

II PRE BOARD EXAMINATION COMPUTER APPLICATIONS

Maximum Marks : 100

Time Allowed : 2 hours

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 are given in [].

SECTION A [40 Marks]

Attempt all questions from this section.

Question 1

Choose the correct answer and write the correct option:-

[16]

a. Name the feature of java depicted in the picture .



- i. Encapsulation
- ii. Inheritance
- iii. Abstraction
- iv. None of these

b. Name the type of error that occurs in following statement :

```
System.out.println(Math rint(Math.sqrt(-10.5)) );
```

- i. Syntax Error
 - ii. Run-ime Error
 - iii. Logical Error
 - iv. None of these
-

This paper consists of 8 printed pages.

- c. Which loop is more suitable for the fixed number of Iteration ?
- for loop
 - while loop
 - do-while loop
 - None of these
- d. _____ is a keyword to make variable as a constant .
- const
 - Constant
 - Const
 - None of these
- e. _____ principle implements the 'code reusability' .
- Data Abstraction
 - Inheritance
 - Both (i) and (ii)
 - None of these
- f. Which keyword is used to call a constructor from within another constructor in the same class?
- new
 - This
 - Super
 - None of these
- g. What is a constructor in Java?
- A method used to initialize the state of an object.
 - A method used to define the behavior of a class.
 - A method used to create new objects.
 - A method used to access the properties of a class.
- h. Which of the following keywords is used to access the properties and methods of a class without creating an instance of the class?
- static
 - abstract
 - Final
 - None of these
- i. valueOf() function converts :
- Primitive type to String
 - String to primitive type
 - character to String
 - None of these

- j. What does the method signature consist of?
- Method name only
 - Method name and parameters
 - Method name, parameters, and return type
 - Method name and return type
- k. In Java, every method must be part of ?
- an object
 - a class
 - a package
 - a project
- l. `int a[][] = new int[3][4];`
`System.out.println(a.length);`
- 3
 - 4
 - 2
 - None of these
- m. What is the output of `"Java" == "Java"` in Java?
- True
 - False
 - Compilation error
 - None of these
- n. What is the return type of `isLowerCase()` ?
- String
 - boolean
 - char
 - None of these
- o. Name the function that compares the Strings lexicographically.
- `rint()`
 - `equals()`
 - `compareTo()`
 - None of these
- p. _____ is a user define datatype.
- Object
 - class
 - variable
 - None of these

- q. `int a[] = (5, 4, 1, 2);`
Determine the error in the above code .
- Syntax error
 - Run Time error
 - Logical error
 - None of these
- r. How many columns does a have if it is created as follows :
`int[][] a = {{2, 4, 6, 8}, {1, 2, 3, 4}}; ?`
- 2
 - 4
 - 8
 - 9
- s. What is the default value of String?
- null
 - `\u0000`
 - false
 - 0
- t. `char ch[] = new char[10];`
How many bytes will be consumed by the above array in the memory?
- 2
 - 4
 - 8
 - None of these

Question 2

- a. Explain pass by reference by example. [2]
- b. Give the output of the following : [2]
`System.out.println("Go, team, Go!".lastIndexOf("Go"));`
- c. Give the output :- [2]
`int m = 3, n = 4;`
`m+ = n-- - n-- - --n - n- + m;`
- d. Give the Output :- [2]
`int a[][] = new int[2][2];`
`for(int i = 0; i < 2; i++)`
`{`
`for(int j = 0; j < 2; j++)`
`{`

```
        System.out.println(a[i][j]);
    }
}
```

e. Rewrite the following code using ternary operator : [2]

```
int a = 6, b = 7, d = 9;
if(a > b && a > c)
    System.out.println("A");
else if(b > c)
    System.out.println("B");
else
    System.out.println("C");
```

f. Write Java Expression :- [2]

$$|a^5 - b^3| \times \sqrt[3]{a - b}$$

g. Give the Output of the following: [2]

```
outer :
for (int i = 3; i <= 4; i++)
{
    for (int j = 2; j < i; j++)
    {
        if(i == 2)
            break outer ;
        System.out.print( j);
    }
}
```

h. Predict the output of the following:- [2]

```
char s = '&';
System.out.println(Character.isLetterOrDigit());
```

i. Give the output of the following:- [2]

```
void test4(String x, String y)
{
    if(x.compareTo(y) > 0)
        System.out.println(x);
    else
        System.out.println(y);
}
```

j. Difference between pass by value and pass by reference. [2]

SECTION B [60 Marks]

Attempt **any four** questions from this Section.

