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FOR TS CLASS 11 PREPARATION

TS Inter 1st Year Model Paper 2027 Mathematics IB

EXAM	YEAR	TYPE	SUBJECT
TS Class 11	2027	Sample Paper	Maths

TELANGANA BOARD OF INTERMEDIATE EDUCATION

MATHEMATICS - IB

MODEL QUESTION PAPER w.e.f. 2026 - 27

Time : 3 Hours **Max. Marks : 60**

Note : The Question Paper consists of three sections A, B and C

Section - A

10 × 2 = 20 Marks

I. Very Short Answer Questions :

(i) Answer ALL Questions

(ii) Each Question carries TWO marks

1. Find the value of x, if the slope of the line passing through (2, 5) and (x, 3) is 2.

2. Find the distance between the parallel lines $3x - 4y = 12$, $3x - 4y = 7$

3. Find the distance of P(3, –2, 4) from the origin.

4. Reduce the equation $x + 2y - 3z - 6 = 0$ of the plane to the normal form.

5. Compute $\lim_{x \to 1} \frac{2x+1}{3x^2 - 4x + 5}$.

6. Compute $\lim_{x \to 0} \frac{e^{7x} - 1}{x}$.

7. Find the derivative of $(x^2 - 3)(4x^3 + 1)$.

8. Find the derivative of the function $\text{Tan}^{-1}(\log x)$

9. If the increase in the side of a square is 4% then find the approximate percentage of increase in the area of the square.

10. If $y = x^4$ then find the average rate of change of y between $x = 2$ and $x = 4$.

Section - B

6 × 4 = 24 Marks

II. Short Answer Questions

(i) Answer any SIX Questions.

(ii) Each Question carries FOUR marks.

11. Find the equation of the locus of a point, which forms a triangle of area 2 with the points A(1, 1) and B(–2, 3).

12. When the axes are rotated through an angle α, find the transformed equation of $x \cos\alpha + y \sin\alpha = p$.

13. Find the distance between the pair of parallel lines $9x^2 - 6xy + y^2 + 18x - 6y + 8 = 0$.

14. Find the condition for the chord $lx + my = 1$ of the circle $x^2 + y^2 = a^2$ (Whose centre is the Origin) to subtend a right angle at the origin.

15. Show that $f(x) = \begin{cases} \dfrac{\cos ax - \cos bx}{x^2} & \text{if } x \neq 0 \\ \dfrac{1}{2}(b^2 - a^2) & \text{if } x = 0 \end{cases}$

where a and b are real constants is continuous at '0'.

16. Find the derivative of the function $ax^2 + bx + c$ from the first principle.

17. Find the equations of the tangent and normal to the curve $xy = 10$ at (2, 5).

18. The profit function P(x) of a company selling x items per day is given by P(x) = (150 – x)x – 1000. Find the number of items that the company should manufacture to get maximum profit. Also find the maximum profit.

Section - C

2 × 8 = 16 Marks

III. Long Answer Questions

(i) Answer any TWO Questions.

(ii) Each Question carries EIGHT Marks.

19. If p and q are the lengths of the perpendiculars from the origin to the straight lines $x \sec\alpha + y \operatorname{cosec}\alpha = a$ and $x\cos\alpha - y\sin\alpha = a\cos 2\alpha$, prove that $4p^2 + q^2 = a^2$.

20. The vertices of a triangle are A(1, 4, 2), B(–2, 1, 2), C(2, 3, –4). Find ∠A, ∠B, ∠C.

21. If $y = x\sqrt{a^2 + x^2} + a^2 \log(x + \sqrt{a^2 + x^2})$, then prove that $\frac{dy}{dx} = 2\sqrt{a^2 + x^2}$.