragma vs meta pragma. (6)

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END TERM EXAMINATION

SIXTH SEMESTER (BCA) JULY-2023

Paper Code: BCA-306

Subject: Linux Environment

Time: 3 Hours

Maximum Marks :75

Note: Attempt all questions as directed. Internal Choice is indicated.

- Q1 Attempt **any ten** of the following questions (10x2.5=25)
- (a) Explain the architecture of Linux.
 - (b) What are the similarities between LINUX & UNIX?
 - (c) What is mounting and unmounting? Explain.
 - (d) Explain the Bootstrap loader in LINUX.
 - (e) How to execute multiple commands in a single command?
 - (f) Explain BASH Shell in LINUX.
 - (g) What is process table in LINUX kernel?
 - (h) Define the IPC?
 - (i) Define the Kernel Architecture?
 - (j) Explain EXT4 in LINUX.
 - (k) Define the system call ptrace?

UNIT-I

- Q2 (a) Explain the file system architecture of LINUX. (6.5)
(b) Differentiate between the `--help` and `man` command with example. (6)

OR

- Q3 (a) Explain the usage of following commands (**Any five**): (5x2=10)
(a) Cut (b) tr (c) diff (d)uniq (e)wc (f) sort (g) tail (h) chmod (i) cat (j) grep (k)proc (l) gzip (m) ps (n) gunzip (o) comm. (p) sed (q) od (r) tre
- (b) Write the command for the following operations: (2.5)
i Create a file named "textfile" with text "Hello World"
ii Copy the file "textfile" in a new file named "textfile copy"

UNIT-II

- Q4 (a) Explain the concept of redirection operator in LINUX with example. (6.5)
(b) What are different modes of vi editor and also write the command/keys used for switching between these modes. (6)

OR

- Q5 (a) Explain different types of file permissions in LINUX and also the command used for checking and manipulating the permissions. (6.5)
(b) Differentiate between the tar, gzip and gunzip. (6)

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UNIT-III

- Q6 (a) Write a short note on su command and explain the differences between su and root user. (6.5)
(b) Write a shell script to print greatest of three numbers entered by the user. (6)

OR

- Q7 (a) Write a shell script to generate the odd and even number series between the ranges given by user. (6.5)
(b) What is sed? Explain the different purpose of sed with example. (6)

UNIT-IV

- Q8 (a) Explain the role of a process descriptor in LINUX. (6)
(b) Explain the usage of system calls in LINUX with example. (6.5)

OR

- Q9 (a) Answer **any five** of the following: (12.5)
(i) Explain nice and renice.
(ii) Linux scheduling algorithm.
(iii) Differentiate between awk and gawk.
(iv) Roles and responsibility of LINUX kernel.
(v) Different states of a process.
(iv) Define any 3 types of shells.

BCA-306

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END TERM EXAMINATION

SIXTH SEMESTER [BCA] JULY-2023

Paper Code: BCA-308

Subject: Multimedia & Its Applications

Time: 3 Hours

Maximum Marks :75

Note: Attempt five questions in all including Q. no.1 which is compulsory. Select one question from each unit.

- Q1 Answer **any five** of the following: (5x5=25)
- (a) What is multimedia, and how is it different from traditional media? [5]
 - (b) What is streaming media? Discuss its advantages and applications. [5]
 - (c) What are the different types of media channels and platforms available for media consumption today? [5]
 - (d) What are the different image file formats commonly used in multimedia applications? Explain their characteristics and best use cases [5]
 - (e) Discuss the role of multimedia in the gaming industry. How does multimedia enhance the gaming experience? [5]
 - (f) Explain the process of video editing in multimedia production. What software tools are commonly used for video editing? [5]

UNIT-I

- Q2 What are the key stages involved in the production of multimedia content? [12.5]
- Q3 (a) Explain the process of storyboarding in multimedia production. How does it help in planning and organizing the content. [6]
(b) Explain the concept of multimedia authoring tools. What are some popular tools used for creating multimedia content? [6.5]

UNIT-II

- Q4 (a) Explain the concept of compression in multimedia. Discuss the advantages and disadvantages of compression techniques? [6.5]
(b) Describe the various elements of multimedia, including text, images, audio, video, and animations? [6]
- Q5 (a) Differentiate between Lossy and Lossless compression techniques with example. [6]
(b) Describe the process of digitizing analog audio and video signals for multimedia applications? [6.5]

P.T.O.

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P_{1/2}

UNIT-III

- Q6 (a) Differentiate between Internet and www with example? [3.5]
(b) Write short notes on: [3x3=9]
i) Web Server
ii) Web Browser
iii) Plug-ins
- Q7 (a) What is HTML? What are the tags/elements in HTML that are useful in making multimedia applications. [6]
(b) What are the challenges and opportunities presented by the digital era in terms of media consumption and access to information. [6.5]

UNIT-IV

- Q8 Discuss the future trends and advancements in multimedia technology and applications? [12.5]
- Q9 (a) Explain the concept of Virtual Reality (VR) and its applications in multimedia. [6.5]
(b) Explain the concept of interactivity in multimedia applications. Provide examples of interactive multimedia? [6]

BCA-308
P2/2

END TERM EXAMINATION

SIXTH SEMESTER [BCA] JULY-2023

Paper Code: BCA-312

Subject: Artificial Intelligence

Time: 3 Hours

Maximum Marks:75

Note: Attempt five questions in all including Q. no.1 which is compulsory. Select one question from each unit.

