2019
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 meant by data encapsulation? **1**

2. What is the significance of scope resolution operator(::)? **1**

3. Define the term ‘containership’. **1**

4. What is meant by the term ‘stream’? **1**

5. What is the precondition for binary search to be performed on a single dimension? **1**

6. What is a linear list? **1**

7. Define DBMS. **1**

8. What is meant by Candidate key? **1**

9. What is a duality principle? **1**

10. Write the Demorgan’s law. **1**

11. Define cookies. **1**

12. Name two major issues of Cloud Computing. **1**

13. Write two major differences between Object Oriented Programming and Procedural Programming. **2**

14. What will be the output of the following program? **2**

```
# include< iostream.h >
int area(int s) {
```

```
return(s*s);
}
float area(int b, int h){
return (0.5*b*h);
}
main()
{
cout<<area(5)<<endl;
cout<<area(4,3)<<endl;
cout<<area(6,area(3))<<endl;
return 0;
}
```

15. Write any two special characteristics of destructors. **2**

16. What is a pointer? How will one define a pointer to an integer and a pointer to a character? **2**

17. Consider the following declaration: **2**
int x[7] = {1,2,3,4,5,6,7};
(i) What is the value of *x?
(ii)What is the value of *x[5]?
(iii)What is the value of (*x+2)?
(iv) What is the value of *(x+2)?

18. What is a queue? Why is it called FIFO? **2**

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

20. What are constraints? What is the difference between unique constraint and primary key? **2**

21. Draw the circuit diagram for the Boolean function
F(X,Y,Z) = (X'+Y)(Y'+Z) using NOR gates only. **2**

22. Compare freeware and shareware. **2**

23. Mention any two advantages of Open Source Software over proprietary software. **2**

24. **a.** Explain different types of member function declaration with example each.

Or **4**

b. Demonstrate Pass by value and Pass by reference using object as argument.

25. **a.** Write a C++ program to print numbers from 1 to 10 and to display their sum.

Or **4**

b.Explain Constructor overloading with a suitable example.

26. Describe different types of inheritance with proper diagram and example. **4**

27. **a.** Write a program in C++ that will create a data file containing- name of a country and its capital. Write an interactive menu driven program to do the following:
(i) Determine the country given the capital.
(ii) Determine the capital given its country.

Or **4**

b. Differentiate between Sequential and Random Access files.

28. The following numbers: (**10,89,25,31,95,56,20,64,48,40**) are required to be sorted using selection sort. Show how the list would appear at the end of each pass. **4**

29. **a.** Convert an expression given in infix form to postfix form:
A +B * C ^ D – (E / F – G)

Or **4**

b. Write a C++ program to implement a stack using arrays.

30. Consider the following tables ITEM and CUSTOMER and answer (a) and (b) parts of this question: **4**

TABLE:**ITEM**

I_ID	ItemName	Manufacturer	Price
PC01	Personal Computer	ABC	35000
LC05	Laptop	ABC	55000
PC03	Personal Computer	XYZ	32000
PC06	Personal Computer	COMP	37000
LC03	Laptop	PQR	57000

TABLE:**CUSTOMER**

C_ID	CustomerName	City	I_ID
01	N Roy	Delhi	LC03
06	H Singh	Mumbai	PC03
12	R Pandey	Delhi	PC06
15	C Sharma	Delhi	LC03
16	K Agarwal	Bangalore	PC01

a. Write SQL commands for the following statements:
(i) To display the details of item whose price is in the range of 35000 to 55000(both values included).
(ii) To increase the price of all items by 1000 in the table item.

b. Give the output of the following SQL queries:

(i) SELECT DISTINCT (City) FROM CUSTOMER;

(ii) SELECT CustomerName,Manufacturer FROM ITEM,CUSTOMER WHERE ITEM.I_ID = CUSTOMER.I_ID;

31. Reduce the following Boolean expression using K-map. **4**
F(U,V,W,Z) = E(0,1,3,,4,5,6,7,9,10,11,13,15)

32. **a.** Differentiate between hackers and crackers.

Or **4**

b. Describe with diagram the bus and star topologies of a network.

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