**SAMPLE PAPER**

**MATHEMATICS**

**CLASS XII**

**2017-18**

 **Time Allowed: 3 Hours Maximum Marks: 100**

***General Instructions:***

***This question paper consists of 29 questions.***

***All questions are compulsory.***

***Questions 1 – 4 carry1 mark each, ,questions 5 – 12 carry 2mark each, questions 13 – 23 carry 4 marks each and questions 24 – 29 carry 6 mark each.***

***SECTION A***

1. **If  and  find (gof) [- ]**
2. **Find the principal value of cosec-1**
3. **If AB=A and BA=B. Show that A=A2**
4. **Find the equation of the line passing through (1,-2,5) and perpendicular to the plane 2x + 3y – z =8**

***SECTION B***

1. **With out expanding evaluate: **
2. **If  find .**
3. **Find the rate of change of the area of a circle with respect to its circumference when radius is 3cm.**
4. **Find the point of local minima or local maxima if any of **
5. **Find the angle between the line and the plane  .**
6. **Find the angle between the lines.**

** and **

1. **Find the angle between **
2. **Find the area of the ABC triangle having vertices A(1,-2,3),B(0,4,-4) and C(3,6,9).**

**SECTION C**

1. **Show that **

1. **A trust fund has Rs. 30,000 that has to invested in two different types of bonds. The first bond pays 5% interest per year and the second bond pays 7% interest per year. Using matrix multiplication, determine how to divide Rs. 30,000 among two types of bonds to obtain an annual total interest Rs. 1800.**
2. **Find the value of a,b,c so that**

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**Is continuous at **

1. **Differentiate w.r.t. **

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1. **Evaluate :  OR**

**Evaluate : **

1. **Evaluate : -1( sin x) dx OR Evaluate:**

1. **Let S be a relation on the set R of all real numbers defined by**

**S = **

**Prove that S is not an equivalent relation on R**

1. **If sin-12tan-1x , Prove that **
2. **Show that the maximum value of is .**

**Or,**

**Find the angle of intersection of the curves  and .**

1. **Find the distance of the point  from the line**
2. **A man known to speak the truth 3 times out of the 5 times. He throws a die and reported that it is one. Find the probability that it is actually one.**

 **SECTION D**

1. **An isosceles triangle of vertical angle 2 is inscribed in a circle of radius r. Show that the area of the triangle is maximum when =.**

**Or**

**Show that the volume of the greatest cylinder which can be inscribed in a cone of height h and semi vertical angle 450 is h3.**

1. **Find the point intersection of the planes 2x – y + z = 4, 5x + 7y + 2z = 0 and 3x + 4y – 2z + 3 =0.**
2. **Solve : **

**Or,**

**Solve **

1. **Find the area of the region **

**OR**

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1. **A letter is known to have come either from LONDON or CLIFTON on the letter two consecutive letters on ON are visible . What is the probability that the letter has come from**

**(i) LONDON, (ii) CLIFTON**

**29. If a young man rides his motor cycle at 25 km/h, he has to spend Rs 2 / km on petrol, if he rides it at a faster speed at 40km/h, he spend Rs 5/km on petrol. He has Rs100 to spend on petrol and wishes to travel maximum distance with in on hour. Express this as a linear programming and solve it.**