

2017
SECTION A (40 MARKS)
Attempt all questions

Question 1

- (a) What is inheritance? [2]
- (b) Name the operators listed below: [2]
- (i) < (ii) ++ (iii) && (iv) ? : [2]
- (c) State the number of bytes occupied by **char** and **int** data types. [2]
- (d) Write one difference between / and % operator. [2]
- (e) String x[] = {"SAMSUNG", "NOKIA", "SONY", "MICROMAX", "BLACKBERRY"};
 Give the output of the following statements: [2]
- (i) System.out.println(x[1]);
- (ii) System.out.println(x[3].length()); [2]

Question 2

- (a) Name the following: [2]
- (i) A keyword used to call a package in the program
- (ii) Any one reference data type [2]
- (b) What are the two ways of invoking functions? [2]
- (c) State the data type and value of **res** after the following is executed [2]
- char ch='t'; res=Character.toUpperCase(ch);
- (d) Give the output of the following segment and also mention the number of times the loop is executed: [2]
- ```
int a,b;
for(a=6, b=4; a<=24; a=a+6)
{
 if(a%b==0)
 break;
}
System.out.println(a);
```
- (e) Write the output: [2]
- ```
char ch='F';
int m=ch; m=m+5;
System.out.println(m+" "+ch);
```

Question 3

- (a) Write a Java expression for the following: [2]
- $$ax^5 + bx^3 + c$$
- (b) What is the value of **x1** if x=5? [2]
- $$x1 = ++x - x++ + - - x$$
- (c) Why is an object called an instance of a class? [2]
- (d) Convert the following *do while* loop into *for* loop: [2]
- ```
int i=1; int d=5;
do {
 d=d*2;
 System.out.println(d);
 i++; } while(i<=5);
```
- (e) Differentiate constructor and function: [2]
- (f) Write the output for the following: [2]
- ```
String s="Today is Test";
System.out.println(s.indexOf('T'));
System.out.println(s.substring(0,7)+" "+"Holiday");
```
- (g) What are the values stored in variable **r1** and **r2**: [2]
- (i) double r1=Math.abs(Math.min(-2.83,-5.83);
- (ii) double r2=Math.sqrt(Math.floor(16.3)); [2]
- (h) Give the output of the following code: [2]
- ```
String A="26", B="100", String D=A+B+"200";
int x=Integer.parseInt(A); int y=Integer.parseInt(B);
int d=x+y;
System.out.println("Result 1 = "+D);
System.out.println("Result 2 = "+d);
```
- (i) Analyze the given program segment and answer the following questions: [2]
- ```
for(int i=3; i<=4; i++) {
    for(int j=2; j<=i; j++) {
        System.out.print(""); }
    System.out.println("WIN"); }
```
- (i) How many times does the inner loop execute?
- (ii) Write the output of the program segment [2]
- (j) What is the difference between the Scanner class functions *next()* and *nextLine()*? [2]

2017**SECTION B (60 MARKS)***Attempt any four questions***Question 4**Define a class **ElectricBill** with the following specification:

Instance variables / Data members:

String n – to store the name of the customer, int units – to store the number units consumed

double bill – stores the amount to be paid

Member methods:

- (i) void accept() - To accept name of the customer and number of units consumed
 (ii) void calculate() - To calculate the bill as per the following tariff:

Number of units	Rate per unit
First 100 units	Rs.2.00
Next 200 units	Rs.3.00
Above 300 units	Rs.5.00

A surcharge 2.5% of bill is charged if the units is above 300

- (iii) void print() - To print the details as follows:

Name of the customer:

Number units consumed:

Bill amount:

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

[15]

Question 5Write a program to accept a number and check and display whether it is a **spy number** or not.

(A number is spy if the sum of its digits equals the product of its digits.)

Example: Consider the number 1124. Sum of digits:= 1+1+2+4=8. Product of digits = 1*1*2*4 = 8

[15]

Question 6

Using switch statement, write a menu driven program for the following:

- (i) To find and display the sum of the series given below:

$$S = x^1 - x^2 + x^3 - x^4 + x^5 \dots - x^{20} \text{ (where } x=2)$$

- (ii) To display the following series: 1 11 111 1111 11111

For an incorrect option an appropriate error message should be displayed

[15]

Question 7

Write a program to input integer elements into an array of size 20 and perform the following operations::

- (i) Display larger number from the array
 (ii) Display smallest number from the array
 (iii) Display sum of all elements from the array

[15]

Question 8

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

- (i) void check(String str, char ch) – to find and print the frequency of a character in a string.

Example: Input: str="success" ch= 's'

Output: Number of s present is = 3

- (ii) void check(String str) – to display only vowels from string s1, after converting it to lower case

Example: Input: s1= "computer" Output: o u e

[15]

Question 9Write a program to input **forty** word in an array. Arrange these words in descending order of alphabets using selection sort. Print the sorted array.

[15]