Q.1 The vertices of a hyperbola are at (0, 0) and (10, 0) and one of its foci is at (18, 0). The equation of the hyperbola is -

(A) $\frac{x^2}{25}-\frac{y^2}{144}=1$ (B) $\frac{(x-5)^2}{25}-\frac{y^2}{144}=1$

(C) $\frac{x^2}{25}-\frac{(y-5)^2}{144}=1$ (D) $\frac{(x-5)^2}{25}-\frac{(y-5)^2}{144}=1$

Q.2 If the latus rectum of an hyperbola be 8 and eccentricity be $\frac{3}{\sqrt{5}}$, then the equation of the hyperbola is-

(A) $4x^2 - 5y^2 = 100$ (B) $5x^2 - 4y^2 = 100$

(C) $4x^2 + 5y^2 = 100$ (D) $5x^2 + 4y^2 = 100$

Q.3 The foci of the hyperbola

$9x^2 - 16y^2 + 18x + 32y - 151 = 0$ are-

(A) (2, 3), (5, 7) (B) (4, 1), (–6, 1)

(C) (0, 0), (5, 3) (D) None of these

Q.4 The foci of the hyperbola $4x^2 - 9y^2 - 36 = 0$ are-

(A) $[\pm\sqrt{11}, 0]$ (B) $[\pm\sqrt{12}, 0]$

(C) $[\pm\sqrt{13}, 0]$ (D) $[0, \pm\sqrt{12}]$

Q.5 Foci of the hyperbola $\frac{x^2}{16} - \frac{(y-2)^2}{9} = 1$ are

(A) (5, 2); (–5, 2) (B) (5, 2); (5, –2)

(C) (5, 2); (–5, –2) (D) None of these

Q.6 The eccentricity of a hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ passing through the points (3, 0), $(3\sqrt{2}, 2)$ will be-

(A) $\sqrt{13}$ (B) $\frac{\sqrt{13}}{3}$

(C) $\frac{\sqrt{13}}{4}$ (D) $\frac{\sqrt{13}}{2}$

Q.7 Equation of the hyperbola with eccentricity 3/2 and foci at (± 2, 0) is-

(A) $\frac{x^2}{4} - \frac{y^2}{5} = \frac{4}{9}$

(B) $\frac{x^2}{9} - \frac{y^2}{9} = \frac{4}{9}$

(C) $\frac{x^2}{4} - \frac{y^2}{9} = 1$

(D) None of these

Q.8 If the centre, vertex and focus of a hyperbola be (0, 0), (4, 0) and (6, 0) respectively, then the equation of the hyperbola is-

(A) $4x^2 - 5y^2 = 8$ (B) $4x^2 - 5y^2 = 80$

(C) $5x^2 - 4y^2 = 80$ (D) $5x^2 - 4y^2 = 8$

Q.9 The eccentricity of the hyperbola can never be equal to-

(A) $\sqrt{\frac{9}{5}}$ (B) $2\sqrt{\frac{1}{9}}$

(C) $3\sqrt{\frac{1}{8}}$ (D) $\sqrt{2}$

Q.10 The eccentricity of the hyperbola whose latus rectum is 8 and conjugate axis is equal to half the distance between the foci is-

(A) $\frac{4}{3}$ (B) $\frac{4}{\sqrt{3}}$

(C) $\frac{2}{\sqrt{3}}$ (D) None of these

Q.11 If the length of the transverse and conjugate axes of a hyperbola be 8 and 6 respectively, then the difference of focal distances of any point of the hyperbola will be-

(A) 8 (B) 6

(C) 14 (D) 2

Q.12 If m is a variable, the locus of the point of

intersection of the lines $\frac{x}{3} - \frac{y}{2} = m$ and $\frac{x}{3} + \frac{y}{2} = \frac{1}{m}$ is a/ an-

(A) parabola (B) ellipse

(C) hyperbola (D) None of these

Q.13 The equation of the hyperbola whose foci are (6, 5) , (– 4, 5) and eccentricity 5/4 is-

(A) $\frac{(x-1)^2}{16} - \frac{(y-5)^2}{9} = 1$ (B) $\frac{x^2}{16} - \frac{y^2}{9} = 1$

(C) $\frac{(x-1)^2}{9} - \frac{(y-5)^2}{16} = 1$ (D) None of these

Q.14 The equation $\frac{x^2}{12-\lambda} + \frac{y^2}{8-\lambda} = 1$ represents

(A) a hyperbola if $\lambda < 8$

(B) an ellipse if $\lambda > 8$

(C) a hyperbola if $8 < \lambda < 12$

(D) None of these

Q.15 The equation $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a rectangular hyperbola if-

