

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)

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- 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 $\delta(G)$ and $\Delta(G)$ 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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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]

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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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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 base10 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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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>
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- (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)

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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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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)
