

Paper ID : 70068

Total Pages : 2

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?

----- X -----

Paper ID : 70066

Total Pages : 2

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

----- X -----

Paper ID : 70067

Total Pages : 2

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

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 :

$$C = \{1, 2, 3, 4, 5, \dots\}$$

70065/1390

(1)

[P.T.O.]

(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

$R \circ S$ 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 $f: R \rightarrow R$ be defined by

$f(x) = x^2 + 1$, where R is the set of real numbers, then

70065/1390

(2)

$f^{-1} = \sqrt{x-1}$

Find the value of:

(a) $f^{-1}(-5) = \sqrt{-5-1} = \sqrt{-6}$

(b) $f^{-1}(26) = \sqrt{26-1} = \sqrt{25} = 5$

(c) $f^{-1}(10, 37) = (\sqrt{10-1}, \sqrt{37-1}) = (3, 6)$

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

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

(a) Construct Hasse diagram

(b) Maximal and Minimal elements

(c) Is POSET a lattice

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

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

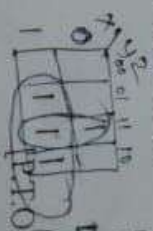
8. Show that set of all divisors of 70 form a Lattice.

9. Minimize the Boolean expression using K-map:

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

70065/1390

$\begin{matrix} x & y & z \\ 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 0 \end{matrix}$



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

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

(a) ✓ Equivalence Relation

(b) ✓ Monoid

(c) Semi-group

(d) Partitions of set

----- X -----

es?

er to