2016
SECTION A (40 MARKS)
Attempt all questions

Question 1

(a) Define Encapsulation. [2]

(b) What are keywords? Give an example. [2]

(c) Name any two library packages. [2]

(d) Name the type of error (syntax, runtime or logical error) in each case given below:
   (i)   Math.sqrt(36-45)   ii)   int a;b;c; [2]

(e) If int x[]={4,3,7,8,9,10}; what are the values of **p** and **q**?
   (i)   p=x.length   (ii)   q=x[2]+x[5]*x[1] [2]

Question 2

(a) State the difference between = operator and equals() method. [2]

(b) What are the types of casting shown by the following examples:
   (i)   char c=(char)120;   (ii)   int x='t'; [2]

(c) Differentiate between formal parameter and actual parameter. [2]

(d) Write function prototype for the following: [2]
   A function **PosChar** which takes a string argument and a character argument and return an integer value. [2]

(e) Name any two types of acceess specifiers. [2]

Question 3

(a) Give the output of the following string functions:
   (i)   "MISSISSIPPI".indexOf('S')+ "MISSISSIPPI".lastIndexOf('I')
   (ii)   "CABLE".compareTo("CADET") [2]

(b) Give the output of the following Math functions:
   (i)   Math.ceil(4.2)   (ii)   Math.abs(-4) [2]

(c) What is a parameterized constructor? [2]

(d) Write down Java expression for:
   $T=\sqrt{A^2+B^2+C^2}$ [2]

(e) Rewrite the following using ternary operator:
   if(x%2==0)
   System.out.print("EVEN");
   else
   System.out.print("ODD"); [2]

(f) Convert the following while loop to the corresponding for loop:
   int m=5,n=10;
   while(n>=1)
   {
       System.out.println(m*n);
       n--;
   } [2]

(g) Write one difference between primitive data types and composite data types. [2]

(h) Analyze the given program segment and answer the following questions:
   (i)   Write the output of the program segment:
   (ii)   How many times does the body of the loop gets executed?
       for(int m=5; m<=20; m+=5)
       {   if(m%3==0)
               break;
           else
           if(m%5==0)
           System.out.println(m);
               continue;
       } [2]

(i) Give the output of the following expression:
   a+=a++ + ++a + --a + a--; when a=7 [2]

(j) Write the return type of the following library functions:
   (i)   isLetterOrDigit(char)
   (ii)   replace(char,char) [2]

2016
SECTION B (60 MARKS)
Attempt any four questions

Question 4

Define a class named BookFair with the following description:
Instance variables / Data members:
String Bname – stores the name of the book
double price – stores the price of the book
Member methods:
(i)   BookFair()   - Default constructor to initialize data members
(ii) void Input()   - To input and store the name and the price of the book
(iii) void calculate() - To calculate the price after discount. Discount is calculated based on following criteria

Price	Discount
Less than or equal to Rs. 1000	2% of price
More than Rs. 1000 and less than or equal to Rs. 3000	10% of price
More than Rs. 3000	15% of price

(iv) void display()   - To display name and price of the book after discount
Write a main method to create an object of the class and call the above member methods.   [15]

Question 5

Using the switch statement, write a menu driven program for the following:
(i)   To print the Floyd's triangle given below
```
1
2   3
4   5   6
7   8   9   10
11  12  13  14   15
```
(ii) To display the following pattern:
```
I
I  C
I  C  S
I  C  S  E
```

For an incorrect option, an appropriate error message should be displayed.   [15]

Question 6

Special words are those words which starts and ends with the same letter.
Examples:
EXISTENCE
COMIC
WINDOW
Palindrome words are those words which read the same from left to right and vice versa.
Examples: MALAYALAM LEVEL
All palindrome are special words, but all special words are not palindromes.
Write a program to accept a word, check and print whether the word is palindrome or only special word. [15]

Question 7

Design a class to overload a function SumSeries() as follows:
(i)   void SumSeries(int n, double x) – with one integer argument and one double argument to find and display the sum of the series given below:
    $s = x/1 - x/2 + x/3 - x/4 + x/5 \ldots \ldots \ldots$ n terms
(ii) void SumSeries() – to find and display the sum of the series given below:
    $s = 1 + (1 \times 2) + (1 \times 2 \times 3) + \ldots \ldots \ldots + (1 \times 2 \times 3 \times 4 x \ldots \ldots \ldots x20)$ [15]

Question 8

Write a program to accept a number and check and display whether it is a **Niven** number or not
(Niven number is that number which is divisible by its sum of digits)
Example: 126. Sum of digits is 1+2+6 = 9 and 126 is divisible by 9.   [15]

Question 9

Write a program to initialize the seven wonders of the world along with their locations in two different arrays. Search for a name of the country input by the user. If foundm display the name of the country along with its wonder, otherwise display "Sorry Not found!".
Seven wonders: CHICHEN ITZA, CHRIST THE REDEEMER, TAJ MAHAL, GREAT WALL OF CHINA, MACHU PICCHU, PETRA, COLOSSEUM
Locations: MEXICO, BRAZIL, INDIA, CHINA, PERU, JORDAN, ITALY
Example: Country name: INDIA   Output: TAJMAHAL
          Country name: USA   Output: Sorry Not found!   [15]