

SRK/KW/14/6933/6938

**Faculty of Engineering & Technology
Third Semester B.E. (Electronic/ET/EC) (C.B.S.)**

Examination

**OBJECT ORIENTED PROGRAMMING AND DATA
STRUCTURE**

Time—Three Hours]

[Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Answer any **SIX** questions.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.

1. (a) What are the advantages of an object-oriented programming paradigm ? 5
- (b) Write a C++ program to find the area of circle and rectangle by using default and parameterized constructor. 8

OR

2. Explain the following terms. Give examples for each :
(i) Object and Class

- (ii) Data abstraction and data encapsulation.
 - (iii) Inheritance and Polymorphism
 - (iv) Dynamic binding and message passing. 13
3. (a) What is Function Overloading ? Explain this with an example. 7
- (b) What are Function Templates ? Write a template based program for sorting numbers. 7

OR

4. (a) What is Operator Overloading ? What are the limitations of overloading unary increment/ decrement operator ? How are they overcome ? 7
- (b) Create a class to store the information of an employee for generating the salary as per the following conditions.
- (i) DA is 92% of Basic Salary.
 - (ii) HRA is 58% of Basic Salary.
 - (iii) LIC is deducted : Rs. 500 every month.
- If the basic salary is entered through the keyboard. 7
5. (a) What is Inheritance ? Explain the different forms of Inheritance. Explain any one of them with example. 7
- (b) Explain run-time polymorphism using virtual function. 6

OR

6. (a) Create derived classes as engineering, science and medical from student class. Create their object and process them. 9

(b) What are pure virtual functions ? How do they differ from normal virtual function ? 4

7. (a) Sort the following elements using quick sort :
10, 1, 9, 11, 46, 20, 15, 0, 72, 2.

Give the complexity of Quick/Sort. 5

(b) Explain the working of Bubble Sort, with example. 5

(c) Discuss Binary Search Technique. 4

OR

8. (a) State the difference between linear search and binary search. 3

(b) Explain the technique for Insertion Sort. State its best case, average case and worst case complexity. 6

(c) Sort the following array using Selection Sort :
23, 15, 19, 29, 11, 1, 35. 5

9. (a) What is stack ? What are different operations performed on stack ? Give application of stack. 9

(b) What is Queue ? Diagrammatically represent a queue.

4

OR

10. (a) What is Dynamic Memory Allocation ? 4

(b) Write a program to insert and delete following elements from keyboard in Queue and display on the output screen : A, B, C, D, E. 5

(c) What is linked list ? How is it represented in memory ?

4

✓ 11. (a) Draw a binary tree if inorder traversal sequence is DBEAFC and post-order is DEBFCA. 3

(b) Explain the Iterative process for preorder Traversal of a binary tree, with suitable example. 6

(c) What is binary search tree ? Draw binary search tree for 7 3 8 4 1 16 5 12. 4

OR

12. (a) Explain array representation of binary tree. 3

✱ (b) Explain threaded binary tree. 3

(c) Write a program for insertion and deletion of a node in binary search tree. 7