

Model Question Paper
Analytical Geometry - Part II

12th Standard

Business Maths

Reg.No. :

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I. Answer all the questions.

II. Use Blue pen only.

Time : 01:30:00 Hrs

Total Marks : 90

5 x 1 = 5

Section-A

- 1) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ represents an ellipse ($a > b$) if
(a) $b^2 = a^2(1 - e^2)$ (b) $b^2 = -a^2(1 - e^2)$ (c) $b^2 = \frac{a^2}{(1 - e^2)}$ (d) $b^2 = \frac{1 - e^2}{a^2}$
- 2) Latus rectum of an ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ ($a > b$) is
(a) $\frac{2a^2}{b}$ (b) $\frac{a^2}{2b}$ (c) $\frac{2b^2}{a}$ (d) $\frac{b^2}{2a}$
- 3) Focus of $y^2 = 16x$ is
(a) (2,0) (b) (4,0) (c) (8,0) (d) (2,4)
- 4) Equation of the directrix of $y^2 = -8x$ is
(a) $x+2=0$ (b) $x-2=0$ (c) $y+2=0$ (d) $y-2=0$
- 5) The length of the latus ractum of $3x^2 + 8y = 0$, is
(a) $\frac{8}{3}$ (b) $\frac{2}{3}$ (c) 8 (d) $\frac{3}{8}$

Section-B

5 x 6 = 30

- 6) Find the equation of the ellipse whose foci are (4, 0) and (-4, 0) and $e = \frac{1}{3}$.
- 7) Find the centre, vertices, eccentricity, foci and latus rectum and directrices of the ellipse $9x^2 + 4y^2 = 36$.
- 8) Find the equation of the hyperbola whose foci are (6, 4) and (-4, 4) and eccentricity 2.
- 9) Find the equation of the hyperbola whose centre is (1, 0), one focus is (6, 0) and transverse axis 6.
- 10) Find the centre, eccentricity, foci and directrices for the hyperbola : $9x^2 - 16y^2 = 144$.

Section-C

5 x 10 = 50

- 11) The girder of railway bridge is a parabola with its vertex at the highest point, which is 15 metres above the span of length 150 metres. Find its height 30 metres from the mid point.
- 12) Find the centre, eccentricity, foci and directrices of the ellipse $3x^2 + 4y^2 - 6x + 8y - 5 = 0$.
- 13) Find the centre, eccentricity, foci and latus rectum of the hyperbola $9x^2 - 16y^2 - 18x - 64y - 199 = 0$.
- 14) The equation $4x^2 + 4xy + y^2 + 4x + 32y + 16 = 0$ represents a conic. Identify the conic.
- 15) a) Find the equation to the hyperbola which passes through (2,3) and has for its asymptotes the lines $4x + 3y - 7 = 0$ and $x - 2y = 1$.
b) Find the equation of the parabola with focus (1,2) and directrix $x+y-2=0$.
