**GUESS PAPER (2013)**

**CLASS – XII**

**SUB:Mathematics**

Time allowed: 3 Hours Maximum Marks: 100

**General Instructions:**

1. All questions are compulsory
2. The question paper consists of 29 questions divided into three sections A B, and C. Section A comprises of 10 questions of one mark each, B comprises of 12 questions of four marks each and Section C comprises of 7 questions of six marks each.
3. All questions in section A are to be answered in one word, one sentence or as per the exact requirement of the question.
4. There is no overall choice. However internal choice has been provided in 4 questions of four marks each and 2 questions of six marks each. You have to attempt only one of the alternatives in all such questions.
5. Use of calculators is not permitted.

**[Section –A]**

1. Write the value of p, for which =and =Îare parallel vectors.
2. Show that
3. Find the second order derivative of
4. Find the principal value of
5. Write the general equation of the plane passing through the point (-1, 3, 2).
6. If [ ]=[5],find x.
7. Diagonal vectors of a parallelogram are 2̂ and 5ĵrespectively. Find the area of the parallelogram.
8. If A=, then find the value of k if |2A|=k|A|.
9. If the binary operation defined on Q, is defined as

For all a,b Q,find the value of 3.

1. Evaluate dx.

**[SECTION –B]**

1. Evaluate :

**Or**

Evaluate:

1. Prove the following : = ,

**Or**

Prove the following: =

1. Find the position vector of a point R which divides the line joining two points P and Q whose position vectors are +) and -3) respectively, externally in the ratio 1:2. Also, show that P is the midpoint of the line segment RQ.
2. Find all points of discontinuity of f, where f is defined as follows :

f(x)=

**Or**

Find if

1. Find the equations of the normals to the curve which are parallel to the line

**Or**

Find the interval in which the function f given by is (i) increasing (ii) decreasing.

1. Find the angle between the line and the plane
2. By using properties of determinants, prove that: =.
3. Find the particular solution, satisfying the given condition, for the following differential equation :
4. Solve the following differential equation :

1. A speaks truth in 75% and B in 80% of the cases. In what percentage of cases are they likely to contradict each other in narrating the same incident?
2. Evaluate:
3. If .

**[SECTION: C]**

1. If A=find. Using , solve the following system of equations:
2. Using integration, find the area of the region bounded by the lines,

**Or**

Find the area of the circle which is interior to the parabola

1. Show that the least perimeter of an isosceles triangle in which a circle of radius r can be inscribed as

**Or**

For a given curved surface of a right circular cone, when the volume is maximum, prove that the   
 Sine of semi vertical angle is.

1. A dealer wishes to purchase a number of fans and sewing machines. He has only Rs.5760 to Invest and has space for at most 20 items. A fan costs him Rs.360 and a sewing machine Rs. 240. He expects to sell a fan at a profit of Rs.22 and a sewing machine at a profit of Rs.18 Profit? Solve and find the maximum profit.
2. Evaluate :
3. Find the coordinates of the foot of the perpendicular and the perpendicular distance of the point P(3,2,1) from the plane Also find the image of the point in the plane.
4. A factory has three plants A, B, and C. Their daily production is 500, 1000 and 2000 units. Out of this 0.5%, 0.8% and 1% units respectively are found to be defective. An item is chosen at random and is found to be defective. What is the probability that it came from plant A?