**SAMPLE PAPER-2013**

**CLASS-XII**

**Subject : Maths**

**SECTION-A**

**Q1**

**Q2 If sin-1 -1 -1x, then find x.**

**Q3 If A is a square matrix such that A2=A, then find 2-3A.**

**Q4 If A=**

**Q5 Evaluate:**

**Q6 Find the value of**

**Q7 Write the value**

**Q8 If is the angle between any two vectors**

**Q9 Find**

**Q10 Find a vector of magnitude 4 units which is parallel to the vector**

**SECTION-B**

**Q11 By using properties of determinants, show that**

**Q12 Evaluate:**

**OR**

**Prove that :**

**Q13 Verify the condition of mean value Theorem and find a point c in the interval as stated by the mean value theorem for the function given by.**

 **= logex on [1,2]**

**OR**

**If xy=ex-y, show that**

**Q14 Show that the curves 2x=y2 and 2xy =k cut each at right angles if k2 =8.**

**Q15 Find the general solution of the differential equation:**

**Q16 Show that the differential equation**

**Is homogenous and solve it.**

**Q17 If find the angle between .**

**Q18 By examining the chest X-ray, the probability that T.B. is detected when a person is actually suffering is 0.99. The probability of incorrect diagnoses is 0.001. In a certain city 1 in 1000 persons suffer from T.B. A person selected at random and is diagnosed to have T.B. what is the chance that he actually has T.B?**

**OR**

**A pair of dice is tossed twice. If the random variable X is defined as the number of doublets, find the probability distribution of X.**

**Q19 Find the distance of the point (3,8,2) from the line**

 **Measured parallel to the plane 3x+2y-2z+15=0.**

**Q20 Show that the relation in the set A= {1,2,3,4,5} given by**

 **R={(a,b): |a-b|is even}, is an equivalence relation.**

**Q21 find the intervals in which the function f(x) =(x+1)3 (x-3)3 is strictly increasing or decreasing.**

**OR**

 **Find the equation of the tangent and the normal to the curve x=1 –cos , y=**

**Q22 write the following function in the simplest from:**

**tan-1**

**SECTION-C**

 **If A= find A-1 and use it to solve the system of equation:**

**X+y+2z=0**

**X+2y-z=9**

**x-3y+3z=-14**

**OR**

**Let A=**

 **Find a matrix D such that CD-AB=0.**

**Q24 A and B take turns in throwing to dice, the first two throw 9 being declared a winner. Show that the chances of A and B winning are in the ratio of 9:8, if A starts the game.**

**Q25 Prove that if a plane has the intercepts a,b,c and is at a distance of p units from the origin, then .**

**Q26 Find the point on the curve y2=2x which is at a minimum distance form the point (1,4).**

 **Or**

**A right circular cylinder is inscribed in a right circular cone. Show that the curved surface area of the cylinder is maximum when the diameter of cylinder is equal to the radius of the base of the cone.**

**Q27Find the area of smaller region bounded by the ellipse and the straight line .**

**Q28Evaluate:**

**Q29 An oil company requires 13,000, 20,000 and 15,000 barrels of high grade, medium grade and low grade oil respectively. Refinery A produces 100, 300 and 200 barrels per day of high, medium and low grade oil respectively whereas the refinery B produces 200,400 and 100 barrels per day respectively. If A costs Rs. 400 per day an B costs Rs.300 per day to operate how many days should each be run to minimise the cost of requirement `**