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INDIAN SCHOOL SOHAR
FINAL EXAMINATION (2018 – 19)
COMPUTER SCIENCE

CLASS: XI **MAX. MARKS: 70**

DATE: 03/03/2019 **DURATION: 3 HRS.**

General Instructions:

- ***All the questions are compulsory.***
- ***Answer the questions carefully after reading the questions and write the question numbers correctly.***

1. Explain the main functions of an Operating system. 2

2. Differentiate between customized and general application software 2

3. Explain the process of booting up of a computer system. 2

4. Explain the following storage devices: 2 x 1 = 2
   a. Magnetic tape
   b. The Cloud

5. Convert the following: 4 x 1 = 4
   a. $(111100001010)_2 = (?)_{16}$
   b. $(5470)_8 = (?)_2$
   c. $(2986)_{10} = (?)_2$
   d. $(BA95)_{16} = (?)_{10}$

6. Explain the following viruses: (a) Trojan horse (b) Macro virus 2

7. Differentiate between deadline and response ratio scheduling. 2

8. Explain multiprocessing OS. List the names of any two multiprocessing OS. 2

9. Explain the use of comments and indentations in a program with appropriate example. 2

10. Draw the flowcharts for the following: 2 x 2 = 4
    a. To print the reverse of a 5 digit number.
    b. To find whether the 6 digit number is a palindrome or not.

11. Write the equivalent C++ expression for the following expressions: 3 x 1 = 3
    a. $x=-b+\sqrt{(b^2-4ac)}/2a$
    b. $-b + (ab)^2/(b)^{2y}$
    c. $\left[\frac{2x - 5y}{4x + 5y}\right]^{7/2}$

12. Illustrate the use of #define in C++ to define a macro. 2

13. Construct logical expressions to represent the following conditions: 3 x 1 = 3
    a) weight is greater than or equal to 120 kgs or weight less than 120 kgs but greater than 90 kgs.
    b) salary is more than Rs. 25000 and medical allowance is Rs. 5000 OR salary is more than Rs. 42000 and medical allowance is Rs. 7500.
    c) ch is a lowercase alphabet.

14. What is recursion? Support your answer with an appropriate example. 2

15. Explain isalnum() function with syntax and appropriate example. 2

16. Differentiate between entry controlled and exit controlled conditional structures with appropriate example. 2

17. What is an array? Explain the disadvantages of using an array. 2

18. Differentiate between call-by-value and call-by-reference using appropriate examples. 2

19. Write a program to reverse an integer array having 10 elements. The program uses a function reverse() to reverse this array. 2

20. Write a program to find sum of each row and each column of a 3x3 two dimensional array. 2

21. Write a C++ program that invokes a function satis() to find whether four integers a, b, c, d sent to satis() satisfy the equation $a^3 + b^3 + c^3 = d^3$ or not. The function returns 0 if the equation is satisfied otherwise returns -1. 2

22. Write a menu driven program by creating functions for each option:
    a. Factorial of a number (eg. 5! = 5 * 4 * 3 * 2 * 1, where 5 is given as input)
    b. Power of a number. (eg. 5^2, where 5 and 2 both are given as input) (**without using pow() function**)
    c. Exit

    i. Creating a function for options a and b 2 x 2 = 4
    ii. Exiting the program when user has entered 'c' option 1
    iii. Using switch for the menu options 1

23. Write a program to add one string to another string without using string built – in function. 2

24. Write a program using structure to generate train ticket for a customer based on the following conditions: 6

    Customer name, source, destination, age, per ticket rate, ticket price, Discount amount, ticket amount

    Note: ticket price = no. of persons * per ticket rate
    discount amount = discount percentage * ticket price
    Ticket amount = ticket price – discount amount

    Conditions:
    a) If age is above 60 years then 50% discount is given on the ticket rate
    b) If age is between 8 to 12 years then 35% discount is given on the ticket rate
    c) If age is below 8 years then 100% discount is given on the ticket rate

25. Write the output of the following programs: 4 x 2 = 8

(i)
```
void display (char s[], int size)
{
   int x = 0, y = 0;
   while(s[x] != '\0')
   {
        y = 0;
        cout << " # ";
        while(y <= x)
        {
             cout <<  s[y] << " : ";
             y++;
        }
        cout << endl;
        x++;
   }
}
void main()
{
   char t[5] = “LAND”;
   display(t, 5);
}
```

(ii)
```
void main()
{
      int n1 = 125, n2 = 80, n3;
      n3 = ++n1;
      n3 = ++n2 - ++n1 * 2;
      n2 = ++n3 - --n1;
      n2 = --n1 * 2.5 - --n3;
      cout << n1 << ", " << n2 << ", " << n3;
}
```

(iii)
```
struct Box
{
      int l, b, h;
};
void dim(Box box)
{
      box.l = ++box.b / box.h++;
      box.b = box.l * box.h;
      box.h = box.h++ + ++box.b - ++box.l;
      cout << box.l << “ * ” << box.b << “ * “ << box.h << endl;
}
void main()
{
      Box b1 = {10, 15, 5}, b2, b3;
      ++b1.h;
```

```
        dim(b1);
        b3 = b1;
        ++b3.l;
        b3.b++;
        dim(b3);
        b2 = b3;
        b2.h += 5;
        b2.l--;
        dim(b2);
    }
```

(iv)
```
    void main()
    {
        char input=’F’, alphabet = 'A';
        for(int i = 1; i <= (input-'A'+1); ++i)
        {
           for(int j = 1; j <= i; ++j)
           {
              cout << alphabet << " ";
           }
           ++alphabet;

           cout << endl;
        }
    }
```

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