

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

This Paper is divided into two Sections.

*Attempt **all** questions from **Section A** and **any four** questions from **Section B**.*

The intended marks for questions or parts of questions are given in brackets [].

SECTION A

*(Attempt **all** questions from this Section.)*

Question 1

[20]

- (i) Arrange the following primitive data type in an ascending order of their size:
i) char ii) byte iii) double iv) int
(a) ii), i), iv), iii) (b) i), ii), iv), iii) (c) ii), i), iii), iv) (d) ii), iii), iv), i)
- (ii) The if...else construct returns _____ value.
(a) integer (b) character (c) boolean (d) null
- (iii) The condition that determines the execution of statements is
(a) looping (b) jumping (c) sequence (d) selection
- (iv) Find the odd one
(a) Math.floor (b) Math.ceil (c) Math.random (d) Math rint
- (v) The value placed in X is: $X = a > b \ \&\& \ a > c ? a : (b > c ? b : c)$; when $a=10$, $b=15$ and $c=20$
(a) 20 (b) 15 (c) 0 (d) 5
- (vi) Give the output of the following expression:
`System.out.print(Math.pow("345".indexOf('5'),3));`
(a) 0.0 (b) 27.0 (c) 8.0 (d) error
- (vii) do..while loop is an
(a) entry controlled loop (b) infinite loop
(c) exit controlled loop (d) Finite loop
- (viii) what modifier would be used to limit the visibility of a method to only the other classes in the current package and subclasses?
(a) public (b) private (c) protected (d) default
- (ix) Which of the following is contain Math library method
(a) java.util (b) java.awt (c) java.lang (d) java.io
- (x) Which keyword, when used in front of a method must also appear in front of the class.
(a) public (b) abstract (c) final (d) static
- (xi) The _____ operator allocates memory for an object at runtime and returns a reference of this memory.
(a) = (b) == (c) new (d) dot(.)
- (xii) ASCII value of M
(a) 76 (b) 77 (c) 78 (d) none of these

- (xiii) The statement that prints "Welcome" 5 times is
 (a) for (i=0;i<5;i++) (b) for(i=1;i<=5,i++) (c) for (i=10;i>5;i--) (d) all
- (xiv) The entity there denotes a storage location in the memory used to store a data value is-
 (a) Literal (b) array (c) variable (d) none of these
- (xv) Which of the following keyword is optional in multiway branching statement?
 (a) case (b) else (c) switch (d) default
- (xvi) The storage space occupied by a variable of data type double is _____ bytes
 (a) 8 (b) 16 (c) 32 (d) 64
- (xvii) What is the output of the following code

```
int count = -4;
while (count < 2)
{
  System.out.print(count + " ");
  count = count + 1;
}
```

 (a) -4 -3 -2 -1 1 0 (b) -4 -3 -4 -5 -6 -7
 (c) -4 -3 -2 -1 1 2 (d) -4 -3 -2 -1 0 1
- (xviii) A variable that can be access through out the program is called
 (a) scope (b) limit (c) assignment (d) none
- (xix) Which of the following is not a token?
 (a) operator (b) statement (c) keyword (d) identifier
- (xx) The element in x[4]*x[1] of the array {3, 5, 7, 12, 16, 18, 20, 35, 42, 89} is:
 (a) 48 (b) 60 (c) 36 (d) 80

Question 2

- (i) Evaluate the expression: $Z^* = a + + - + + a - - - b + b - - \% 4$ [2]
 where a=11, b=7 and Z=9
- (ii) Write the equivalent Java expression $\sqrt{\frac{(a+b)^p}{|a-b|}}$ [2]
- (iii) Write the following code using ternary operator [2]

```
int x=5;
if(x>=1)
  System.out.print("JAVA");
else
  System.out.print("BLUEJ");
```
- (iv) What will be the output of the following code and how many times loop will execute? [2]

```
int i = 0;
for(i= 10; i >= 1; i--)
{
  if(i % 2 == 1)
    continue;
  System.out.print(i + ",");
}
```
- (v) Difference between constructor and method. [2]
- (vi) What is meant by precedence of operators? What is a literal? [2]

- (vii) Consider the following array and answer the question given below: [2]
 int A[]={ 12, 65, 78, 47, 41, 72};
 (a) System.out.println(A[1]+ “,” + A[5]*2);
 (b) System.out.println(A[3]+ “,” + A[4]%2);
- (viii) System.out.println(("GOOD" + ("MORNING".substring(("MORNING".indexOf('N')).
 toUpperCase()))); [2]
- (ix) Define boxing with example. [2]
- (x) Rewrite the following while loop using for loop: [2]
 int x = 5;
 while(x < 5){
 ++x;
 }
 System.out.println(x++);

SECTION B

(Answer **any four** questions from this **Section**.)

The answers in this section should consist of the programs in either BlueJ environment or any program environment with java as the base. Each program should be written using variable description/ mnemonic codes so that the logic of the program is clearly depicted. Flowcharts and algorithms are not required.

Question 3 [15]

Define a class BillBook having the following description:

Data members/instance variables

int billno - to store bill number
 String name - to store customer name
 int unit - to store number of unit consumed
 double amt - to store bill amount

Member functions:

BillBook () - constructor to initialize billno to 0, name to “ ” unit to 0 and amt to 0.0.
 input () - to store bill no, customer name, total unit consumed
 calculate () - to calculate bill amount as per the given conditions

Total unit	Rate/unit
------------	-----------

First 150 units	Rs 7.5
-----------------	--------

Next 150 units	Rs 8.6
----------------	--------

Next 350 units	Rs 9.5
----------------	--------

Above 650 units	Rs 10
-----------------	-------

Above 400 units 2.5% surcharge and above 600 units 3.5% surcharge on bill amount

display () - To display the details in the following format

Bill no	Customer Name	Total Units	Bill Amount
-----	-----	-----	-----

Create an object in the main method and call all the above methods in it.

Question 4

[15]

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

(i) int Sum(int A, int B) – with two integer arguments (A and B) calculate and return sum of all the prime numbers in the range of A and B.

Sample input: A=4 and B=16

Sample output: sum = 5 + 7 + 11 + 13=36

(ii) long Sum(int N) – with one integer arguments(N) calculate and return the sum of the following series:

Sample input: N=10

Sample output: sum = 1! + 3! + 5! + 7! + 9!

(iii) int Sum(int A, int B, int N) - with three integer argument (A, B and N) calculate and return sum of the following series:

Sample input: A=2, B=4 and N=10

Sample output: sum = $1^2 + 2^4 + 3^2 + 4^4 + 5^2 + 6^4 + 7^2 + 8^4 + 9^2 + 10^4$

Write the main method to create an object and invoke the above methods.

Question 5

[15]

Write a program to create an array to store N integer. Print the original array elements. Print smallest and largest element from the array.

Question 6

[15]

Write a program to input a name and print the initials except the last word (surname). Each initial must be followed by symbol dot (.). At the end print total number of characters in the original name and in the initials except the blank spaces and other characters

Example: Input: Mohan Das Karam Chand Gandhi

Output: M. D. K. C. Gandhi

Number of characters in the original name = 24

Number of characters in the initials = 10

Question 7

[15]

Write a menu driven program to perform following operations using switch-case.

1. To print the triangle with N rows

Example: If N = 5, Output:

```
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1
```

2. To print the triangle

Example: If S = "BLUEJ", Output:

```
J E U L B
J E U L
J E U
J E
J
```

Question 8

[15]

Write a program to input 20 integers in an array from the keyboard. Search the integer 'num' from the array using Binary search technique and print the index of the num if found in the array otherwise print a message "Number not found".