COMPUTER APPLICATION
CLASS 8
JAVA PROGRAMS
2019-2020

MID TERM SYLLABUS:

1. **Chapter 5 – Introduction to Java**
   - ✓ **Introduction to Java**
   - ✓ **Introduction To Java**
   - ✓ **Object Oriented Programming**
   - ✓ **Starting BLUE**
   - ✓ **Keywords**
   - ✓ **Data Types**
   - ✓ **Literals & Variables**
   - ✓ **Classes And Methods In Java**
   - ✓ **Operators(Excluded-Logical Operators , Increment and Decrement Operators(++,--))**
   - ✓ **Control Statements In Java(Excluded- If-Else-If statement & Switch statement)**
   - ✓ **Looping Statement(Excluded)**
2. **Math Functions – Math.pow( ), Math.sqrt( )**
3. **Input in Java – Integer, float, double, char, String**

1. Write a program to display the following pattern on the screen.

```
#
##
###
####
#####
######
#######
```

```
class hash
{
	public static void main(String args[])
	{
		System.out.println("#");
		System.out.println("##");
		System.out.println("###");
		System.out.println("####");
		System.out.println("#####");
		System.out.println("######");
		System.out.println("#######");
	}
}
```

2. Write a program to display the following pattern on the screen.

```
@@@@@@@@@
@         @
@         @
@         @
@         @
@         @
@@@@@@@@@
```

```
class pattern
{
	public static void main(String args[])
	{
		System.out.println("@@@@@@@@@");
		 System.out.println("@         @");
		System.out.println("@         @");
		System.out.println("@         @");
		System.out.println("@         @");
		System.out.println("@         @");
		System.out.println("@@@@@@@@@");
	}
}
```

3. Write a program to display the following pattern on the screen:

C
CO
COM
COMP
COMPU
COMPUT
COMPUTE
COMPUTER

```
class computer
{
	public static void main(String[] args)
	{
		System.out.println("C");
		System.out.println("CO");
		System.out.println("COM");
		System.out.println("COMP");
		System.out.println("COMPU");
		System.out.println("COMPUT");
		System.out.println("COMPUTE");
		System.out.println("COMPUTER");
	}
}
```

4. Write a program to display the following using Escape Sequence "\t", "\n" on the screen.

Hello Friend.
How Are You?
I Am Fine.
And What
About You?
I Am Also Fine.
Thank You
Friend.

```
class friend
{
	 public static void main(String args[])
	{
		System.out.println("Hello\tFriend.");
		System.out.println("How\tAre\tYou?");
		System.out.println("I\tAm\tFine.");
		System.out.println("And\tWhat\nAbout\tYou?");
		System.out.println("I\tAm\tAlso\tFine.");
		System.out.println("Thank\tYou\nFriend.");
	}
}
```

5. Write a Program to display your Bio-Data consisting of your Name, Father's Name, Address, Place, State, Contact Number and Email ID.

```
class biodata
{
	public static void main(String args[])
	{
		System.out.println("BIO-DATA");
		System.out.println("Name : Rahul Banerjee");
		System.out.println("Father's Name : Rana Banerjee");
		System.out.println("Address : 132, G. T. Road");
		System.out.println("Place : Durgapur");
		System.out.println("State : West Bengal");
		System.out.println("Contact Number : 9832198321");
		System.out.println("Email ID : happy_rahul@rediffmail.com");
	}
}
```

Note : Type Your Details in place of sample data

6. Write a program in java to assign two number 1273 and 58 in a suitable variable. Find its sum, difference, product, quotient and reminder. Display all values with proper message.

```
class calculation
{
	public static void main(String args[])
	{
		int a=1273;
		int b=58;
		int sum=a+b;
		int diff=a-b;
		int prod=a*b;
		int quo=a/b;
		int rem=a%b;

		System.out.println("First Number = "+a);
		System.out.println("Second Number = "+b);
		System.out.println("Sum of the Numbers = "+sum);
		System.out.println("Difference of the Numbers = "+diff);
		System.out.println("Product of the Numbers = "+prod);
		System.out.println("Quotient of the Numbers = "+quo);
		System.out.println("Reminder of the Numbers = "+rem);
	}
}
```

7. Write a program in java to assign 5768 in a variable. Find and display

i) Double the Number

ii) Half the Number

iii) 2/7 of the number

```
class compute
{
	public static void main(String args[])
	{
		int a=5768;
		int d=a*2;
		double h=(1/2.0d)*a;
		double f=(2/7.0)*a;

		System.out.println("Number = "+a);
		System.out.println("Double the Number = "+d);
		System.out.println("Half the number = "+h);
		System.out.println("2/7 of the number = "+f);
	}
}
```