- Q1 Attempt **any Five** from the following (5x5=25)
- (a) What is Production System explain its characteristics?
 - (b) Compare Depth first Search with Best First Search by providing suitable applications?
 - (c) Describe Constraint Satisfaction Problem with Example?
 - (d) Describe Some applications of AI? With its Types?
 - (e) How AI is different form Machine Learning?
 - (f) What is the Difference between Syntactic and Semantic Processing
 - (g) What are State space? Why they are important? Show the State spaces for TIC -TOE game?

UNIT-I

- Q2 (a) Explain the following search algorithms with example: (3x2=6)
- (i) A*
 - (ii) Hill Climbing
- (b) What are the Various Heuristic Search Techniques? Explain with Suitable Example? (6.5)
- Q3 (a) What are the various types of agents in AI? Write PEAS for Driverless Vehicle? (6)
- (b) Discuss various problems in Hill Climbing Algorithm and how they can be prevented? (6.5)

UNIT-II

- Q4 (a) What is representing instances and is-a relationship? (6.5)
- (b) Difference between Predicate and Propositional Logic? Provide example. (6)
- Q5 (a) What Knowledge Representation is necessary? Explain with Example? (6.5)
- (b) What are the Various types for Knowledge representations? (6)

UNIT-III

- Q6 (a) What is Natural Language Processing? and Explain its applications? (6.5)
- (b) Write a short notes on different types of Learnings? (6)

P.T.O.

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1/2

- Q7 (a) How learning with example is different from Rote Learning? (6.5)
(b) What is the difference between Discourse and pragmatic processing? Explain with suitable example? (6)

UNIT-IV

- Q8 (a) Write a LISP for computing the Average of first five Whole Numbers? (6)
(b) Differentiate between Simulation and Synthesis? And Describe any one language used for AI Modelling? (6.5)
- Q9 (a) Draw the Block diagram for Expert System? And Explain each Block? (6)
(b) Explain any one application of Expert system in Detail? (6.5)

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P2/2

END TERM EXAMINATION

SIXTH SEMESTER [BCA] JULY-2023

Paper Code: BCA-314

Subject: Computer Network &
Information Security

Time: 3 Hours

Maximum Marks:75

Note: Attempt five questions in all including Q. no.1 which is compulsory. Select one question from each unit.

Q1 Answer any five of the following:

[5x5=25]

- (a) What is a Denial of Service (DoS) attack, and how can it impact a network? Discuss common mitigation techniques? [5]
- (b) What is the difference between symmetric and asymmetric encryption algorithms? Explain with example. [5]
- (c) Describe the concept of a Virtual Private Network (VPN) and its role in securing network communications. [5]
- (d) What is a Man-in-the-Middle (MitM) attack? Describe the techniques used and how to prevent them [5]
- (e) Describe the principles and advantages of using a strong password policy to enhance network security? [5]
- (f) Explain the working of Digital Signature Scheme? [5]

UNIT-I

Q2 (a) What is Information Security and explain its attributes in detail.[6]

(b) What is the concept of network access control? Discuss the various techniques and technologies used for network access control? [6.5]

Q3 (a) What is Cipher? Differentiate between stream and block ciphers.[6.5]

(b) Write short notes on: (any two) [2x3=6]

- (i) Trojan Horse
- (ii) Logic bombs
- (iii) Cryptography

UNIT-II

Q4 (a) Write Short notes on:

- (i) Public Key Infrastructure
- (ii) Authentication & Authorization
- (iii) Hash Functions

[2.5x3=7.5]

(b) Explain RSA algorithm with an example?

[5]

P.T.O.

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- Q5 (a) Explain the public key cryptography principles and its applications. [6]
(b) Explain different ways of message authentication? [6.5]

UNIT-III

- Q6 (a) Explain briefly Internet Control Message Protocol? [3.5]
(b) Write short notes on: [3x3=9]
(i) IP Spoofing
(ii) Buffer Overflow
(iii) Teardrop Attacks
- Q7 (a) Explain in detail TCP session hijacking with the help of diagram. [6]
(b) Describe the concept of a Virtual Private Network (VPN) and its role in securing network communications. [6.5]

UNIT-IV

- Q8 Explain the architecture of Simple Network Management Protocol and its components? [12.5]
- Q9 (a) Write notes on: [2x3=6]
(i) SSL/TLS (ii) Requirements of SET
- (b) Explain the design principles and types of firewalls? [6.5]

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