The answers in this Section should consist of the programs either Blue J environment or any program environment with Java as the base.

Each program should be written using variable descriptions/Mnemonic Codes so that the logic of the program is clearly depicted.

Flow charts and algorithms are not required.

[15]

Question 3

Define a class named MovieMagic with the following description :

Instance variable/data members :

- int year : to store the year of release of the movie
- String title : to store the title of the movie
- float rating : to store the popularity rating of the movie
(maximum rating = 0.0 and maximum rating = 5.0)

Member method :

- MovieMagic() : define constructor to initialize numeric data member to 0 and String data members to " "
- Void accept() : to input and store year, title and rating.
- Void display : to display the title of the movie and message based on the 10 rating as per the table below.

Rating	Message to be displayed
0.0 to 2.0	Flop
2.1 to 3.4	Semi- Hit
3.5 to 4.5	Hit
4.6 to 5.0	Super Hit

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

Question 4**[15]**

Write a program to accept 3 * 3 Matrix in an double dimensional array and print the sum of each columns separately.

Question 5**[15]**

Write a menu driven program in Java to display a following pattern :

- a. 1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
- b. 0
0 1
0 1 1
0 1 1 2

Question 6**[15]**

Write a class program with the following specifications :

- Class name : Calculate
Instance variables : int num, f, rev
Member Methods :
calculate (int n) : to initialize num with n, f and rev with 0 (zero)
int prime() : to return 1, if number is prime
int reverse() : to return reverse of the number
void display() : to check and print whether the number is a prime palindrome or not

Question 7

[15]

Design a class 'Time' with the following specifications :

class : Time

Data members/Instance variables : int hour, min, sec

Member Methods :

Time() : default constructor to initialize integer data members to 0

void get_time() : to accept a time in hour, minute and second.

void show_time() : to display the time in terms of hour, minute and second.

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

Question 8

[15]

Write a program to accept 20 numbers in a single dimensional array and sort them using selection sort .

#####

Solution

i) iii Abstraction	k) ii a class	[1x20=20]
ii) iv None of these	l) i 3	
iii) i for loop	m) iii Compilation error / i True	
iv) iv None of these	n) ii boolean	
i) ii Inheritance	o) iii Compare P/C	
ii) iii Super / None of the	p) ii class	
iii) i A method to initialize the state of	q) i Syntax error	
iv) i static	r) ii 4	
i) ii String to primitive	s) i null	
ii) ii Method name and parameter	t) iv None of these	

Q.2 a) In pass by reference any change made in the formal parameter is reflected onto the actual parameter. [1+1]

```
class Reference
```

```
{ void add(int b[])
```

```
{ int i, p = b.length;
```

```
for(i=0; i<p; i++)
```

```
b[i] = b[i] + 2;
```

```
System.out.println("Parameters after change");
```

```
for(i=0; i<p; i++)
```

```
System.out.print(b[i] + " ");
```

```
System.out.println();
```

```
}
```

```
public static void main()
```

```
{ int a[] = {2, 4, 8, 6, 15};
```

(1)

Reference ob = new Reference ();

ob.add(a);

System.out.println ("Function arguments after function operation");

for (int j=0; j < a.length; j++)

System.out.print (a[j] + " |t");

}

}

b) 10

[2]

c) -1

[2]

d) 0

[2]

0

0

0

e) System.out.println(a > b || a > c) ? 'A' : (b > c) ? 'B' : 'C';

[2]

f) Math.abs(Math.pow(a, 5) - Math.pow(b, 3)) * Math.cos(a - b);

[2]

g) 223

[2]

h) false

[2]

i) AMIT

[2]

j) In call by value changes made in the formal parameter does not affect the actual parameter. The actual parameter remains intact.

In call by reference changes made in the formal parameter is reflected onto the actual parameter. Hence, the actual parameter also changes accordingly.

