Total number of printed pages: 3 *2020/XII/CSC*

2020

COMPUTER SCIENCE

Total marks : 70 Time : 3 hours

General instructions:

i) Approximately 15 minutes is allotted to read the question paper and revise the answers.

ii) The question paper consists of 32 questions. All questions are compulsory.

iii) Marks are indicated against each question.

N.B: Check that all pages of the question paper are complete as indicated on the top left side.

1. What is the purpose of header file in a program? **1**
2. What is the purpose of subscript in an array? **1**
3. What is the fundamental idea of object-oriented programming? **1**
4. What is meant by data abstraction? **1**
5. What does function *read()* do? **1**
6. What is meant by alias? **1**
7. Define database. **1**
8. What is DML? **1**
9. Prove algebraically x.(x+y) = x **1**
10. What are fallacies? **1**
11. What is a web-server? **1**
12. Define modem. **1**
13. Write the format of a class declaration with an example. **2**
14. How does an object differ from a program module? **2**
15. What is the difference between structure and class? **2**
16. Differentiate between text file and binary file. **2**
17. When does the * appear before a pointer variable? **2**

18. Find out the syntax error(s) in the following program and write down possible corrections: **2**

```
include<iostream.h>
main()
{
  int x[5], *y, z[5]
  for(i=0;i<5;i++
  {
  x[i];
  z[i] = i+3;
  y = z;
  x = y;
  }
}
```

19. Write the advantages of circular queue over simple linear queue. **2**

20. An array T[15][10] is stored in the memory with each elements requiring 2 bytes of storage. If the base address of T is 2000, determine the location of T[7][8] when the array T is stored by column major. **2**

21. Define the term sorting and searching. **2**

22. Explain any two levels of data abstraction. **2**

23. Represent the Boolean expression YZ+XZ with the help of NAND gates only. **2**

24. **a.** What is the importance of constructor in object oriented programming? Explain with the help of an example.

Or **4**

b. Write a C++ program to calculate factorial of a given number using constructor to initialize data members.

25. **a.** Define a class Employee with the following specifications: **4**

- Empno integer
- Ename 20 characters
- Basic, hra, da float
- Netpay float
- Calculate a function to calculate: basic+hra+da with float return type.

Public member function of class Employee

- Havedata() function to accept values for Empno, Ename, basic, hra, da and invoke calculate() to calculate netpay.
- Dispdata() function to display all the data members on the screen.

26. Explain the different visibility modes of class derivatives. **4**

27. **a.** Explain any four wireless communication media.

Or **4**

b. Explain the following networking devices:
i) gateway ii) router iii) bridge iv) repeater

28. The following numbers 89, 20, 31, 56, 20, 64, 48 are required to be sorted using bubble sort. Show how the list would appear at the end of each pass. **4**

29. **a.** Evaluate the following postfix expression using a stack and show the content of stack after execution of each operation:
100, 40, 8, +, 20, 10, -, +, *

Or **4**

b. Convert the infix expression : A – B + C * D ^ E * G / H into postfix expression using stack status.

30. Write SQL commands for (a) to (c) and write the output for (d) on the basis of table CLUB: **4**

TABLE: **CLUB**

COACH_ID	COACH NAME	AGE	SPORTS	PAY	SEX
1	KIBOVI	35	KARATE	10000	M
2	SANEN	34	KARATE	12000	M
3	ALONG	34	SQUASH	20000	M
4	ZUBEMO	33	BASKETBALL	15000	F
5	PHILIP	36	SWIMMING	20000	M
6	KETAKI	36	SWIMMING	18000	F
7	NIKITA	39	BASKETBALL	22000	F
8	GABRIEL	37	KARATE	11500	M
9	SHAILYA	41	SWIMMING	19000	F
10	KUSH	37	BASKETBALL	17000	M

a) To show all the information about the swimming coaches in the club.
b) To display a report, showing coach name, pay, age and bonus(15% of pay) for all the coaches.
c) To insert a new row in the CLUB table with the following data:
11, “BIKASH”, 37, “SQUASH”, 25000, “M”
d) Select AVG(PAY) from CLUB where SPORTS = “SQUASH”;

31. Obtain a simplified form for the following Boolean expression using K-map: **4**
F(a, b, c, d) = $\sum$(0, 1, 2, 4, 5, 7, 8, 9, 10, 11, 14)

32. **a.** Define cloud computing. Explain the different types of cloud computing.

Or **4**

b. Differentiate between open source and proprietary software.

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