నమస్తే తెలంగాణ
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III ఇంటర్ ఎగ్జామ్స్ ప్రత్యేకం
శనివారం 30 ఏప్రిల్ 2022

1935లో స్థాపించిన ముల్కీ ఉద్యమ సంస్థ ఏది?
ది నిజామ్స్ సబ్జెక్ట్ లీగ్

కోయ తెగవారు తెలంగాణలో ఎక్కువ ఉన్న జిల్లాలు ఏవి?
వరంగల్, ఖమ్మం

మీర్ ఆలం ఎవరి కాలంలో దివానుగా పనిచేశారు?
సికిందర్ జా

నిజాం రాజ్యాన్ని ఎన్ని సుబాలుగా విభజించారు?
ఐదు సుబాలు, 17 జిల్లాలు

నిజాం రాజ్యంలో సతీసహగమనాన్ని రద్దు చేసిన ప్రధాని ఎవరు?
సాలార్‌జంగ్

Senior Inter Maths Model Papers

MATHS II(A)

SECTION-A 10X2=20

1. If $Z_1=(2,-1), Z_2=(6,3)$, find Z_1-Z_2
2. Write the complex number $\frac{4+3i}{(2+3i)(4-3i)}$ in the form of A+iB
3. Write the conjugate of the complex number $(2+5i)(-4+6i)$
4. If A,B,C are the angles of a triangle and $x=cisA, y=cisB, z=cisC$ find the value of xyz
5. Prove that the roots of $(x-a)(x-b)=h^2$ are always real
6. Form a quadratic equation whose roots are $5-2\sqrt{3}$ *and* $5+2\sqrt{3}$
7. Find the equation whose roots are the reciprocals of the roots of $x^4+3x^3-6x^2+2x-4=0$
8. If the product of roots of $4x^3+16x^2-9x-a=0$ is 9, then find `a'
9. If ${}^nC_5={}^nC_6$ then find ${}^{13}C_n$
10. If ${}^{13}P_r=5040$ *and* ${}^nC_r=210$ find `n' and `r'
11. Find the number of terms in the expansion of $(2x+3y+z)^7$
12. Find the 3rd term from the end in the expansion of $\left(x^{\frac{-2}{3}}-\frac{3}{x^2}\right)^8$
13. Find the mean deviation about the median for the following data 4,6,9,3,10,13,2
14. Find the probability that a non-leep year contain (i) 53 Sundays (ii)52 Sundays only
15. If X is a possion variate satisfies P(X=1)=P(X=2), Find P(X=5)?

SECTION-B 5X4=20

16. If $x+iy=\frac{1}{1+\cos\theta+i\sin\theta}$ then, Show that $4x^2-1=0$
17. Find the real values of θ in order that $\frac{3+2i\sin\theta}{1-2i\sin\theta}$ is a (a) purely real number (b) purely imaginary number
18. If $1,\omega,\omega^2$ are the cube roots of unity, then prove that $(2-\omega)(2-\omega^2)(2-\omega^{10})(2-\omega^{11})=49$
19. If x is real $\frac{x-P}{x^2-3x+2}$ takes all real values for $x\in R$, than find the bounds for p
20. Solve the equation $x^4-6x^3+11x^2-10x+2=0$, given that $2+\sqrt{3}$ is a root of the equation
21. Find the sum of all four digited numbers that can be formed using the numbers 1,2,3,4,5,6 without repetition
22. Simplify ${}^{34}C_5+\sum_{r=0}^{4}{}^{38-r}C_4$
23. Resolve $\frac{x^4}{(x-1)(x-2)}$ into partial fractions
24. Resolve $\frac{x^2+5x+7}{(x-3)^3}$ into partial fractions
25. Resolve $\frac{x^2+13x+15}{(2x+3)(x-3)^2}$ into partial fractions
26. Suppose A and B are events with $P(A)=0.5, P(B)=0.4$ *and* $P(A\cap B)=0.3$ Find the probability that (i) A does not occur (ii)neither A nor B occurs
27. State and prove addition theorem on probability

SECTION-C 5x7=35

28. If α,β are the roots of the equation $x^2-2x+4=0$ then for any $n\in N$, show that $\alpha^n+\beta^n=2^{n+1}\cos\left(\frac{n\pi}{3}\right)$
29. If $c^2\neq ab$ and roots of $(c^2-ab)x^2-2(a^2-bc)x+(b^2-ac)=0$ are equal, then show that $a^3+b^3+c^3=3abc$ or a=0
30. Solve $6x^6-25x^5+31x^4-31x^2+25x-6=0$
31. Find the polynomial equation whose roots are the translates of those of the equation $x^5-4x^4+3x^2-4x+6=0$ by -3
32. If the letter of the word MASTER are permutated in all possible ways the words thus formed are arranged in the dictionary order then find the rank of the word MASTER
33. Find the numerically greatest terms in the expansion of $(3x-4y)^{14}$ when x=8. and y=3
34. A,B,C are 3 news papers from a city .20% of the population read A, 16% read B, 14% read C, 8% both A and B ,5% both A and C, 4% both Band C and 2% all the three. Find the percentage of the population who read at least one news paper
35. If A, B, C are three independent event such that $P(A\cap B^C\cap C^C)=1/4$, $P(A^C\cap B\cap C^C)=1/8$, $P(A^C\cap B^C\cap C^C)=1/4$, then find P(A),P(B),P(C)
36. If X is a random variable with probability function $P(X=k)=\frac{(k+1)c}{2^k}$, k=0,1,2,3,….then find `c'
37. One in 9 ships is likely to be wrecked, when they are set on sail, when 6 ships are on sail, find the probability for (i)At least one will arrive safely (ii)Exactly, 3 will arrive safely