(A) $\Delta \neq 0$, $h^2 > ab$, $a + b = 0$

(B) $\Delta \neq 0$, $h^2 < ab$, $a + b = 0$

(C) $\Delta \neq 0$, $h^2 = ab$, $a + b = 0$

(D) None of these

Q.16 The equation $\frac{x^2}{1-k} - \frac{y^2}{1+k} = 1$, $k > 1$ represents-

(A) circle (B) ellipse

(C) hyperbola (D) None of these

Q.17 If e and e′ be the eccentricities of two conics S and S′ such that $e^2 + e'^2 = 3$, then both S and S′ are-

(A) ellipse (B) parabolas

(C) hyperbolas (D) None of these

Q.18 A point moves in a plane so that its distances PA and PB from two fixed points A and B in the plane satisfy the relation $|PA - PB| = k$ $(k \neq 0)$, then the locus of P is-

(A) a parabola (B) an ellipse

(C) a hyperbola (D) a branch of a hyperbola

Q.19 The equation of the conic with focus at (1, –1), directrix along $x - y + 1 = 0$ and with eccentricity $\sqrt{2}$ is-

(A) $x^2 - y^2 = 1$ (B) $xy = 1$

(C) $2xy - 4x + 4y + 1 = 0$ (D) $2xy + 4x - 4y - 1 = 0$

Q.20 The length of the latus rectum of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = -1$ is-

(A) $\frac{2a^2}{b}$ (B) $\frac{2b^2}{a}$

(C) $\frac{b^2}{a}$ (D) $\frac{a^2}{b}$

Q.21 The equation $16x^2 - 3y^2 - 32x + 12y - 44 = 0$ represents a hyperbola-

(A) the length of whose transverse axis is $4\sqrt{3}$

(B) the length of whose conjugate axis is 4

(C) whose centre is (–1, 2)

(D) whose eccentricity is $\sqrt{\frac{19}{3}}$

Q.22 The length of the transverse axis of a hyperbola is 7 and it passes through the point (5, –2). The equation of the hyperbola is-

(A) $\frac{4}{49}x^2 - \frac{196}{51}y^2 = 1$ (B) $\frac{49}{4}x^2 - \frac{51}{196}y^2 = 1$

(C) $\frac{4}{49}x^2 - \frac{51}{196}y^2 = 1$ (D) none of these

Q.23 The latus rectum of a hyperbola $\frac{x^2}{16} - \frac{y^2}{p} = 1$ is $4\frac{1}{2}$. Its eccentricity e =

(A) 4/5 (B) 5/4

(C) 3/4 (D) 4/3

Q.24 Consider the set of hyperbola xy = k, $k \in R$. Let e_1 be the eccentricity when k = 4 and e_2 be the eccentricity when k = 9. Then $e_1^2 + e_2^2$ =

(A) 2 (B) 3

(C) 4 (D) 1

Q.25 The eccentricity of the hyperbola $-\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is given by -

(A) $e=+\sqrt{\frac{a^2+b^2}{a^2}}$ (B) $e=+\sqrt{\frac{a^2-b^2}{a^2}}$

(C) $e=+\sqrt{\frac{b^2-a^2}{a^2}}$ (D) $e=+\sqrt{\frac{a^2+b^2}{b^2}}$

Q.26 If e and e' be the eccentricities of a hyperbola and its conjugate, then $\frac{1}{e^2}+\frac{1}{e'^2}=$

(A) 0 (B) 1

(C) 2 (D) None of these

Q.27 The equation of a tangent parallel to y = x drawn to $\frac{x^2}{3}-\frac{y^2}{2}=1$ is-

(A) x – y + 1 = 0 (B) x – y + 2 = 0

(C) x + y – 1 = 0 (D) x – y + 2 = 0

Q.28 The line lx + my + n = 0 will be a tangent to the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$, if -

(A) $a^2l^2+b^2m^2=n^2$ (B) $a^2l^2-b^2m^2=n^2$

(C) $am^2-b^2n^2=a^2l^2$ (D) None of these

Q.29 The equation of tangents to the hyperbola $x^2-4y^2=36$ which are perpendicular to the line x–y+4=0

(A) $y=-x+3\sqrt{3}$ (B) $y=x-3\sqrt{3}$

(C) $y=-x\pm2$ (D) None of these

Q.30 The line y = x + 2 touches the hyperbola $5x^2-9y^2=45$ at the point-

(A) (0, 2) (B) (3, 1)

(C) (–9/2, –5/2) (D) None of these

ANSWER KEY

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	B	A	B	C	A	B	A	C	B	C
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	A	C	A	C	A	D	C	C	C	A
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	D	C	B	C	D	B	A	B	A	C