

2010
SECTION A (40 MARKS)
Attempt all questions

Question 1

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

Question 2

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

Question 3

- (a) What do you understand by *data abstraction*? Explain with 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<5; 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) Analyze the following 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 integer *n* and returns true or false. [2]
- (e) State two features of a constructor.
- (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 *str* is in uppercase. [2]
- (g) What will be the following functions return when executed?
 (i) `Math.max(-17, -10)`
 (ii) `Math.ceil(7.8);` [2]
- (h) Write answer for the following:-
 (i) Why is an object called an instance of a class?
 (ii) What is the use of the keyword `import`? [2]

2010**SECTION B (60 MARKS)***Attempt any four questions***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 described as follows:

Data members:

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 average and 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 the class and call the above member methods. [15]

Question 6

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

<u>Ticket amount</u>	<u>Discount</u>
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	-	-	-	-

(Imagine there are n customers, first customer is given serial number 1, next customer 2.. so on). [15]

Question 7

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

- (a) Prime number: A number is said to be prime number if it is divisible only by 1 and itself and not by any other number. E.g.: 3,5,7,11 etc.
- (b) Automorphic number: An automorphic number is the number which is contained in the last digit(s) of its square. E.g.: 25 is an automorphic number as its square is 625 and 25 is present as last two digits.

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 array P and Q. Display the resultant array.

P[]	Q[]	R[]
4	19	4
6	23	6
1	18	1
5	33	5
3		3
7		7
	19	
	23	
	18	
	33	

[15]

Question 9.

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

Example: Input: COMPUTER HARDWARE

Output:

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

[15]