MATHS II(B)

SECTION-A 10X2=20

1. If $ax^2+bxy+3y^2-5x+2y-3=0$ represents a circle, find the values of a and b. Also find its radius and centre
2. State the necessary and sufficient condition for $lx+my+n=0$ to be a normal to the circle $x^2+y^2+2gx+2fy+c=0$
3. Find the pole of $ax+by+c=0\,(c\neq 0)$ with respect to $x^2+y^2+=r^2$
4. Find the equation of the tangent to the circle $x^2+y^2-4x-6y+11=0$ at the point (3,4)
5. Find the angle between the circles $x^2+y^2-12x-6y+41=0$ *and* $x^2+y^2+4x+6y-59=0$
6. Find the equation of the common chord of the circles $x^2+y^2+2x+3y+1=0$ *and* $x^2+y^2+4x+3y+2=0$
7. Find the equation of the parabola whose focus is S (1,-7) and vertex is A (1,-2)
8. If the centricity of a hyperbola is $\frac{5}{4}$, then find the eccentricity of its conjugate hyperbola
9. Evaluate $\int\frac{x^2dx}{\sqrt{1-x^6}}$
10. Evaluate $\int\sec x\,dx$
11. Evaluate $\int\frac{(\sin^{-1}x)^2}{\sqrt{1-x^2}}dx$
12. Evaluate $\int\frac{dx}{\sqrt{x^2+2x+10}}$
13. Evaluate $\int_0^{\pi/2}\frac{\cos^{3/2}x dx}{\sin^{3/2}x+\cos^{3/2}x}$
14. Evaluate $\int_2^3\frac{2x}{1+x^2}$
15. Find the order and degree of the differential equation $\left(\frac{d^2y}{dx^2}-\left(\frac{dy}{dx}\right)^3\right)^{6/5}=6y$

SECTION-B 5X4=20

16. Show that the tangent at (1,-2) of the circle $x^2+y^2-4x-8y+7=0$ touches the circle $x^2+y^2+4x+6y=0$, also find its point of contact
17. Find the angle between the tangents drawn from (3,2) to the circle $x^2+y^2-6x+4y-2=0$
18. Find the length of the chord intercepted by the circle $x^2+y^2-x+3y-22=0$ *on the line* $y=x-3$

19. Find the equation of the circle passing through the points of intersection of the circles $x^2+y^2-8x-6y+21=0$, $x^2+y^2-2x-15=0$ and passes through (1,2)
20. Find the radical center of the circles $x^2+y^2-2x-6y=0$, $x^2+y^2-4x-2y+6=0$, $x^2+y^2-12x+2y+3=0$
21. Find the length of the major axis, minor axis, latus rectum and eccentricity of an ellipse $9x^2+16y^2=144$
22. If the length of the latus rectum is equal to half of the minor axis, of an ellipse in the standard form , then find the eccentricity of ellipse
23. Find the centre, eccentricity, foci, length of latus rectum for the hyperbola $\frac{x^2}{16}-\frac{y^2}{25}=1$
24. Evaluate $\int_{-\pi/2}^{\pi/2}\frac{\cos x}{1+e^x}dx$
25. Evaluate $\int_0^{\pi}\frac{x\sin x dx}{1+\cos^2 x}$
26. Solve the differential equation $\tan y\sec^2 x\,dx+\tan x\sec^2 y\,dy=0$
27. Solve the differential equation $\frac{dy}{dx}+\frac{y^2+y+1}{x^2+x+1}=0$

SECTION-C 5X7=35

28. Show that the points (1,1) (6,0), (2,2) and (-2,-8) are concyclic.
29. Find the direct common tangents to the circles $x^2+y^2+22x-4y-100=0; x^2+y^2-22x+4y+100=$
30. Show that the circles $x^2+y^2-4x-6y-12=0$ *and* $x^2+y^2+6x+18y+26=0$ touch each other, also find the point of contact and common tangent at this point of contact
31. Find the equation of the circles orthogonal to $x^2+y^2-x+6y+53=0$, $x^2+y^2+3x+2y+1=0$, $x^2+y^2+5x-8y+15=0$
32. Show that standard equation of parabola is $y^2=4ax$
33. Evaluate $\int\frac{9\cos x-\sin x}{5\cos x+4\sin x}dx$
34. Evaluate $\int\frac{dx}{1+\sin x+\cos x}$
35. Evaluate $\int(6x+5)\sqrt{6-2x^2+x}\,dx$
36. Evaluate $\int_0^1\frac{\log(1+x)}{1+x^2}dx$
37. Solve the differential equation $(xy^2+x)dx+(yx^2+y)dy=0$

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