8. A shopkeeper buys a TV set for Rs. 32,500 and sells it at a profit of 15 %. Apart from this a GST of 18.5% and Service Charge is 1.07% is charged. Display total selling price, profit along with GST and service charge.

```
class television
{
	public static void main(String args[])
	{
		int cp=32500;
		float p=(15/100.0f)*cp;
		float sp=cp+p;
		float gst=(18.5/100.0f)*sp;
		float sc=(1.07/100.0f)*sp;
		float tsp= sp + gst + sc;

		System.out.println("Cost Price = "+cp);
		System.out.println("Profit = "+p);
		System.out.println("Selling Price = "+sp);
		System.out.println("GST @ 18.5 % = "+vat);
		System.out.println("Service Charge @ 1.07 % = "+sc);
		System.out.println("Total Selling Price = "+tsp);
	}
}
```

9. Pankaj purchased an old cycle for Rs. 1200 and spend Rs. 250 on repairs, Rs. 350 in coloring and added new accessories worth Rs. 500. Pankaj wants to make a profit of Rs. 1500 on selling the cycle. Find the selling price of the cycle. Write a java program to store all values and calculate and display the selling price and profit percent of the cycle.

```
class cycle
{
	public static void main(String args[])
	{
		int cp=1200, r=250,c=350,a=500,p=1500;
		int tcp=cp+r+c+a;
		int sp=tcp+p;
		double pp = (p*100.0d)/tcp;

		System.out.println("Total Cost Price = "+tcp);
		System.out.println("Selling Price = "+sp);
		System.out.println("Profit % = "+pp);
	}
}
```

10. A train covers 120.5 km in 2.3 hours, next 160.75 km in 3.5 hours and the last 140.9 km in 5.5 hours. Write a java program to store all values and calculate and display average speed.

```
class distance
{
	public static void main(String args[])
	{
		float d1=120.5f, d2=160.75f, d3=140.9f;
		float t1=2.3f , t2=3.5f, t3=5.5f;

		float td=d1+d2+d3;
		float tt=t1+t2+t3;

		float as = td/tt;

		System.out.println("Average Speed = "+as);
	}
}
```

11. An alloy consists of 13 parts of copper and 7 parts of zinc and 5 parts of nickel. What is the percentage of each alloy in the metal? Write a java program to store all values and calculate and display the percentage of each metal.

```
class alloy
{
	public static void main(String args[])
	{
		int c=13,z=7,n=5;
		int sum =c+z+n;

		float pc= (c*100.0f)/sum;
		float pz= (z*100.0f)/sum;
		float pn= (n*100.0f)/sum;

		System.out.println("Percentage of Copper in Alloy = "+pc);
		System.out.println("Percentage of Zinc  in Alloy = "+pz);
		System.out.println("Percentage of Nickel in Alloy = "+pn);
	}
}
```

12. A salesperson sells goods worth Rs. 4325.00, Rs. 4996.50, Rs. 8935.00 and Rs. 9960.75 in four months. Write a program to store the above values and calculate and display total and average sales.

```
class average
{
	public static void main(String args[])
	{
		double s1=4325.0d, s2=4996.5d, s3=8935.5d,s4=9960.75d;

		double tot = s1+s2+s3+s4;
		double avg = tot/4.0d;

		System.out.println("Total Sales = "+tot);
		System.out.println("Average Sales = "+avg);
	}
}
```

13. The average height of 8 boys is 157 cm. When the seventh boy joins the group the average height changes to 158 cm. Find the height of the ninth boy in the group. Write a program to store the above data and find and display the height of the seventh boy.

```
class height
{
	public static void main(String args[])
	{
		int avg8=157, avg9=159;
		int tot8=avg8 * 8;
		int tot9=avg9 * 9;
		int h9=tot9 - tot8;

		System.out.println("Height of Ninth Boy = "+h9+" cm");
	}
}
```

14. The angles of a quadrilateral are in the ratio 14 : 6 : 8 : 10. Write a program to store the given ratio. Find and display each angle of the quadrilateral.

```
class quad
{
	public static void main(String args[])
	{
		int a=14,b=6,c=8,d=10;
		int tot=a+b+c+d;

		double s1 =(a*360.0)/tot;
		double s2 =(b*360.0)/tot;
		double s3 =(c*360.0)/tot;
		double s4 =(d*360.0)/tot;

		System.out.println("First Angle = "+s1);
		System.out.println("Second Angle = "+s2);
		System.out.println("Third Angle = "+s3);
		System.out.println("Fourth Angle = "+s4);
	}
}
```

