Paper ID : 70065 Total Pages : 4

BCA (Semester-II) Examination, 2022

(Session 2020-23)

COMPUTER APPLICATION

[Paper Code : BCA-201]

(Discrete Mathematics)

Time : Three Hours] [Maximum Marks : 80

Note : Candidates are required to give their answers in their own words as far as practicable. The questions are of equal value. Answer **any five** questions.

1. Define the following terms :

   (a) Inclusion and Exclusion of Set

   (b) Venn diagram

   (c) Equality of sets

   (d) Rings

2. If $A=\{1,2,3\}$, $B=\{2,4,5\}$ and $\Omega C=\{x: x \text{ is a digit}\}$ then :

(a) $(A \cup B) \cap (B - A)$

(b) $(A - B)^C$

(c) $A^C - B^C$

(d) $(A \cap B)^C$

3. (a) Define equivalence relation on a set with example.

(b) If $A = \{1,2,3,4\}$, $B = \{1,3,9,10\}$, $C = \{5,6,7,8\}$ and $R = \{(1,1),(1,3),(2,9),(2,10),(3,3),(4,10)\}$

$S = \{(1,5),(3,7),(9,7),(10,8)\}$, then find RoS and its relation graph.

4. List all partition of sets :

(a) $A = \{x, y, z\}$

(b) $B = \{1,2,3,4\}$

5. If the function $f : R \to R$ be defined by $f(x) = x^2 + 1$, where R is the set of real numbers, then

find the value of :

(a) $f^{-1}(-5)$

(b) $f^{-1}(26)$

(c) $f^{-1}(10,37)$

6. If $X = \{2,3,6,12,24,36\}$,

R on $X = \{(x,y) \in R \; x \text{ divides } y\}$

(a) Construct Hasse diagram

(b) Maximal and Minimal elements

(c) Is POSET a lattice

7. (a) Draw a K-map 4-variable.

(b) If $f(x) = 3x - 5$ and $f[g(x)] = 2x$, then find $g(x)$.

8. Show that set of all divisors of 70 form a Lattice.

9. Minimize the Boolean expression using K-map :

(a) $f = x'yz + xy'z + xyz + xyz'$

(b) $f = A'C + A'B + AB'C + BC$

10. Write short notes on **any two** of the following :

(a) Equivalence Relation

(b) Monoid

(c) Semi-group

(d) Partitions of set

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BCA (Semester-II) Examination, 2022

(Session : 2020-23)

COMPUTER APPLICATION

[Paper Code : BCA-202]

(Computer Architecture)

Time : Three Hours] **[Maximum Marks : 80**

Note : Candidates are required to give their answer in their own words as far as practicable. The questions are of **equal** value. Answer **any five** questions.

1. What is fixed point representation ? Explain 1's and 2's complement.

2. Explain modes of Input/output data transfer or mode of data transfer.

3. Convert each of the following expressions into sum of products and product of sum :

   (a) (AB+C) (B+C'D)

   (b) X'+X (X+Y') (Y+Z')

4. Explain K-map with example.

5. Design a four-bit binary synchronous counter with D flip-flops.

6. Explain ripple counter and synchronous counter.

7. Explain isolated versus memory mapped input/output.

8. Explain auxiliary memory, magnetic disks and magnetic tape.

9. Explain cache memory, hit ratio and writing into cache.

10. Describe the following terminology :

(a) Data transfer

(b) Register

(c) Associative memory

(d) Semiconductor memories

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BCA (Semester-II) Examination, 2022

(Session : 2020-23)

COMPUTER APPLICATION

[Paper Code : BCA-203]

(Data Structure Through "C")

Time : Three Hours] [Maximum Marks : 80

Note : Candidates are required to give their answer in their own words as far as practicable.The questions are of **equal** value. Answer **any five** questions.

1. What is data structure ? Explain the types of linear data structure with diagram.

2. What is function ? Explain the types of function Write a C program to find all prime number from 2 to n given number using function.

3. What is circular link list ? Write a C program to demonstrate the concept of circular link list.

4. What is queue ? Write a C program to demonstrate add delete operation in queue using array implementation.

5. What is Binary tree ? Discuss its properties.

6. What is sorting ? Discuss the types of sorting.

7. What is linear searching ? Write a C program to enter n number in an array. Search a number in the given list of array using linear search.

8. What is an array ? Discuss the types of array. write a C program to find sum of all even number from n given number.

9. Explain the concept of double linked list. Write a C program to perform the following operation in a double linked list :

   (a) Create a node

   (b) Insert a node

   (c) Delete a node

   (d) Searching of nodes

10. Write notes on :

   (a) Graph

   (b) Structure

   (c) Tree Traversals

   (d) Recursion Vs. Looping

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BCA (Semester-II) Examination, 2022

(Session : 2020-23)

COMPUTER APPLICATION

[Paper Code : BCA-204 (Gr.A)]

(System Analysis and Design)

Time : Three Hours] [Maximum Marks : 80

Note : Candidates are required to give their answer in their own words as far as practicable. The questions are of **equal** value. Answer **any five** questions.

1. What is System? Define the characteristics and components of system.

2. What are the various types of Information System?

3. What are the principles that guide System Design?

4. Describe the concepts of system. Why is this so important in organization and information system?

5. Discuss various roles and responsibilities of a system analyst?

6. What is Feasibility Study? Explain the various types of it.

7. What are the various level of constructing DFD? Explain Rules and Symbols associated with it.

8. Write short notes on the following :

   (a) Decision Table

   (b) Decision Tree

   (c) Data Dictionary

   (d) System Flowchart

9. What are the various system development approaches? Explain.

10. What is OAS? What are the roles of computer to implement OAS?

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