Model Question Paper

Analytical Geometry - Part III

12th Standard

Business Maths

Reg.No. : | | | | | | |

I.Answer all the questions.
II.Use Blue pen only.
III.Question No 15 is compulsory

Time : 01:40:00 Hrs

Total Marks : 90

Section-A

5 x 1 = 5

1) The sum of focal distances of any point on the ellipse is equal to length of its
   (a) minor axis (b) semi minor axis (c) major axis (d) semi major axis

2) The difference between the focal distances of any point on the hyperbola is equal to length of its
   (a) transverse axis (b) semi transverse axis (c) conjugate axis (d) semi conjugate axis.

3) Asymptotes of a hyperbola pass through
   (a) one of the foci (b) one of the vertices (c) the centre of the hyperbola (d) one end of its latus rectum.

4) Eccentricity of the rectangular hyperbola is
   (a) 2 (b) $\frac{1}{2}$ (c) $\sqrt{2}$ (d) $\frac{1}{\sqrt{2}}$

5) If a is the length of the semi transverse axis of rectangular hyperbola $xy = c^2$ then the value of c^2 is
   (a) a^2 (b) $2a^2$ (c) $\frac{a^2}{2}$ (d) $\frac{a^2}{4}$

Section-B

6 x 6 = 36

6) Find the equation of the ellipse whose foci are (2, 0) and (-2, 0) and eccentricity is $\frac{1}{2}$.

7) Find the eccentricity, foci and latus rectum of the ellipse $9x^2 + 16y^2 = 144$.

8) Find the equation of the hyperbola in standard form whose eccentricity is $\sqrt{2}$ and the distance between the foci is 16.

9) Find the equation of the hyperbola whose eccentricity is $\sqrt{3}$, focus is (1, 2) and the corresponding directrix is 2x + y =1.

10) Find the foci, latus recta, vertices and directrices of the parabola$y^2 - 4x + 2y - 3 = 0$

11) Find the foci, latus recta, vertices and directrices of the parabola $y^2 - 8x - 9 = 0$

Section-C

4 x 10 = 40

12) Identify the conic represented by $16x^2 + 25y^2 - 118x - 150y - 534 = 0$.

13) A machine sells at Rs.p and the demand, x (in hundreds) machines per year is given by $x = \frac{90}{P+5} - 6$. What type of demand curve corresponds to the above demand's law? At what price does the demand tend to vanish?

14) The cost of production of a commodity is Rs.12 less per unit at a place A than it is at a place B and distance between A and B is 100km. Assuming that the route of delivery of the commodity is along a striaght line and that the delivery cost is 20 paise per unit per km, find the curve, at any point of which the commodity can be supplied from either A or B at the same total cost.

15) a) Find the equation to the hyperbola which has the lines x + 4y - 5 = 0 and 2x - 3y + 1 = 0 for its asymptotes and which passes through the point (1,2).

(OR)

b) Find the equations of the asymptotes of the hyperbola $2x^2 + 5xy + 2y^2 - 11x - 7y - 4 = 0$

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