

Computer Applications
ICSE 2011

Section A (40 marks)

Question 1.

- a) What is the difference between an object and a class?
- b) What does the token keyword refer to, in the context of Java?
- c) State the difference between entry controlled loop and exit controlled loop.
- d) What are the two ways of invoking functions?
- e) What is the difference between / and % operator?

[2 x 5 = 10]

Question 2.

- a) State the total size in bytes, of the arrays a[4] of char data type and p[4] of float data type.
- b)
 - i) Name the package that contains Scanner class.
 - ii) Which unit of the class gets called, when the object of the class is created?

- c) Give the output of the following:-

```
String n="Computer Knowledge.";
String m="Computer Applications";
System.out.println(n.substring(0,8).concat(m.substring(9)));
System.out.println(n.endsWith("e"));
```

- d) Write the output of the following:

- i) System.out.println(Character.isUpperCase('R'));
- ii) System.out.println(Character.toUpperCase('j'));

- e) What is the role of keyword void in declaring functions?

[2 x 5 = 10]

Question 3.

- a) Analyse the following the following program segment and determine how many times the loop will be executed and what will be the output of the program segment?

```
int p=200;
while(true)
{
    if(p<100)
        break;
    p=p-20;
}
System.out.println(p);
```

[2]

- b) What will be the output of the following code?

i)

```
int k=5,j=9;
k+=k++ - ++j + k;
System.out.println(" k = " + k);
System.out.println(" j = " + j);
```

[2]

ii)

```
double b=-15.6;
double a= Math rint(Math.abs(b));
System.out.println(" a = " + a);
```

[2]

- c) Explain the concept of constructor overloading with an example.

[2]

- d) Give the prototype of a function search which receives a sentence sentnc and a word wrd and returns 1 or 0?

[2]

- e) Write an expression in Java for

$$z = \frac{5x^3 + 2y}{x + y}$$

[2]

- f) Write a statement each to perform the following task on a string:

- i) Find and display the position of the last space in a string s.
- ii) Convert a number stored in a string variable x to double data type.

[2]

- g) Name the keyword that

- i) informs that an error has occurred in an input/output operation.

- ii) Distinguishes between instance variable and class variable [2]
- h) What are library classes? Give an example. [2]

Section B (60 Marks)

Question 4.

Define a class called mobike with the following description:

Instance variables/data members:

int bno – to store the bike’s number

int phno – to store the phone number of the customer

String name – to store the name of the customer

int days – to store the number of days the bike is taken on rent

int charge – to calculate and store the rental charge

Member methods:

void input() – to input and store the detail of the customer.

void compute() – to compute the rental charge

The rent for a mobike is charged on the following basis.

First five days Rs 500 per day;

Next five days Rs 400 per day

Rest of the days Rs 200 per day

void display () – to display the details in the following format:

Bike No.	PhoneNo.	No. of days	Charge
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[15]

Question 5.

Write a program to input and store the weight of ten people. Sort and display them in descending order using the selection sort technique.

[15]

Question 6.

Write a program to input a number and print whether the number is a special number or not. (A number is said to be a special number, if the sum of the factorial of the digits of the number is same as the original number).

Example: 145 is a special number, because $1! + 4! + 5! = 1 + 24 + 120 = 145$

(where ! stands for the factorial of the number and the factorial value of a number is the product of all integers from 1 to that number, example $5! = 1*2*3*4*5 = 120$).

[15]

Question 7.

Write a program to accept a word and convert it into lowercase if it is in uppercase, and display the new word by replacing only the vowels with the character following it.

Sample Input : computer

Sample Output : cpmptfr

[15]

Question 8.

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

(a) void compare (int, int) – to compare two integer values and print the greater of the two integers.

(b) void compare (char, char) – to compare the numeric value of two character and print the character with higher numeric value

(c) void compare (String, String) – to compare the length of the two strings and print the longer of the two.

[15]

Question 9.

Write a menu driven program to perform the following . (Use switch-case statement)

(a) To print the series 0, 3, 8, 15, 24 n terms
(value of 'n' is to be an input by the user).

(b) To find the sum of the series given below:

$$S = \frac{1}{2} + \frac{3}{4} + \frac{5}{6} + \frac{7}{8} \dots\dots\dots \frac{19}{20}$$

[15]