15. Write a program in java to input two numbers. Find and display its sum, difference, product, quotient and reminder.

```
import java .io.*;
class cal
{
	public static void main(String[] args)
	{
		DataInputStream in= new DataInputStream(System.in);

		int a,b,sum,diff,prod,quo,rem;
		sum=diff=prod=quo=rem=0;

		try
		{
			System.out.print("Enter First Number : ");
			a=Integer.parseInt(in.readLine());

			System.out.print("Enter Second Number : ");
			b=Integer.parseInt(in.readLine());

			sum=a+b;
			diff=a-b;
			prod=a*b;
			quo=a/b;
			rem=a%b;

			System.out.println("Sum of the Numbers = "+sum);
			System.out.println("Difference of the Numbers = "+diff);
			System.out.println("Product of the Numbers = "+prod);
			System.out.println("Quotient of the Numbers = "+quo);
			System.out.println("Reminder of the Numbers = "+rem);
		}
		catch(Exception e)
		{};
	}
}
```

16. Write a program that will compute and display total bill where a loaf of bread cost Rs. 23.5 and an egg cost Rs. 5.75, where the user enters the loaf of bread and number of eggs to purchase.

```
import java .io.*;

class bill
{
	public static void main(String[] args)
	{
		DataInputStream in= new DataInputStream(System.in);

		double cb=23.5d, ce=5.75d,bill=0.0d;
		int nb,ne;

		try
		{
			System.out.print("Enter Number of Loafs of bread to buy : ");
			nb=Integer.parseInt(in.readLine());
			System.out.print("Enter Number of eggs to buy : ");
			ne=Integer.parseInt(in.readLine());

			bill = nb*cb + ne*ce;

			System.out.println("Total Bill = "+bill);
		}
		catch(Exception e)
		{};
	}
}
```

17. Write a program to enter Principal, Rate and Time. Calculate and display Simple Interest and Amount.

```
import java.io.*;
class bank
{
	public static void main(String args[])
	{
		DataInputStream in = new DataInputStream(System.in);
		double p,t,r,s=0.0,a=0.0;

		try
		{
			System.out.print("Enter Principal : ");
			p=Double.parseDouble(in.readLine());
			System.out.print("Enter Rate : ");
			r=Double.parseDouble(in.readLine());
			System.out.print("Enter Time : ");
			t=Double.parseDouble(in.readLine());

			s=(p*t*r)/100.0;
			a=p+s;
```

```
                System.out.println("Simple Interest = "+s);
                System.out.println("Amount = "+a);
            }
            catch(Exception e)
            {};
        }
}
```

18. Write a program to enter length and breadth of rectangular field. Calculate and display its area, perimeter and diagonal.

```
import java.io.*;

class rect
{
    public static void main(String args[])
    {
        DataInputStream in = new DataInputStream(System.in);

        double l,b,a=0.0,p=0.0,d=0.0d;

        try
        {
            System.out.print("Enter Length : ");
            l=Double.parseDouble(in.readLine());
            System.out.print("Enter Breadth : ");
            b=Double.parseDouble(in.readLine());

            a =l * b;
            p = 2*(l + b);
            d = Math.sqrt(l*l + b*b);

            System.out.println("Area of Rectangle = "+a);
            System.out.println("Perimeter of Rectangle = "+p);
            System.out.println("Diagonal of Rectangle = "+d);
        }
        catch(Exception e)
        {};
    }
}
```

19. Write a program to input roll (int), Name (String), Class(String) Section (char) marks of three subjects(Float). Calculate and display total and average marks.

```
import java.io.*;
class datatype
{
	public static void main(String args[])
	{
		DataInputStream in = new DataInputStream(System.in);

		int rl;
		float tot,m1,m2,m3,avg=0.0;
		char sec;
		String nm,,cl,x;

		try
		{
			System.out.print("Enter Roll no : ");
			rl=Integer.parseInt(in.readLine());
			System.out.print("Enter Name : ");
			nm=in.readLine();
			System.out.print("Enter Class : ");
			cl=in.readLine();
			System.out.print("Enter section : ");
			sec=(char)in.read();
			x=in.readLine();
			System.out.print("Enter Marks of subject-1 : ");
			m1=Float.parseFloat(in.readLine());
			System.out.print("Enter Marks of subject-2 : ");
			m2=Float.parseFloat(in.readLine());
			System.out.print("Enter Marks of subject-3 : ");
			m3=Float.parseFloat(in.readLine());

			tot=m1+m2+m3;
			avg=tot/3.0f;

			System.out.println("Total Marks : "+tot);
			System.out.println("Average marks : "+avg);
		}
		catch(Exception e)
		{};
	}
}
```

