

ICSE 2015

Section A

Attempt all questions in this section

Question 1.

- a) What are the default values of the primitive data type int and float?
- b) Name any two OOP's principle.
- c) What are identifiers?
- d) Identify the literals listed below:
  - i) 0.5    ii) 'A'    iii) false    iv) "a"
- e) Name the wrapper class of char type and Boolean type.

[ 2 x 5 = 10]

Question 2.

- a) Evaluate the value of n if value of p=5, q=19  
`int n= (q-p)>(p-q) ? (q-p) : (p-q);`
- b) Arrange the following primitive data types in ascending order of their size:
  - i) char    ii) byte    iii) double    iv) int
- c) What is the value stored in variable res given below:  
`double res= Math.pow("345".indexOf('5'),3);`
- d) Name the two types of constructors.
- e) What are the values of a and b after the following function is executed, if the values passed are 30 and 50:

```
void paws(int a, int b)
{
    a=a+b;
    b=a-b;
    a=a-b;
    System.out.println(a+","+b);
}
```

[ 2 x 5 = 10]

Question 3.

- a) State the data type and value of y after the following is executed:  
`char x='7';`  
`y=Character.isLetter(x);`
- b) What is the function of catch block in exception handling? Where does it appear in a program?
- c) State the output when the following program segment is executed:  
`String a="Smartphone", b="Graphic Art";`  
`String h=a.substring(2,5);`  
`String k=b.substring(8).toUpperCase( );`  
`System.out.println(h);`  
`System.out.println(k.equalsIgnoreCase(h));`
- d) The access specifier that gives the most accessibility is \_\_\_\_\_ and the least accessibility is \_\_\_\_\_.
- e) i) Name the mathematical function which is used to find sine of an angle given in radians.  
ii) Name a string function which removes the blank spaces provided in the prefix and suffix of a string.
- f) i) What will this code print?  
`int arr[]= new int[5];`  
`System.out.println(arr);`
  - i) 0    ii) values stored in arr[0]    iii) 0000    iv) garbage value

- ii) Name the keyword which is used to resolve the conflict between method parameter and instance variables/fields.
- g) State the package that contains the class:
- BufferedReader
  - Scanner
- h) Write the output of the following program code:
- ```
char ch;
int x= 97;
do
{
    ch=(char)x;
    System.out.print(ch + " ");
    if(x%10 ==0)
        break;
    ++x;
}
while(x<=100);
```
- i) Write the Java expressions for:
- $a^2 + b^2$   
-----  
2ab
- j) If int y=10 then find int z=(++y \* (y++ + 5));

[ 2 x 10 = 20]

### Section B

Attempt any 4 questions from this section

Each program should be written using a variable list so that the logic of the program is clearly depicted.

#### Question 4.

Define a class ParkingLot with the following description:

##### Instance variables/data members

int vno - To store the vehicle number

int hours - To store the number of hours the vehicle is parked in the parking lot.

double bill - To store the bill amount

##### Member methods:

void input( ) - To input and store the vno and hours

void calculate( ) - To compute the parking charge at the rate of Rs. 3/- for the first hour or part thereof and Rs 1.50/- for each additional hour or part thereof.

Write a main method to create an object of the class and call the above methods.

[ 15 ]

**Question 5.**

Write two separate programs to generate the following patterns using iteration (loop) statements:

|       |       |
|-------|-------|
| a)    | b)    |
| *     | 54321 |
| *#    | 5432  |
| *##   | 543   |
| *###  | 54    |
| *#### | 5     |

[ 15 ]

**Question 6.**

Write a program to input and store roll numbers, names and marks in 3 subjects of n number of students in three single dimensional arrays and display the remark based on average marks as given below: (The maximum marks in the subject are 100)

$$\text{Average marks} = \frac{\text{Total marks}}{3}$$

| Average marks | Remark      |
|---------------|-------------|
| 85- 100       | EXCELLENT   |
| 75-84         | DISTINCTION |
| 60-74         | FIRST CLASS |
| 40-59         | PASS        |
| Less than 40  | POOR        |

[ 15 ]

**Question 7.**

Design a class to overload a function Joysting( ) as follows:

- a) void Joysting(String s, char ch1, char ch2) with one string argument and two character arguments that replaces the character argument ch1 with the character argument ch2 in the given string s and prints the new string.

Example:-

Input value of s = "TECHNALAGY"

ch1='A'

ch2='O'

Output:

"TECHNOLOGY"

- ii) void Joysting(String s) with one string argument that prints the position of the first space and last space of the given string s.

Example:-

Input value of s = "Cloud computing means Internet based computing"

Output: First index : 5

Second index:36

- iii) void Joysting(String s1, String s2) with two String arguments that combines the 2 strings with a space between them and prints the resultant string.

Example:

Input value ofs1= "COMMON WEALTH"

Input value ofs2= "GAMES"

Output: COMMON WEALTH GAMES  
(use library functions)

[ 15 ]

**Question 8.**

Write a program to input 20 names in an array. Arrange these names in descending order of alphabets, using the bubble sort technique.

[ 15 ]

**Question 9.**

Using the switch write a menu driven program to :

i) To find and display all the factors of a number input by the user (including 1 and excluding the number itself).

Example:

Sample input : n = 15

Sample output : 1, 3, 5

ii) To find and display the factorial of a number input by the user ( the factorial of a non negative integer  $n$  , denoted by  $n!$ , is the product of all integers less than or equal to  $n$ ).

Example:

Sample input : n =5

Sample output :  $5! = 1 \times 2 \times 3 \times 4 \times 5 = 120$

For an incorrect choice an appropriate error message should be displayed.

[ 15 ]