

Q9. Define following class and its member methods:

Class Name: SortWords

Member variable:

txt- String type

Member function:

Constructors- initialize data member

void read()- input a line of text from user to store in txt.

void show()- prints the string on the screen.

Int noOfWords()- returns number of words in the line.

void process()- prints letter of all words in alphabetical order.

Example:

Input- computer paper is easy

Output -cemoprtu aeppr is aesy

Q10. Define following class and its member methods (10)

Class Name : Date

Member variable :

Integer type: dd, mm, yy

Member function:

Constructors-both parameterized and non parameterized

Void read()-input date, month and year from user

Int noOfDays() - returns number of days starting from 1st January to the given data. Take care of leap year also.

Half Yearly Examination - 2018-19

Computer Science - Paper 1

Class : XI

Time : 3 Hrs

Full Marks : 70

Answer all questions in Part I (compulsory) and answer six questions from part II, choosing two questions from Section A and three questions from Section B.

All working, including rough work, should be done on the same sheet as the rest of the answer.

The intended marks for questions or parts of questions are given in brackets [].

PART I

Answer all questions

While answering questions in this Part, indicate briefly your working and reasoning, wherever required.

Q1.

- a) Derive AND gate using NOR operation? [1]
- b) What do you mean by concentration? [1]
- c) Write the Boolean expression for $F(A, B, C) = \sum(0, 1, 2, 5)$ [1]
- d) Draw the logic diagram using basic gates $A'+(B'.A)$ [1]
- e) Write Absorption Law. [1]

Q2.

- (a) Simplify $A.B+ B.C+ A'.C$ using the laws of (2x5=10) Boolean algebra. At each step state clearly the law used for simplification.

- (b) Why NAND and NOR gates are regarded as Universal Gate? Justify.
- (c) Draw the logic gate symbol and make the truth table for the two input NOR gate.
- (d) State De-Morgan's Laws. Verify one of them using a truth table.
- (e) Find out the complement of Exclusive OR.

Q3.

Find the output

(5)

```
class sample4
{
int func(int x, int y)
{
    if(x% y== 0) return ++x;
    else return y--;
}
void mairi( )
{
    Int p=20,q=25;
    p=func( q, p);
    System.out.println(p+"\t"+q);
    q=func(p q);
    System.out.println(p+"\t"+q);
}
```

num - long integer type

Member functions:

Number()- constructor to assign 0 to num

Number(long a) - constructor to assign a to num

int sumDigit() - to find the sum of each digit of the number and display it. (Use Recursion)

void PrimeFactors() - to find the prime factors of the number and display them.

Specify the class Number giving the details of the two constructors and functions void PrimeFactors() and

int sumDigits(). You do not need to write the main function.

Question 8

[10]

Design a class Alpha which enables a word to be toggled.

The details of the members of the class are given below:

Class name: Alpha

Data members /instance variables:

Str : to store a word

Member functions:

Alpha() : default constructor

void readWord() : to accept the inputted word

void toggle() : to toggle the case of characters in the word from lower to upper and upper to lower.

void disp() : displays the word.

Specify the class Alpha giving details of the constructor and the member functions void readword(), void toggle(), void disp () Defining the main () function to create an object and call the function in order to execute the class by displaying the original word and the changed word with proper message.

PART -II

Answer five questions in this part, choosing two questions from Section A and three questions from Section B.

SECTION-A

Answer any two questions

Q4.

- (a) State the difference between if-else if ladder and switch ... case. [2]
- (b) Explain the concept of constructor overloading with an example. [2]
- (c) What is the use of keyword static? [2]
- (d) Verify that $((P' + Q).(Q' + R))' + (P' + R) = 1$ [2]
- (e) Find the complement of X. $(Y.Z' + Y'. X)$ using De Morgan's law. Show the relevant reasoning [2]
Do not reduce the function.

Q5

- (a) What is the difference between local variable instance variable? [2]
- (b) `int x =20, y = 10, z;`
What is the value of z in `z = ++x* (y--) -y?` [2]
- (c) What is the purpose of default in a switch? [2]
- (d) Differentiate between `isUpperCase(char)` and `toUpperCase(char)`. [2]
- (e) What will be the output of the following code?
`float x = 7.87;`
`System.out.println(Math.ceil(x));`
`System.out.println(Math.floor(x));` [2]

Q6. What will be the output of the following program segments?

- (i) `String s = "application";`
`int p = s.indexOf('a');`
`System.out.println(p);`
`System.out.println(p+s);` [2]
- (ii) `String st = "PROGRAM";`
`System.out.println(st.indexOf(st.charAt(4)));` [2]
- (iii) `int a = 0;`
`if(a>0 && a<20)`
`a++;`
`else a-- ;`
`System.out.println(a);` [2]
- (iv) `int a= 5, b = 2,c;`
`if (a>b || a! = b)`
`c = ++a--b;`
`System.out.printi c+ " "+a+ " "+b);` [2]
- (v) `int i = 1;`
`while(i++<=1)`
`{`
`i++;`
`System.out.print(i + " ");`
`}`
`System.out.print(i);` [2]

SECTION - B

Answer any three questions

Q7. A class Number has been defined to find the sum of each digit present in the number and the Prime factors of the number and display the results. Some of the members of the class Number are given below: [10]

Class name: Number

Data member:

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