CLASS XII
GUESS PAPER
MATHEMATICS

Total Marks -100.   **Time- 3h**

Section – A, One marks each, Section – B, four marks Each, Section – C, Six marks each

SECTION-A

1. Find the possible orders of the matrices having 12 elements?
2. Show that the function $f(x)= x^3+3x^2+3x-7$ is always increasing on R.
3. Evaluate $\int_1^{1.9}[x]dx$
4. Probability of a success in an experiment of four trials is $\frac{1}{3}$. Find the probability of no success?
5. Find the projection of a vector $2\hat{\imath} - \hat{\jmath} + \hat{k}$ on the vector $\hat{\imath} - 2\hat{\jmath} + \hat{k}$?
6. differentiate $\log_7 x$ with respect to x.

SECTION-B

7. Prove that $\tan^{-1}\left(\frac{2x}{1-x^2}\right) + \tan^{-1}x = \tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right)$

8. If the function f:R→R given by $f(x) = x+2^+ 3x +1$ and g:R→R given by $g(x) = 2x – 1$, then find gof and fog?   **OR**

    Let A = $\{x \in R : -1 \le x \le 1\}$ = B show that f:A→B, given by f(x) = x|x| is bijective.

9. Using the properties of determinant show that $\begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (c+a)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix}$ = 2abc(a+b+c)^3

10. Find the value of k for which the function $f(x) = \begin{cases} 2x-1, & x < 2 \\ k & x = 2 \\ 3x-1, & x > 2 \end{cases}$ is continuous at x= 2

11. Differentiate w.r.t x,   y = $\tan^{-1}\left(\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}\right)$

    OR

    Find the interval for which the function $f(x) = x^3 – 12x^2 + 36x +17$ is increasing or decreasing

12. Find the equation of the tangent to the curve $y = \sqrt{3x - 2}$, which is parallel to the line
$4x - 2y + 5 = 0$

13. Evaluate $\int \frac{dx}{(x^2+1)(x^2+2)} dx$

14. Evaluate $\int \frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$ **OR** Evaluate $\int_0^{\frac{\pi}{2}} \frac{\sin^{\frac{3}{7}}x}{\sin^{\frac{3}{7}}x + \cos^{\frac{3}{7}}x} dx$

15. Find the unit vector perpendicular to the vectors $(\overrightarrow{3a} + \overrightarrow{b})$ & $(\vec{a} - 2\vec{b})$ where $\vec{a} = \hat{i} + \hat{j} + \hat{k}$,
and $\vec{b} = 4\hat{i} - 2\hat{j} + 3\hat{k}$

16. Find the coordinate of point, where the line $\frac{x-2}{3} = \frac{y+1}{4} = \frac{z-2}{2}$ intersect the plane $x - y + z - 5$
$= 0$, also find the angle between them. **OR**
Find the equation of the plane passing through the points $(1,1,2)$; $(3,2,1)$ & $(3,-4,-5)$.

17. Solve the differential equation $x \frac{dy}{dx} \sin\left(\frac{y}{x}\right) + x - y \sin\left(\frac{y}{x}\right) = 0$

18. The probabilities of A,B,C can solve a given problem are $\frac{1}{3}, \frac{3}{5}, \frac{3}{8}$ respectively. If all the three try to solve the
problem simultaneously, find the probability that at least one of them can solve the problem?

19. Evaluate $\int \sqrt{\frac{1+\cos 2x}{1-\cos 2x}} dx$

SECTION-B

20. Solve the Equations $2x + y + z = 7$; $x - y - z = -4$; $3x + 2y + z = 10$

OR Find the Inverse of the matrix by using elementary operation $\begin{bmatrix} -1 & 3 & 3 \\ 5 & 2 & 1 \\ 1 & -2 & 4 \end{bmatrix}$

21. Show that the right circular cone of least curve surface area and given volume has an altitude
equal to $\sqrt{2}$ times the radius of the base.

22. Evaluate $\int_0^{\frac{\pi}{2}} \log \sin x \, dx$

23. Draw a rough sketch of $(x, y \geq 0)$, $y^2 \geq 4x$ and $x^2 \geq 4y$, and find the area of the bounded region
by using integration **OR**, Evaluate by using limit as sum $\int_1^3 (x^2 - x + 1) dx$

CBSE Sample Papers | CBSE Guess Papers | CBSE Practice Papers | Important Questions | CBSE PSA | CBSE OTBA | Proficiency
Test | 10 Years Question Bank | **CBSE Guide** | CBSE Syllabus | Indian Tutors | **Teacher' Jobs** CBSE eBooks | Schools | Alumni |
CBSE Results | CBSE Datesheet | **CBSE News**

24. Find the equation of the plane through the line of intersection of the planes x + y + z =1 and 2x + 3y + 4z = 5 which is perpendicular to the plane 3x – 2y + 5z = 7, also find the distance of the plane from the origin?

25. A manufacture company makes two types of teaching aids A and B of Mathematics for class XII. Each type of A requires 9 labour hours of fabricating and 1 labour hour for finishing . Each type of B requires 12 labour hours of fabricating and 3 labour hour for finishing, fabricating and finishing the maximum labour available per week are 180 and 30 respectively. The company makes a profit of Rs 80 and Rs.120 on each pieces of A and B. how many pieces of A and B should be manufacture to get a maximum profit. Solve the problem by graphically. What is the maximum profit?

26. In a bulb factory machines A, B, C manufacture 60%, 30%, and 105 bulbs, respectively. 1% , 2%, and 3% of bulbs produced respectively by A, B, C are found to be defective. A bulb is picked up at random from the total production and found to be defective. Find the probability that this bulb was production by the machine A.

************************************** *Best of luck* **************************************

CBSE Sample Papers | CBSE Guess Papers | CBSE Practice Papers | Important Questions | CBSE PSA | CBSE OTBA | Proficiency Test | 10 Years Question Bank | **CBSE Guide** | CBSE Syllabus | Indian Tutors | **Teacher' Jobs** CBSE eBooks | Schools | Alumni | CBSE Results | CBSE Datesheet | **CBSE News**