20. Write a program in java to input number of days. Find and display number of years, months and days.

```
import java.io.*;

class days
{
	public static void main(String args[])
	{
		DataInputStream in = new DataInputStream(System.in);
		int d,y,m=0;

		try
		{
			System.out.print("Enter no of days :");
			d=Integer.parseInt(in.readLine());

			y=d/365;
			d=d%365;
			m=d/30;
			d=d%30;

			System.out.println("Number of Years ="+y);
			System.out.println("Number of Months ="+m);
			System.out.println("Number of Days ="+d);
		}
		catch(Exception e)
		{};
	}
}
```

21. Write a program to input basic pay of an employee. Calculate da, hra,pf, gp and np. Display gp and np. Where da= 24% of bp, hra = 15% of bp, pf = 8.33 of bp. gp = bp+da+hra, np = gp-pf.

```
import java .io.*;

class salary
{
	public static void main(String[] args)
	{
		DataInputStream in= new DataInputStream(System.in);

		double bp,da,hra,pf,np,gp;
		bp=da=hra=pf=np=gp=0.0d;

		try
		{
			System.out.print("Enter Basic Pay : ");
			bp=Double.parseDouble(in.readLine());
```

```
                da=(24/100.0)*bp;
                hra=(15/100.0)*bp;
                pf=(8.33/100.0)*bp;

                gp = bp+da+hra;
                np = gp-pf;

                System.out.println("Gross Pay of employee = "+gp);
                System.out.println("Net   Pay of employee = "+np);
            }
            catch(Exception e)
            {};
        }
}
```

22. Write a program to enter temperature in Fahrenheit and convert it to temperature in Celsius using formula c = 5/9(f-32).

```
import java .io.*;

class temperature
{
        public static void main(String[] args)
        {
                DataInputStream in= new DataInputStream(System.in);

                double f,c=0.0d;

                try
                {
                        System.out.print("Enter Temperature in Fahrenheit : ");
                        f=Double.parseDouble(in.readLine());

                         c = (5/9.0d)*(f-32.0d);

                        System.out.println("Temperature in Celsius = "+c);
                }
                catch(Exception e)
                {};
        }
}
```

23. **Write a program in java to enter 3 sides of a triangle. Calculate and display its area using the formula. Area =** $\sqrt{s-(s-a)(s-b)(s-c)}$

```
import java .io.*;
class triangle
{
	public static void main(String[] args)
	{
		DataInputStream in= new DataInputStream(System.in);
		double a,b,c,s=0.0d,ar=0.0d;

		try
		{
			 System.out.println("Enter 3 side of a Triangle : ");
			a=Double.parseDouble(in.readLine());
			b=Double.parseDouble(in.readLine());
			c=Double.parseDouble(in.readLine());

			s=(a+b+c)/2.0d;
			a = Math.sqrt(s*(s-a)*(s-b)*(s-c));

			System.out.println("Area of Triangle = "+a);
		}
		catch(Exception e)
		{};
	}
}
```

24. Write a program to input radius and height of a cone. Calculate and print the volume of the cone using formula : $v=1/3\pi r^2h$.

```
import java .io.*;
class cone
{
	public static void main(String[] args)
	{
		DataInputStream in= new DataInputStream(System.in);

		double r,h,v=0.0d,p=22/7.0d;
		try
		{
			System.out.println("Enter Radius and Height of Cone : ");
			r=Double.parseDouble(in.readLine());
			h=Double.parseDouble(in.readLine());

			v = (1/3.0d) * p * Math.pow(r,2) * h;

			System.out.println("Area of Cone = "+v);
		}
		catch(Exception e)
		{};
	}
}
```

25. Write a program that will allow the cashier to input Marked Price of the product. The shop keeper offers successive discounts as 50% + 75% on the Marked Price. Calculate and display the successive discount and Selling Price.

```
import  java  .io.*;

class markedprice
{
        public static void main(String[] args)
        {
                DataInputStream in= new DataInputStream(System.in);

                double mp,d1,d2,nmp,sp;
                mp=d1=d2=nmp=sp=0.0d;

                try
                {
                        System.out.print("Enter Marked Price of Product : ");
                        mp=Double.parseDouble(in.readLine());

                        d1 = (50/100.0d) * mp;

                        nmp = mp - d1;

                        d2 = (75/100.0d) * nmp;
                        sp=nmp - d2;

                        System.out.println("Discount-1 @ 50% = "+d1);
                        System.out.println("Discount-2 @ 75% = "+d2);
                        System.out.println("Selling Price = "+sp);
                }
                catch(Exception e)
                {};
        }
}
```