[1+1]

SECTION - B

```
83. import java.util.*;
class MovieMagic
{ int year;
  String title;
  float rating;
  MovieMagic ()
  { year = 0;
    String = "";
    rating = 0.0;
  }

  void accept()
  { Scanner sc = new Scanner (System.in);
    System.out.println("Enter year, title and rating");
    year = sc.nextInt();
    title = sc.nextLine();
    rating = sc.nextFloat();
  }

  void display()
  { System.out.println("Title of the movie = " + title);
    if (rating >= 0.0 && rating <= 2.0)
      System.out.println("Flop");
    else if (rating >= 2.1 && rating <= 3.4)
      System.out.println("Semi-Hit");
    else if (rating >= 3.5 && rating <= 4.5)
      System.out.println("Hit");
    else if (rating >= 4.6 && rating <= 5.0)
      System.out.println("Super Hit");
    else
      System.out.println("No such rating");
  }
}
```



```

public static void main()
{
    Magic ob = new Magic();
    ob.accept();
    ob.display();
}
}

```

13 + 2 = 15

Q4

```

import java.util.*;
class Q4
{
    public static void main()
    {
        Scanner sc = new Scanner(System.in);
        int a[][] = new int[3][3];
        int i, j, c;
        for (i = 0; i < 3; i++)
        {
            for (j = 0; j < 3; j++)
            {
                System.out.println("Enter the number of the matrix");
                a[i][j] = sc.nextInt();
            }
        }
        System.out.println("The sum of the elements of each column");
        for (i = 0; i < 3; i++)
        {
            c = 0;
            for (j = 0; j < 3; j++)
            {
                c = c + a[j][i];
            }
            System.out.println("The sum of the elements of " +
                "(i+1)th column = " + c);
        }
    }
}

```

13 + 2 = 15



A5.

```

import java.util.*;
class A5
{
    public static void main()
    {
        Scanner sc = new Scanner(System.in);
        int ch, i, j, R;
        System.out.println("Enter 1 for Pattern 1 and 2 for Pattern 2");
        ch = sc.nextInt();
        switch(ch)
        {
            case 1: for(i=1; i<=4; i++)
                    {
                        for(j=1; j<=i; j++)
                            System.out.print(j+" ");
                        for(R=i-1; R>=1; R--)
                            System.out.print(R+" ");
                        System.out.println();
                    }
                break;
            case 2: for(i=0; i<=3; i++)
                    {
                        R=0;
                        for(j=0; j<=i; j++)
                        {
                            if(j%2 != 0)
                                R=R+1;
                            System.out.print(R+" ");
                        }
                        System.out.println();
                    }
                break;
            default: System.out.println("Wrong choice");
        }
    }
}

```

13+2=15

Q6

```

import java.util.*;
class Calculate
{
    int num, f, rev;
    Calculate (int n)
    {
        num = n;
        f = 0;
        rev = 0;
    }

    int prime ()
    {
        int i;
        for (i = 1; i <= num; i++)
        {
            if (num % i == 0)
                f++;
        }
        if (f == 2)
            return 1;
    }

    int reverse ()
    {
        int d, num1 = num;
        while (num1 != 0)
        {
            d = num1 % 10;
            rev = rev * 10 + d;
            num1 = num1 / 10;
        }
        return rev;
    }

    void display ()
    {
        int r = reverse ();
        int p = prime ();
        if (p == 1 && num == rev)
            System.out.println ("Prime Palindrome");
        else
    
```

```

        System.out.println("Not a Prime Palindrome");
    }
    public static void main()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a number");
        int a = sc.nextInt();
        Calculate ob = new Calculate(a);
        ob.display();
    }
}

```

13+2 VD

Q7.

```

import java.util.*;
class Time
{
    int hour, min, sec;
    Time()
    {
        hour = 0;
        min = 0;
        sec = 0;
    }
    void get_time()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter hour, minute and second");
        hour = sc.nextInt();
        min = sc.nextInt();
        sec = sc.nextInt();
    }
    void show_time()
    {
        System.out.println(hour + "hours" + min + "minutes" +
            sec + "seconds");
    }
}

```

```

public static void main()
{
    Time ob = new Time();
    ob.getTime();
    ob.showTime();
}
}

```

13 + 2 VD

```

88 import java.util.*;
class Selection-sort
{
    public static void main()
    {
        Scanner sc = new Scanner(System.in);
        int a[] = new int[20];
        int i, j, t, min;
        for(i=0; i<20; i++)
        {
            System.out.println("Enter array element");
            a[i] = sc.nextInt();
        }
        for(i=0; i<9; i++)
        {
            min = i;
            for(j=i+1; j<10; j++)
            {
                if(a[j] < a[min])
                {
                    min = j;
                }
            }
            t = a[i];
            a[i] = a[min];
            a[min] = t;
        }
        System.out.println("The numbers in ascending order - ");
        for(i=0; i<10; i++)
            System.out.println(a[i]);
    }
}

```

13 + 2 VD