2019

COMPUTER SCIENCE

(Theory)

Full Marks : 70

Pass Marks : 21

Time : Three hours

All the questions are compulsory.

The figures in the right margin indicate full marks for the questions.

Select the correct answer from each of the following (1 – 4) and rewrite it.

1. Function overloading implements   1

    A.   Data encapsulation

    B.   Data abstraction

    C.   Inheritance

    D.   Polymorphism

2. Which of the following is not true for a destructor   1

    A.   Destructor functions are invoked automatically
         when objects are destroyed.

    B.   No arguments can be provided to a destructor.

    C.   A destructor can be inherited.

    D.   A destructor does not return any value.

3. Which of the following files is best for online processing   1

    A.   Random access files

    B.   Serial files

    C.   Sequential files

    D.   Indexed sequential files.

4. The device used to communicate between dissimilar networks with different protocols is   1

    A.   Repeaters

    B.   Bridge

    C.   Gateway

    D.   Router.

Answer Question Nos. (5 – 14) in a word or sentence each.

5. What is data hiding ?   1

6. Write the benefit of using inline function.   1

7. What is the main difference between multiple inheritance and hierarchical inheritance ?   1

8. Write the file mode for deleting the contents of the file if it exists.   1

9. What do you mean by merging ?   1

10. When a stack is said to be underflow ?   1

11. What is a priority queue ?   1

12. Name the logic gate which gives an output of 1 only if an odd number of inputs is 1.   1

13. State the use of Karnaugh map.   1

14. Mention one advantage of networking.   1

Give short answer of the following questions (15 – 24) in about 30 words each.

15. (a) Name the header file for stw ( ) in C++.

   (b) What is the difference between the functions strcmp( ) and strcmpi ( ).

   2

16. Write any two characteristics of friend function.   2

17. What is a constructor? When the copy constructors are used.   2

18. How does the public derivation of a class differ from protected derivation ?   2

19. Open a file called "MAIN.DAT" in read mode by using constructor and moves the file pointer n bytes backward from the end of the file.   2

20. Convert the following infix expression into prefix and postfix expression.

   (A B)*(C–D)   2

21. Write the use of the following commands   2

   (a) SELECT with DISTINCT clause

   (b) SELECT with ORDER BY clause

22. Draw the circuit diagram to realize the following expression

   $F(X,Y,Z)=XZ+Y(\overline{X}+\overline{Y})$ 2

23. Represent $\overline{A}B+A\overline{B}$ with the help of NAND gates and NOT gates.   2

24. Convert AB + C to minterm.   2

Give answer of the following questions (25 – 31) in about 50 words each.

25. What are the characteristics of OOP?   3

26. Write a C++ program to add two complex numbers using a function that return an object.   3

27. Explain the memory management operators giving the examples.   3

28. Give one limitation of using arrays ? Sort the following list of numbers manually using insertion sort method.

18, 12, 46, 39, 10, 24, 15.   3

29. What is a doubly linked list? Write the structure of a node in a linked list.   3

30. (a) Name the Internet based protocol.

(b) How data is transmitted in half-duplex mode? Give the full form of CSMA/CD.   3

31. Define a web page? Explain briefly the working of a server.   3

Answer Question (32 to 34) in about 120 words each.

32. Write a C++ program to search an item from an array using binary search method.   5

33. (a) State the first normal form.

(b) What is the purpose of ALTER TABLE command?

(c) Give the function of project operation.

(d) Consider a table teacher having fields NAME, AGE, DEPARTMENT, SALARY and SEX. Write the SQL commands

(i) to list all the female teacher of computer department.

(ii) to count the number of teachers older than 40.   5

34. Write a C++ program to arrange a list of strings in alphabetical order using string functions.   5

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