BC-201 2020 (Question) Math

Q1. What is Set ? write and explain the types of Set with their operation.

Q2. (a) Let A = {1, 2, 3, 4, 5} & B = {0, 3, 6} Find:
(i) A ∪ B (ii) A ∩ B (iii) A - B (iv) B - A.

(b) Let A = {a, b, c, d, e} & B = {a, b, c, d, e, f, g, h}. Find:
(i) A ∪ B (ii) A ∩ B (iii) A - B (iv) B - A.

Q3. (a) Draw a venn diagram for each of these combination of the Sets A, B & C:
(i) $A \cap (B \cup C)$ (ii) $\bar{A} \cap \bar{B} \cap \bar{C}$
(iii) $(A - B) \cup (A - C) \cup (B - C)$

(b) Show that if A & B are Sets, Prove:
(i) $A - B = A \cap \bar{B}$
(ii) $(A \cap B) \cup (A \cap \bar{B}) = A$.

Q4. Discuss the Concept of Relation. What are its types ? Show each one with Suitable example.

Q5. (a) Let $A = \{1,2,3\}$ and $B = \{1,2,3,4\}$. The relations $R_1 = \{(1,1),(2,2),(3,3)\}$ and $R_2 = \{(1,1),(1,2),(1,3),(1,4)\}$. Find the:

(i) $R_1 \cup R_2$ (ii) $R_1 \cap R_2$

(iii) $R_1 - R_2$ (iv) $R_2 - R_1$.

(b) What is function? Explain.

Q6. (a) What is graph? Draw a graph $G = (V, E)$ where:

$V = (v_1, v_2, v_3, v_4)$

$E = (e_1, e_2, e_3, e_4, e_5)$.

(b) Write Short Note with example.

(a) parallel edges (b) pendant vertex

(c) Null graph (d) Pseudo Graph.

Q7. Define with proper representation of

(i) walk (b) circuit

(c) cycle (d) path.

Q8. (a) Write down the truth table of:

$$(P \to P \cap \bar{r}) \leftrightarrow (r \oplus q)$$

(b) If $X = \{a, b, c\}$ & $Y = (1, 2, 3)$ find:

$(X \cdot) \cdot (X)$ and $X \cdot Y$.

Q9. (a) Show that $p \vee (q \wedge r) \leftrightarrow (p \wedge q) \cap (p \wedge r)$ is a tautology.

(b) Prove that $-(p \vee q) = -p \wedge -q$.

Q10. (a) What is group? Explain

(b) what is semi group? Explain.

2020 BC-202

Q1. What are the different types of Logic Gates? Explain with the help of truth tables and give an examples of each gate.

Q2. (a) prepare truth tables for following Boolean expression

(i) $(\bar{A} + \bar{B}) \cdot (A + C) \cdot (B + \bar{C})$

(ii) $A \cdot \bar{B} \cdot C + \bar{A} \cdot B \cdot \bar{C}$.

(b) Express following Boolean expression in their sum-of-product form:

(i) $(\bar{A} + C) \cdot (\bar{A} + \bar{B} + \bar{C}) \cdot (A + \bar{B})$

(ii) $(\bar{A} + B) \cdot (\bar{B} + \bar{C})$

Q3. Write Short notes on the following.

(i) memory Hierarchy

(ii). Locality of Reference

(iii). Virtual memory

(iv). I/O interface.

Q4. Convert.

(i) $(A1SB)_{16}$ into octal & binary.

(ii) $(1011011011100010 1)_2$ into octal and hexadecimal.

(iii) $(749)_{10}$ into octal & binary

(iv). $(4362)_8$ into hexadecimal.

(b). Find the 2's Complement of following:

(i) 10110101
(ii). 10111010
(iii). 10001001
(iv) 10011001

Q5 (a) Draw a XOR gate using NAND gate only.
(b) Discuss the working of full adder and draw by using two half adders.

Q6. write short notes on the following
(i) flip flops
(ii) multiplexers
(iii) counter
(iv) virtual memory.

Q7. Explain, In detail about Standard I/O interface.

Q8 (a) Differentiate between Isolated I/O and memory mapped I/O.
(b) what is asynchronous data transfer? Explain in detail.

Q9 (a) Explain memory hierarchy in a computer system

(b). Draw a neat sketch, explain the working of principle of DMA.

Q10. Explain the working of master-slave flip-flop and D flipflop with a suitable diagram and explanation.

2020

Time : 3 hours

BC-203

Full Marks : 70

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 function. Differentiate between Library Function and User Define Function. Explain with examples.

2. Define Array. Explain its types. Differentiate between Array and Structure with examples.

3. Explain Recursion. Differentiate between Recursion and Loop. Define Resursive Function.

4. (a) WAP to arrange 10 no's in array in ascending order using any sorted method.

(b) WAP to search an element in a sorted array using Linear Search Method.

5. Define Linked List. Explain Single, Circular and Doubly Linked List.

6. Explain Pointer. Define Pointer Operation. Explain its types with suitable examples.

7. Define Queue. Explain its operation with examples.

8. Define Tree. Differentiate between Binary Tree and Binary Search Tree.

9. Differentiate between searching and sorting with examples.

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

(a) Header File

(b) Multidimensional Array

(c) Loop

(d) Quick Sort

(e) Structure

2020 (SAD) BC-204

Q1. List out and explain different phases of SDLC?

Q2. Discuss top down approach to system planning?

Q3. What is DFD? Explain it in details with proper example.

Q4. What levels of Quality assurance must a system meets? Explain.

Q5. What is the different b/w analysis and design? Can anyone begin to design without analysis? Why?

Q6. What Considerations are involved in feasibility analysis? It it mandatory in every study? what are the exceptions?

Q7. What are the Role and attributes of System analyst?

Q8. What is MIS? Discuss the Components of MIS.

Q9. what is Testing ? Discuss black box and white box testing.

Q10. write short notes on the following.

(a) Data flow diagram

(b) Unit testing

(c) Decision table

(d) SRS.