



# SHIKSHA CLASSES

Subject : Maths - I

## Question Paper

Total Marks :25

Class : XI

7 : Conic Sections

Time : 1 Hour

### SECTION - A

**Q.1 : Choose the correct option :** 4

i) If the parabola  $y^2 = 4ax$  passes through (3, 2) then the length of its latus rectum is.....

a)  $\frac{2}{3}$                       b)  $\frac{4}{3}$

c)  $\frac{1}{3}$                       d) 4

ii) Centre of the ellipse  $9x^2 + 5y^2 - 36x - 50y - 164 = 0$  is at

a) (2, 5)                      b) (1, -2)

c) (-2, 1)                      d) (0, 0)

**Q.2 : Solve the following questions:** 2

i) Find the equation of the parabola whose directrix is  $x + 3 = 0$ .

ii) Write the equation of the curve of ellipse.

### SECTION B

**: Solve the following : (ANY 3)** 6

**Q.3 :** Find the focal distance of a point on the parabola  $y^2 = 16x$  whose ordinate is 2 times the abscissa .

**Q.4 :** Find the area of the triangle formed by the line joining the vertex of the parabola  $x^2 = 12y$  to the end points of catus rectum.

**Q.5 :** Find the equation of the ellipse in standard form if distance between directrix is 18 and

eccentricity is  $\frac{1}{3}$

**Q.6 :** Find the equation of the tangent to the

hyperbola  $\frac{x^2}{16} - \frac{y^2}{9} = 1$  at the point in a first

quadrant whose ordinate is 3.

**Q.7 :** Find the equation of the hyperbola referred to its principal axes which passes through the points (6, 9) and (3, 0)

### SECTION C

**: Solve the following : (ANY 3)** 9

**Q.8 :** Show that the line  $3x - 4y + 10 = 0$  is a tangent to the hyperbola  $x^2 - 4y^2 = 20$ . Also, find the point of contact.

**Q.9 :** A line touches the circle  $x^2 + y^2 = 2$  and the parabola  $y^2 = 8x$ . Show that its equation is  $y = \pm(x + 2)$

**Q.10 :** Find the equation of the hyperbola in the standard form if length of conjugate axis is 5 and distance between foci is 13.

**Q.11 :** Find k, if the line  $3x + 4y + k = 0$  touches  $9x^2 + 16y^2 = 144$

**Q.12 :** Find the equation of common tangent to the parabolas  $y^2 = 4x$  and  $x^2 = 32y$ .

### SECTION D

**: Answer the following : (ANY 1)** 4

**Q.13 :** Two tangents to the parabola  $y^2 = 8x$  meet the tangents at the vertex in the points P and Q. If  $PQ = 4$ , prove that the equation of the locus of the point of intersection of two tangents is  $y^2 = 8(x + 2)$

**Q.14 :** Find the equation of the ellipse in standard form if passing through the points (-3, 1) and (2, -2).

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