Std : X   MARKS : 100
Date : 17/01/25   Time : 2 Hrs
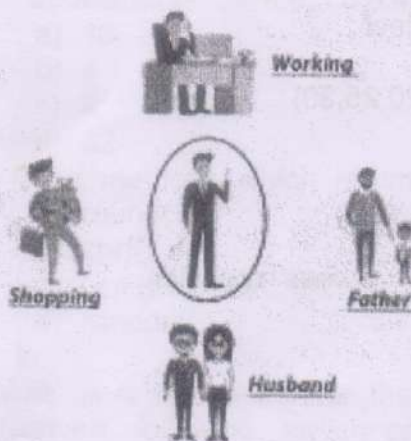
SECTION A (40 MARKS)

Question 1

Choose the correct answers from the given options.   [20]

(i)   Which java principle is depicted in the following figure.
    a) inheritance
    b) abstraction
    c) polymorphism
    d) encapsulation

(ii)   Once the java program is written , it works on any platform.
       Name java feature
    a) java is case sensitive
    b) WORA(Write once run anywhere)
    c) robust
    d) open product

(iii) Which of the following is user defined data type ?
       1) array   2) double 3) class 4) boolean
    a) only 1
    b) 1 and 3
    c) only 2
    d) only 4

(iv)   The operators which joins two relational expressions
    a) relational
    b) ternary
    c) arithmetic
    d) logical

(v)   The output of 30/6%2 is
    a) 1

b) 10
c) 2
d) 0

(vi) Select the infinite loop
    a) for(int i=1;i<=10;i++)
    b) for(int i=2; i!=0 ;i-=3)
    c) for(int i=5 ;i<=5;i++)
    d) for(int i =1;i>=1; i - -)

(vii) The output of Math.max(-7, Math.min(-5 ,-4)) is
    a) -5
    b) -4
    c) -7
    d) error

(viii) Which method results into boolean data type ?
    a) trim()
    b) equals()
    c) replace()
    d) concat()

(ix) Which statement is true for the following statement ?
    Game cricket= new Game();
    a) Game is object of cricket class
    b) new keyword crates object Game
    c) Game is a class and cricket is an object
    d) Game and cricket are objects

(x) The sum of a[2] and a[4] in a[ ]={ 5,10,15,20,25,30}
    a) 30
    b) 40
    c) 35
    d) 20

(xi) Society playground is an example for _____ access specifier.
    a) public
    b) local
    c) protected
    d) private

(xii) parseInt() is an _____ method
    a) in built
    b) user defined
    c) derived
    d) default

(xiii) Assertion : In switch case break statement avoids fall through.
    Reason : break statement helps to execute only one case at a time.
    a) Both Assertion(A) and Reason(R) is true and Reason (R) is a correct explanation of Assertion(A)
    b) Both Assertion(A) and Reason(R) is true and Reason (R) is not a correct explanation of Assertion(A)
    c) Assertion (A) is true and reason(R) is false
    d) Assertion (A) is false and reason(R) is true

(xiv) Assertion : In the absence of updation statement for loop becomes an infinite loop
    Reason : The updation is not necessary statement in for loop.
    a) Both Assertion(A) and Reason(R) is true and Reason (R) is a correct explanation of Assertion(A)
    b) Both Assertion(A) and Reason(R) is true and Reason (R) is not a correct explanation of Assertion(A)
    c) Assertion (A) is true and reason(R) is false
    d) Assertion (A) is false and reason(R) is true

a) 1

b) 3

c) -1

d) 5

(xvi) Which is correct statement for boxing ?

  a) Integer x=6;

  b) Integer ob=new Integer(25);

  c) int n= 40;

  d) int x=Integer.parseInt("45");

(xvii) The index of last element of an array ar[ ] is

  a) ar.length( )

  b) ar[ ].length

  c) ar.length-1

  d) ar.length()-1

(xviii) int check(char ch, String s)

  which statement is correct for the above prototype

  a) check ( ) does not return any value

  b) check ( ) has return type int

  c) check method has two actual parameters

  d) it is type of pure method

(xix) double x [ ]={2.5,4.5,5.5,6.4}; occupy _____ bytes

  a) 16

  b) 4

  c) 8

  d) 32

(xx) The methods which returns int value

  a) round( )

  b) cbrt()

  c) ceil ()

  d) random( )

