

INFORMATION TECHNOLOGY

(Discipline Specific Core)

Paper Name: Object Oriented Programming Using C++

Paper Code: **BIT-DSC-249**

Full Marks: 45

Time: Two Hours

(The figures in the margin indicate full marks for the questions)

Answer in English

1. Answer the following questions:

1x4=4

- a) What is a base class ?
- b) Can we overload all operators in C++ ?
- c) What is an object ?
- d) What is the default access specifier of the members of a class ?

2. Answer any three of the following questions:

2x3=6

- a) Differentiate between procedural programming and object-oriented programming.
- b) What are the different types of constructors? Explain briefly.
- c) Define function overloading with a suitable example.
- d) Distinguish between while and do while loop.

3. Answer any three of the following questions:

5x3=15

- a) Explain the various control statements in C++ with example.
- b) What is an operator overloading ? Write a program to show overloading of unary operators.
- c) Explain the concept of base class and derived class.

4. Answer any two of the following questions

10x2=20

- d) Distinguish between break and continue statements with example.
- e) Explain the concept of inheritance along with its various types.
- a) Write a C++ program to show the implementation of class and object.
- b) Explain the advantages of object-oriented programming.
- c) What is run time polymorphism ? Discuss virtual functions with an example.

3(Sem-8/FYUGP)BNC(A)/DSCI

2025

INFORMATION TECHNOLOGY

(Discipline Specific Core)

Paper Name: Software Engineering

Paper Code: BIT-DSC-248

Full Marks: 45

Time: Two Hours

(The figures in the margin indicate full marks for the questions)

Answer in English

1. Answer the following questions:

1x4=4

- a) What is the full form of SDLC ?
- b) What is a bug in software testing ?
- c) A software engineer must design the modules with the goal of high cohesion and low coupling. (Write True/False)
- d) Define system software.

2. Answer any three of the following questions:

2x3=6

- a) Define coupling and cohesion.
- b) What is COCOMO model ?
- c) State two advantages and disadvantages in LOC based cost estimation.
- d) Describe the various phases of SDLC in brief.

3. Answer any three of the following questions:

5x3=15

- a) Distinguish between function-oriented modelling and object-oriented modelling.

- b) Discuss the components of a software requirement specification document.

- c) "A Software does not wear out". Justify the statement.

- d) Explain the risk management.

- e) Write a short note on black-box testing.

4. Answer any two of the following questions

10x2=20

- a) What is waterfall model ? Explain its phases.

- b) Explain software testing and system testing in details.

- c) Define software maintenance. What are the various types of software maintenance ? Explain.

- b) Apply one pass of Bubble sort on the array 25, 12, 22, 64, 11 and show the array after the first pass.
- c) Explain the different types of data structures with examples.
- d) Explain the representation of graphs in memory. Give proper diagram.
- e) Explain the difference between sequential and binary search with examples.

4. Answer any two of the following questions

10x2=20

- a) What is a stack ? Write the algorithm for PUSA and POP operation on a stack.
- b) Define Graph. Discuss adjacency matrix and adjacency list representation with examples.
- c) Discuss linked list in detail. Write algorithms for insertion and deletion in a singly linked list.

Total number of printed pages-02

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INFORMATION TECHNOLOGY

(Discipline Specific Core)

Paper Name: Data structure and Algorithm

Paper Code: **BIT-DSC-247**

Full Marks: 45

Time: Two Hours

(The figures in the margin indicate full marks for the questions)

Answer in English

1. **Answer the following questions:** **1x4=4**
 - a) What is a data structure ?
 - b) Array index starts from (Fill in the blank)
 - c) BFS stands for Breadth first search. (True/False)
 - d) The process of arranging elements in a specific order is known as (Fill in the blank)

2. **Answer any three of the following questions:** **2x3=6**
 - a) Differentiate between stack and queue with example.
 - b) Define Abstract data type (ADT) with example.
 - c) What is a circular link list ? Mention one of its advantages over a singly linked list.
 - d) What is a binary search tree ?

3. **Answer any three of the following questions:** **5x3=15**
 - a) Convert the infix expression $A + B * C - D$ into postfix form using stack.