

COMPUTER APPLICATIONS

**Question 1**

- a) What is inheritance? [1]
- b) Name the primitive data type in Java that is: [1]
- (i) a 64-bit integer and is used when you need a range of values wider than those provided by *int*.
- (ii) a single 16-bit Unicode character whose default value is '\u0000'
- c) State one difference between the floating point literals *float* and *double*. [1].
- d) Operators with higher precedence are evaluated before operators with relatively lower precedence. Arrange the operators given below in order of higher precedence to lower precedence. [1]
- (i) &&    (ii) \*    (iii) >=    (iv) ++
- e) What are the values stored in variables r1 and r2: [1]
- (i) double r1 = Math.abs(Math.min(-2.83, -5.83));
- (ii) double r2 = Math.sqrt(Math.floor(16.3));

**Question 2**

- a) Rewrite the following program segment using *if-else-if* statements instead of the ternary operator. [1]
- String grade=(mark>=90) ? "A" : (mark>=80) ? "B" : "C";
- b) Give the output of the following method: [1]
- ```
int a = 5;
a ++ ;
System.out.println(a);
a -- = ( a -- ) - ( -- a );
System.out.println(a);
```
- c) Name the type of error ( syntax, runtime or logical error ) in each case given below: [1]
- (i) Math.sqrt(36 - 45)                      (ii) int a;b;c;
- d) What are keywords? Give an example [1]
- e) Identify the literals listed below: [1]
- (i) 0.5    (ii) 'A'            (iii) false            (iv) "a".

### Question 3

- a) Give differences between the '+' and '++' [1]  
b) Why is an object called an instance of a class? [1]  
c) Write the Java expression for: [1]

$$\frac{a^2 + b^2}{2ab}$$

- d) Define Encapsulation. [1]  
e) Give the output of the following expression: [1]  
a += a++ + ++a + --a + a-- ; when a = 7

f) Name any two reference data types. [1]

g) What are identifiers? [1]

h) Name the operators listed below [1]

- (i) <      (ii) \*=      (iii) ||      (iv) ? :

i) Write one difference between / and % operator. [1]

j) What is the difference between the Scanner class functions next() and nextLine()? [1]

### Question 4

A special two-digit number is such that when the sum of its digits is added to the product of its digits, the result is equal to the original two-digit number.

Example: Consider the number 59

Sum of digits =  $5 + 9 = 14$       Product of its digits =  $5 \times 9 = 45$

Sum of the sum of digits and product of digits =  $14 + 45 = 59$

Write a program to accept a two-digit number. Add the sum of its digits to the product of its digits. If the value is equal to the number input, output the message "Special 2-digit number" otherwise, output the message "Not a special 2-digit number". [10]

### Question 5

Write a program to input and store roll number, name and marks in 3 subjects of a student 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*

*Remarks*

85-100

EXCELLENT

75-84

DISTINCTION

60-74

FIRST CLASS

40-59

PASS

Less than 40

POOR

[10]



### Question 6

Define a class named BookFair with the following description :

String Bname - stores the name of the book

double price - stores the price of the book

Write a java program input the name and the price of the book. Calculate the price after discount. Discount is calculated based on the following criteria. Display the name and price of the book after discount

| Price                                         | Discount     |
|-----------------------------------------------|--------------|
| Less than or equal to 1000                    | 2% of price  |
| More than 1000 and less than or equal to 3000 | 10% of price |
| More than 3000                                | 15% of price |

[10]

### Question 7

Write a program in java to input consumer number and the number of phone calls done by a consumer in a month. Calculate and print the total bill amount paid by the consumer as per the following data.

| Phone calls done    | Rate per call                   |
|---------------------|---------------------------------|
| First 100 calls     | Only Rs.250 as rental charge    |
| Next 100 calls      | Rs.1.05 per call+ rental charge |
| Next 100 calls      | Rs.1.15 per call+ rental charge |
| More than 300 calls | Rs.1.25 per call+ rental charge |

[10]

### Question 8

Write a java program to input a number from 10 to 20 and print the corresponding Roman numeral

[10]

### Question 9

Using switch statement, write a menu driven program to calculate the volume of cuboid, cylinder and cone by using the formula

1. volume of a cuboid  $=l*b*h$ , where l,b,h are sides of a cuboid.
2. volume of a cylinder  $=\pi r^2 h$ , where r is the radius and h is the height of the cylinder.
3. volume of a cone  $=\frac{1}{3} \pi r^2 h$ , where r is the radius and h is the height of the cone. [10]