Question 2

(i) Write java expression for the following : $x^{10}+y^{10}$ [2]

(ii) Convert following switch case into if else if [2]

```
switch(x)
{
    case 'T' :
    case 't' : System.out.print("Teacher"); break;
    default : System.out.print("Student");
}
```

(iii) Evaluate the given expression when x=4 [2]

  $x * = - - x + x - - + x$

(iv) int a,b;

```
for ( a=10 ,b=1; a>=1 ;a-=2)
{
    b+=a;
    b++;
}
System.out.print(b);
```

  Convert the above loop into exit controlled loop. [2]

(v) Raman wants to check if character is 'm' then display product of two numbers otherwise display sum of two numbers. But code is showing an error. Name the error and rectify the code to run properly. [2]

  void show( )

```java
{
    if ( ch="m")
    System.out.print(x+y);
    else
    System.out.print(x*y);    }
```

(vi)   Write the output of the following   [2]

```java
for( int a=1; a<=10:a++)
{
    if(a%2==0)
    continue;
    System.out.print(a+" ");
}
```

(vii) Write the output of the following String method   [2]

```java
String x= " talent" ;   String y="matrix" ;
```
   a) System.out.println(x.equals(y));
   b) System.out.print(x.substring(3).concat(y.substring(3)) ;

(viii) class perform

```java
{
    int m ; String name;
    perform( int x , String y)
    {
        m=x;
        name=y;
    }
    void print ()
    {
        System.out.print( name+"    "+m);
    }
    public static void main( )
    {
        perform ob1=new perform( 95 , "Xavier");
        ob1.print( );
    }
}
```

   a) Give the output of the following code.
   b) Name constructor and state its type.   [2]

(ix) Predict the output

```java
String s="70" ;
char ch=(char)( Integer.parseInt(s) );
System.out.print( ch+"    "+(++ch) );
```
                                                 [2]

(x) Consider the following segment and answer the following .   [2]

```java
.int a[ ][ ]={ { 12,10,8} ,{4,6,2} ,{3,5,7} }
```
   a) System.out.print(a[0][2]+a[2][0]);
   b) Write left diagonal elements.

SECTION B (60 MARKS)
(Program should have variable description table)

Question 3

Define a class with following specifications.
class name : Hotel
Member variables :
String name : stores name of customer name
long mobno : stores mobile number
int days : stores number of days customer stayed in hotel
int bill : stores customer bill

Member method
Hotel( ) - default customer to initialise variables
void input () – input values using Scanner class methods
void charge( )- calculate bill as per the following criteria

days	charge/day
first 3 days	1000 Rs/ day
next 4 days	900 Rs/day
> 7 days	800 Rs/day

bill = bill + gst(18% of bill)
void print( )- Display customer name , mobile number and bill.
Call all the above method in main method with help of an object.   [15]

Question 4

Define a class to accept 20 characters in array ar[ ]. Count total number of
uppercase characters , lowercase characters and digits. Display them separately.   [15]
output : Number of uppercase characters __
         Number of lowercase characters ____
         Number of digits ___ -

Question 5

Write a class to accept a String and check if it is valid password or not.
A password is valid if it satisfies following specifications :
- Length of password should be 8
- First character should be uppercase character
- Space is not allowed
- Except first character any one character should be special character(&,$,#,@)
If any one specification is not there display it is invalid password.   [15]

Question 6

Define a class to accept values into 3x3 array. Check if it is Unit Matrix or not.
A matrix is said to be Unit Matrix when all left diagonal elements are 1 and rest all
elements are zero.
e.g.   [15]

1	0	0
0	1	0
0	0	1

Question 7

Define a class to accept a number . Find smallest and largest digit of the number.
If sum of smallest and largest is even number then it is called **Bankai** number
otherwise it is not **Bankai** number.
Example : 68943   smallest digit =3 , largest digit=9 sum =9+3=12 is even number   [15]

Question 8

Define a class to overload a method print( ) as follows :
```
void  print ( )-  @#@#@
                  @#@#@
                  @#@#@
                  @#@#@
```

double print(double x , double y) -- display sum of numbers between x and y with
difference of 0.5.
e.g. if x=1.0 , y=4.0 output is : 1.0 +1.5+2.0+2.5+..............+4.0

int print(char ch1, char ch2) – compare ascii code of two characters and return ascii code
                              of largest character.   [15]