

22393

24225

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

5 × 2 = 10

- (a) Write any four applications of OOP.
- (b) Give the significance of scope resolution operator.
- (c) Define Class. Give its example.
- (d) List any four types of inheritance.
- (e) Give classification of data structure.
- (f) Define Linked list and state their types.
- (g) Draw the diagram for representing singly linked list.

2. Attempt any FOUR of the following :

4 × 3 = 12

- (a) Write a C++ program to accept ten elements in an array sort elements in ascending order and display them.
- (b) Describe memory allocation for objects in C++.
- (c) Compare compile-time polymorphism and run-time polymorphism.



- (d) Describe working of linear search with suitable example.
- (e) Sort the given numbers in ascending order using insertion sort technique :
Numbers \longrightarrow 56, 48, 16, 12, 33, 14.

3. Attempt any FOUR of the following :

4 × 3 = 12

- (a) Write a C++ program to check whether entered number is EVEN or ODD.
- (b) Describe the concept of 'Destructor' with suitable example.
- (c) Write a C++ program to declare a class mobile having data members as price and model_number. Accept and display this data for TEN objects.
- (d) Describe queue full and queue empty operation on linear queue with suitable diagrams.
- (e) Convert following expression into post fix form. Give stepwise procedure
 $A + B \uparrow C (D/E) - F/G$

4. Attempt any THREE of the following :

3 × 4 = 12

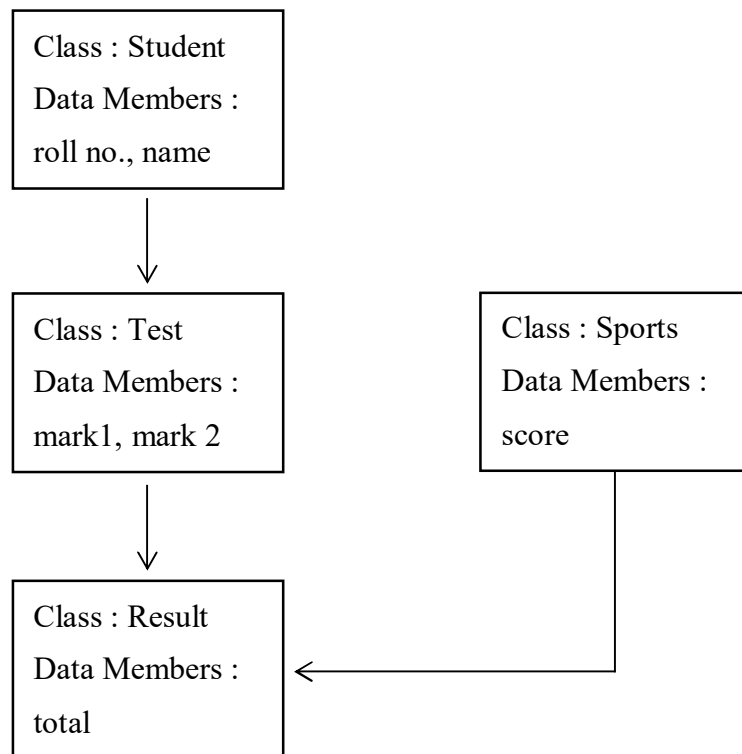
- (a) Differentiate POP and OOP (any four points).
- (b) Write a C++ program to declare a class 'Account' with data members as accno, name and balance. Accept data for five objects and display details of account having balance greater than 10,000.
- (c) State and explain visibility modes used in inheritance.
- (d) Describe PUSH and POP operation to be performed on stack.
- (e) Create singly linked list using data field 45, 97, 48, 37, 68, 53. Perform the following operations and show the representation of linked list at each step :
 - (i) Insert the data 43 and 4th position.
 - (ii) Delete the 2nd node.
 - (iii) Count total number of nodes.

5. Attempt any THREE of the following :**3 × 4 = 12**

- (a) State any four characteristics of constructor.
- (b) Illustrate the multiple inheritance with suitable example.
- (c) Write a C++ program to declare a class student with data members as rollno, name and age. Declare a constructor to initialize the data members of class and display the data.
- (d) Compare stack and queue (any four points).
- (e) Show the suitable diagram for how to delete a node from single linked list at the beginning, in between and at the end of list.

6. Attempt any TWO of the following :**2 × 6 = 12**

- (a) Define Constructor. Explain parameterized constructor and constructor overloading with suitable example.
- (b) Write a program to implement the following hierarchy using suitable member functions. Refer Figure No. – 1

**Fig. No. – 1**

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- (c) Sort the following numbers in ascending order using bubble sort :

Given Numbers → 61, 48, 6, 9, 24, 3, 37, 56
