CBSE 12th Maths Sample Paper

This is the **7th Sample Paper** of Math Sample Paper series and you will find more sample Papers in the below mentioned links. We will soon update the computer science sample paper also.

GENERAL INSTRUCTIONS:

(i) All the question are compulsory.
(ii) The question paper consists of **29** question divided into three Sections A, B and C. Section A comprises of **10** questions of **one** marks each, Section B comprises of 12 questions for **four** marks each and Section C comprises of **7** question of **six** marks each.
(iii) All question in Section A are to be answered in **one** word, **one** sentence or as per the exact requirement of the question.
(iv) Use of calculator is not permitted.

*NOTE: THIS IS CBSE 12th MATHS SAMPLE PAPER FOR THE EFFECTIVE PREPARATION FOR 12th BOARD EXAM.

SECTION A

1. A matrix A of order 3 × 3 has determinant 8. What is the value of | 3A | **[1 Mark]**
2. Find the point on the curve *y* =x^2-4x+3 where the tangent is parallel to *x*-axis. **[1 Mark]**
3. Write the formulae for the eccentricity of ellipse? **[1 Mark]**
4. Cartesian equations of a line AB are:
   (2x-1/3)= (4-y/6) = (z-1/2)
   Write the direction ratios of a line parallel to AB. **[1 Mark]**
5. If matrix A = [3 4 8], write AA', where A' is the transpose of matrix A. **[1 Mark]**
6. If the binary operation * on the set of integers Z, is defined by a*b = a+3b^2, then find the value of 4*8? **[1 Mark]**
7. If A is an invertible matrix of order 3 and | A | = 10, then find |adj. A |. **[1 Mark]**
8. Find the value of ∫sinx/x. **[1 Mark]**
9. Find the value of x for which the vector â= 2i-6j+7k and ĉ=5i+3j-xk are perpendicular to each other. **[1 Mark]**
10. Find the equation of the line perpendicular to y axis and passing through the origin. **[1 Mark]**

SECTION B

1. Using the method of integration find the area of region bounded by the line. **[4 Mark]**
   3x-2y+1=0
   2x+3y-21=0 and
   x-5y+2=0

2. Using the method of integration find the area of region bounded by the line- **[4 Mark]**
   5x-3y+6=0
   2x^2-2x+6 and
   6x-3y=0

3. Using matrices solve the following system of linear equation: **[4 Mark]**
   x-y+3z=8
   3x+4y-4z=-4
   2x-y+3z=11

4. Using elementary operation find the inverse of the following matrix: **[4 Mark]**
   3 3 5
   -1 2 2
   2 4 3

5. A water tank has the shape of an inverted right circular cone with its axis vertical and vertex lower most. Its semi-vertical angle is tan^-1*(1/2) . Water is poured into it at a constant rate of 5 cubic meters per minute. Find the rate at which the level of the water is rising at the instant when the depth of water in the tank is 20m. **[4 Mark]**

6. A die is thrown again and again until three sixes are obtained. Find the probability of obtaining the third six in the sixth throw of the die. **[4 Mark]**

7. Using Rolle's theorem find the points on the curve y = x^2+5, x ε [-2,2], where the tangent is parallel to the x axis. **[4 Mark]**

8. Solve the following differential equations:
   dy/dx+y= sinx-cosx **[4 Mark]**

9. Using vectors prove that Medians of a triangle are concurrent. **[4 Mark]**

10. Using determinants, find the area of the triangle whose vertices are (-2,7), (-1,6) and (-5,2). Are the given points collinear? **[4 Mark]**

11. The probability of a bullet hitting a target is 1/3. How many minimum number of times it must be fired so that the probability of hitting the target at least once is more than 0.67 **[4 Mark]**

12. Find the probability of getting at least sum of 6 when 2 dice are thrown simultaneously.**[4 Mark]**

SECTION C

1. Find the volume of the largest cylinder that can be inscribed in a sphere of radius r. **[6 Mark]**

2. Three bags contain balls as shown in the table below:

BAG	NO OF WHITE BALL	NO OF BLACK BALL	NO OF RED BALL
1.	2	3	1
2.	5	1	4
3.	1	4	6

   A bag is chosen at random and two balls are drawn from it. They happen to be black and red. What is the probability that they came from 3 bags? **[6 Mark]**

3. A tank with rectangular base and rectangular sides, Open at the top is to be constructed so that its depth is 4 cm and volume is 12 meter cube . If building of tank costs Rs. 70 per sq. meter for the basis and Rs. 40 per sq. meter for sides, what is the cost of least expensive tank? **[6 Mark]**

4. Prove that the radius of the base of right circular cylinder of greatest curved surface area which can be inscribed in a given cone is half that of the cone. **[6 Mark]**

5. Find the area of the region enclosed between the two circles:**[6 Mark]**
   $x^2+y^2 = 1$ and $(x-1)^2 + y^2 = 1$

6. Solve the following: $\int(x^2/(x^3+x^2+1))\,dx$. **[6 Mark]**

7. Show that the rectangle of maximum area that can be inscribed in a circle is a square.**[6 Mark]**

BLUEPRINT :

S. No.	Topics	VSA	SA	LA	Total
1. (a)	Relations and Functions	1(1)	4(1)	-	
(b)	Inverse Trigonometric Functions	1(1)	4(1)	-	10(4)
2. (a)	Matrices	2(2)	-	6(1)	
(b)	Determinants	1(1)	4(1)	-	13(5)
3. (a)	Continuity and differentiability	-	8(2)	-	
(b)	Applications of derivatives	-	4(1)	6(1)	
(c)	Integration	2(2)	4(1)	6(1)	
(d)	Applications of Integrals	-	-	6(1)	
(e)	Differential Equations	-	8(2)	-	44(11)
4. (a)	Vectors	2(2)	4(1)	-	
(b)	3-dimensional Geometry	1(1)	4(1)	6(1)	17(6)
5.	Linear - Programming	-	-	6(1)	6(1)
6.	Probability	-	4(1)	6(1)	10(2)
	Total	10(10)	48(12)	42(7)	100(29)

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