MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

PRACTICE MODEL PAPER-8

Section A

1. Find the equation of the straight line passing through (-4,5) and cutting off equal

and non-zero intercepts on the co-ordinate axes.

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2. Transform the equation $2x - 3y + 6 = 0$ into Normal form

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3. Find the distance between the mid point of the line segment $\overline{AB}$ and the point (3,-1,2)

where A = (6,3,-4), B = (-2,-1,2).

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4. Find the equation of the plane through (-1,6,2) and perpendicular to the join of (1,2,3), (-2,3,4).

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5. Compute $Lt_{x \to 0} \frac{3^x - 1}{\sqrt{1+x} - 1}$.

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6. Find $\underset{x \to \infty}{\text{Lt}} \dfrac{8|x| + 3x}{3|x| - 2x}$

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7. Find the derivative of $y = \dfrac{\sin(x + a)}{\cos x}$.

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8. The diameter of a sphere is measured to be 40 cm. If an error of 0.02 cm is made in it, then

find approximate errors in volume and surface area of the sphere.

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9. Verify Lagrange's mean value theorem for the function $f(x) = x^2$ on [2,4]

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Section B

1. $A(1, 2), B(2, -3), C(-2, 3)$ are 3 points. A point P moves such that $PA^2 + PB^2 = 2PC^2$. Show that the equation to the locus of P is 7 x - 7y + 4 = 0 .

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

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3. A straight line through $Q(\sqrt{3}, 2)$ makes an angle $\pi/6$ with positive direction of the X-axis. If the straight line intersects the line $\sqrt{3}x - 4y + 8 = 0$ at P, find the distance PQ.

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4. Show that f(x) = sinx is continuous on R .

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5. Find the derivative of $\cos ax$ from the first Principle.

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6. A stone is dropped into a quiet lake and ripples move in circles at the speed of 5 cm/sec. At the instant when the radius of circular ripple is 8cm, how fast is the enclosed area increases?

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7. Show that the curves $x^2 + y^2 = 2, 3x^2 + y^2 = 4x$ have a common tangent at the point (1,1)

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Section C

1. Find the circumcentre of the triangle whose vertices are (1,3) (-3,5) and (5,-1).

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2. Find the centroid and the area of the triangle formed by the lines $2y^2 - xy - 6x^2 = 0, x + y + 4 = 0$

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3. If the straight lines joining the origion with the points of intersection of the curve $3x^2 - xy + 3y^2 + 2x - 3y + 4 = 0$ & the line $2x + 3y = k$ are perpendicular then prove that $6k^2 - 5k + 52 = 0$.

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4. Find the direction cosines of the two lines which are connected by the relations l + m + n = 0 an mn - 2nl - 2lm = 0.

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5. If $x^y + y^x = a^b$ then prove that $\frac{dy}{dx} = -\left[\frac{yx^{y-1} + y^x \log y}{x^y \log x + xy^{x-1}}\right]$.

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6. S.T the curves $y^2 = 4(x+1), y^2 = 36(9-x)$ intersect orthogonally.

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7. From a rectangular sheet of dimensions $30cm \times 80cm$, four squares of sides x cm are removed at the corners, and the sides are then turned up so as to form an open rectangular

box. What is the value of x, so that the volume of the box is the greatest?

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