26. Write a program to enter distance in km and time in hours. Calculate and display the speed in km/hr and m/sec.

```
import java .io.*;

class speed
{
        public static void main(String[] args)
        {
                DataInputStream in= new DataInputStream(System.in);
```

```
                double d,t,s1,s2;
                s1=s2=0.0d;

                try
                {
                        System.out.print("Enter Distance in Kilometer : ");
                        d=Double.parseDouble(in.readLine());
                        System.out.print("Enter Time in Hours : ");
                        t=Double.parseDouble(in.readLine());

                         s1 = d/t;

                        // to convert Km/Hr to m/sec multiply by 5/18
                         s2 = s1*(5/18.0);

                        System.out.println("Speed in Km/Hr = "+s1);
                        System.out.println("Speed in m/sec = "+s2);
                }
                 catch(Exception e)
                {};
        }
}
```

27. Write a program to input values of variable u, t, a respectively. Find and display the value of the following expression. $s= ut + (1/2)at^2$

```
import java .io.*;
class expression
{
        public static void main(String[] args)
        {
                DataInputStream in= new DataInputStream(System.in);

                double u,t,a,s=0.0d;
                try
                {
                        System.out.print("Enter Value of a : ");
                        a=Double.parseDouble(in.readLine());
                        System.out.print("Enter Value of t : ");
                        t=Double.parseDouble(in.readLine());
                        System.out.print("Enter Value of u : ");
                        u=Double.parseDouble(in.readLine());

                        s = (u*t) + (1/2.0d)*a*Math.pow(t,2);
                        System.out.println("Value of S = "+s);
                }
                catch(Exception e)
                {};
        }
}
```

28. Write a program to input values of a, b, c and x (Integer Values). Compute and display the value of v, where v =ax^3 +$(bx)^2$ + abc + 2bc

```
import java .io.*;

class evaluate
{
	public static void main(String[] args)
	{
		 DataInputStream in= new DataInputStream(System.in);

		int a,b,c,x;
		double v=0.0d;

		try
		{
			System.out.print("Enter Value of a : ");
			a=Integer.parseInt(in.readLine());
			System.out.print("Enter Value of b : ");
			b=Integer.parseInt(in.readLine());
			System.out.print("Enter Value of c : ");
			c=Integer.parseInt(in.readLine());
			System.out.print("Enter Value of x : ");
			x=Integer.parseInt(in.readLine());

			v = a*Math.pow(x,3) + Math.pow((b*x),2) + a*b*c - 2*b*c;

			System.out.println("Evaluated Value of v = "+v);
		}
		catch(Exception e)
		{};
	}
}
```

29. The sum of interior angles of polygon = (n -2) x 180, where n = number of sides of the polygon. Write a program to enter number of sides of a polygon and find and display the sum of the interior angles of a polygon.

```
import java .io.*;

class polygon
{
	public static void main(String[] args)
	{
		DataInputStream in= new DataInputStream(System.in);

		int n,sum=0;
```

```
                try
                {
                        System.out.print("Enter Number of sides of a polygon : ");
                        n=Integer.parseInt(in.readLine());
                        sum = (n-2)*180;
                        System.out.println("Sum of the interior angles of polygon =
                        "+sum);
                }
                catch(Exception e)
                {};
        }
}
```

30. Write a program to input necessary values and evaluate the following expression.

$$\mathbf{s = \sqrt{a^2/b^5 + c^2}}$$

```
import java .io.*;

class expression
{
        public static void main(String[] args)
        {
                DataInputStream in= new DataInputStream(System.in);

                int a,b,c;
                double s=0.0d;
                try
                {
                        System.out.println("Enter Vales of a,band c : ");
                        a=Integer.parseInt(in.readLine());
                        b=Integer.parseInt(in.readLine());
                        c=Integer.parseInt(in.readLine());

                        s= Math.sqrt((Math.pow(a,2)/Math.pow(b,5))+Math.pow(c,2));

                        System.out.println("Evaluated Value of s = "+s);
                }
                catch(Exception e)
                {};
        }
}
```

<u>Note: Any other program can be done provided the formula is given</u>