# AIMSTUTORIAL.IN <br> model guess paper-1 - March - 2019 <br> INTERMEDIATE II-YEAR telengana <br> MATHEMATICS - IIB 

Time: 3hours
Max.Marks:75

## INSTRUCTIONS:

1. Q.Nos: 1-10 are Very Short Answer Type. Each question carries 2 marks.
2. Q. Nos: 11-17 are Short Answer Type. Each question carries 4 marks.
3. Q.Nos: 18-24 are Long Answer Type. Each question carries 7 marks.
I. Very Short Type Questions: Answer ALL.
[10 x 2 = 20]
4. Find the values of $a, b$ of $a x^{2}+b x y+3 y^{2}-5 x+2 y-3=0$ represents a circle. Also find its radius.
5. If $a x+b y+c=0$ is the polar of $(1,1)$ with respect to the circle $x^{2}+y^{2}-2 x+2 y+1=0$ and H.C.F of $a, b, c$ is equal to 1 then find $a^{2}+b^{2}+c^{2}$.
6. Find the value of $k$, if the circles $x^{2}+y^{2}+4 x+8=0$ and $x^{2}+y^{2}-16 y+k=0$ are orthogonal.
7. Find the coordinates of the points on the parabola $y^{2}=2 x$ whofocal distance is $\frac{5}{2}$.
8. If the angle between the asymptotes of a hyperbola is $30^{\circ}$, then ind eccentricity.
9. Evaluate $\int \frac{1+\cos ^{2} x}{1-\cos 2 x} d x$.
10. Evaluate $\int \operatorname{Tan}^{-1} x d x$.
11. Find $\int_{0}^{1} \frac{x^{2}}{1+x^{2}} d x$.
12. Find the area cut off between $x=0,2 x=y^{2}-1$.
13. Find the order and degree of the differential equation $x^{1 / 2}\left(\frac{d^{2} y}{d x^{2}}\right)^{1 / 3}+\frac{x d y}{d x}+y=0$.
II. Short Type Questions: Answer any FIVE
[5 x 4 = 20]
14. Find the equation of normal at $(3,-4)$ to the cysele $x^{2}+y^{2}-22 x-4 y+25=0$. Also find the area of triangle formed by normal with coordinate axes.
15. Find the equation of the circle whose diameter is the common chord of the circles $x^{2}+y^{2}+2 x+3 y+$ $1=0, \quad x^{2}+y^{2}+4 x+3 y+2=0$.
16. Find the eccentricity, foci and equations of directices of the ellipse $4 x^{2}+y^{2}-8 x+2 y+1=0$.
17. The distance of a point on the ellipse $x^{2}+3 y^{2}=6$ from the centre is 2 . Find the eccentric angle of the point.
18. Find the equation of hyperbola whose foci are $(4,2)$ and $(8,2)$ and eccentricity is 2 .
19. Evaluate $\lim _{n \rightarrow \infty} \frac{\sqrt{n+1}+\sqrt{n+2}+\ldots+\sqrt{n+n}}{n \sqrt{n}}$.
20. Solve the differential equation $\left(x^{2}+y^{2}\right) d y=2 x y d x$.
III. Essay Type Questions. Answer any FIVE:
[5 x 7 = 35]
21. Show that the points $(1,2),(3,-4),(5,-6)$ and $(19,8)$ are concyclic.
22. Find the equation of pair of tangents from $(1,3)$ to the circle $x^{2}+y^{2}-2 x+4 y-11=0$ and also find the angle between them.
23. Show that the equations of common tangents to the circle $x^{2}+y^{2}=2 a^{2}$ and the parabola $y^{2}=8 a x$ are $y= \pm(x+2 a)$.
24. Evaluate $\int \frac{2 x+5}{\sqrt{x^{2}-2 x+10}} d x$.
25. Evauate $\int \frac{\cos x+3 \sin x+7}{\cos x+\sin x+1} d x$.
26. Find $\int_{0}^{1} \frac{\log (1+x)}{1+x^{2}} d x$.
27. Solve $\frac{d y}{d x}+x \sin 2 y=x^{3} \cos ^{2} y$.
