

**ICSE COMPUTER APPLICATIONS PAPER  
2010**

**SECTION A**

**Question 1.**

- a) Define the term bytecode.
- b) What do you mean by type conversion? How is implicit conversion different from explicit conversion?
- c) Name 2 jump statements and their use.
- d) What is an exception? Name 2 exception handling blocks.
- e) Write two advantages of using functions in a Java program.

[ 2 x 5 = 10]

**Question 2.**

- a) State the purpose and return data type of the following String functions :-
  - i) indexOf()
  - ii) compareTo()
- b) What is the result stored in x, after evaluating the following expression  
`int x=5; x=x++ * 2 + 3 * --x`
- c) Differentiate between static and non-static data members.
- d) Write the difference between length and .length() function.
- e) Differentiate between private and protected visibility modifiers.

[ 2 x 5 = 10]

**Question 3.**

- a) What do you understand by the term data abstraction? Explain with the help of an example.

[ 2 ]

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

i)

```
int m=2;
int n=15;
for(int i=1;i<=15;i++);
m++;
--n;
System.out.println("m="+m);
System.out.println("n="+n);
```

[ 2 ]

ii)

```
char x='A';
int m;
m=(x=='a')?'A':'a';
```

```
System.out.println("m="+m);
```

[ 2 ]

- c) Analyse 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 k=1,i=2;
while(++i<6)
    k*=i;
System.out.println(k);
```

[ 2 ]

- d) Give the prototype of a function check which receives a character ch and an integer n and returns true or false.

[ 2 ]

- e) State two features of a constructor.

[ 2 ]

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

i) Extract the second last character of a word stored in the variable wd.

[ 2 ]

ii) Check if the second character of a string is in uppercase.

[ 2 ]

- g) What will the following functions return when executed?

i) `Math.max(-17,-19)`

ii) `Math.ceil(7.8)`

[ 2 ]

- h)

i) Why is an object called an instance of a class?

[ 2 ]

ii) What is the use of the keyword `import`?

[ 2 ]

**Section B ( 60 marks)**

**Question 4.**

Write a program to perform binary search on a list of integers given below, to search for an element input by the user, if it is found display the element along with its position, otherwise display the message “Search element not found”

5,7,9,11,15,20,30,45,89,97

[ 15 ]

**Question 5.**

Define a class student as described below:

Data members/instance variables:

Name, age, m1, m2, m3( marks in 3 subjects ), maximum, average

Member methods:

- i) A parameterized constructor to initialize the data members
- ii) To accept the details of a student
- iii) To compute the average and the maximum out of three marks
- iv) To display the name, age, marks in three subjects, maximum and average.

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

[ 15 ]

**Question 6.**

Shasha Travels Pvt. Ltd. gives the following discount to its customers:

Ticket amount	Discount
Above Rs. 70000	18%
Rs. 55001 to Rs. 70000	16%
Rs. 35001 to Rs. 55000	12%
Rs. 25001 to Rs. 35000	10%
Less than Rs. 25001	2%

Write a program to input the name and ticket amount for the customer and calculate the discount amount and net amount to be paid. Display the output in the following format for each customer:

Sl. No.	Name	Ticket charges	Discount	Net amount
1	--	---	---	--

(Assume that there are 15 customers, first customer is given the serial number 1, next customer 2 .... And so on).

[ 15 ]

**Question 7.**

**Write a menu driven program to accept a number and check and display whether it is a prime number or not OR an automorphic number or not . (Use switch case statement)**

**a) Prime number: A number is said to be a prime number if it is divisible only by 1 and itself and not by any other number.**

**Example: 3,5,7,11,13 etc.**

**b) Automorphic number : an automorphic number is the number which is contained in the last digit(s) of its square.**

**Example 25 is an automorphic number as its square is 625 and 25 is present as the last two digits.**

**[ 15 ]**

**Question 8.**

**Write a program to store 6 elements in an array P, and 4 elements in an array Q and produce a third array R, containing all the elements of the array P and Q. Display the resultant array.**

<b>Example:</b>	<b>INPUT</b>	<b>OUTPUT</b>
<b>P[]</b>	<b>Q[]</b>	<b>R[]</b>
<b>4</b>	<b>19</b>	<b>4</b>
<b>6</b>	<b>23</b>	<b>6</b>
<b>1</b>	<b>7</b>	<b>1</b>
<b>2</b>	<b>8</b>	<b>2</b>
<b>3</b>		<b>3</b>
<b>10</b>		<b>10</b>
		<b>19</b>
		<b>23</b>
		<b>7</b>
		<b>8</b>

**[ 15 ]**

**Question 9.**

**Write a program to input a string in uppercase and print the frequency of each character.**

**Example:**

**INPUT:       COMPUTER HARDWARE**

**OUTPUT:**

<b>CHARACTERS</b>	<b>FREQUENCY</b>
<b>A</b>	<b>2</b>
<b>C</b>	<b>1</b>
<b>D</b>	<b>1</b>
<b>E</b>	<b>2</b>
<b>H</b>	<b>1</b>
<b>M</b>	<b>1</b>
<b>O</b>	<b>1</b>
<b>P</b>	<b>1</b>
<b>R</b>	<b>3</b>
<b>T</b>	<b>1</b>
<b>U</b>	<b>1</b>
<b>W</b>	<b>1</b>

**[ 15 ]**