నమస్తే తెలంగాణ
నిపుణ III పోటీపరీక్షల ప్రత్యేకం
Guide to Excellence
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బుధవారం 8 మార్చి 2023

నార్కో టెస్ట్

మెదడులో నిల్వ ఉన్న సమాచారాన్ని యథాతథంగా బయటకు తెప్పించే ప్రక్రియను నార్కోటెస్ట్ అంటారు. ఈ టెస్టు చేసే సమయంలో వ్యక్తికి సోడియం అమైటాల్, సోడియం పెంటథాల్ రసాయనాలను ఇస్తారు. నేరస్థుల నుంచి నేర సమాచారాన్ని రాబట్టడం కోసం ఈ పరీక్ష నిర్వహిస్తారు. నార్కోటెస్ట్ సాధారణంగా అంతర్జాతీయ ఉగ్రవాదులకు, కుంభకోణాలు చేసిన వ్యక్తులకు చేస్తారు. ఇది ప్రస్తుతం అధికారికంగా నిషేధిత జాబితాలో ఉంది.

INTER MATHS MODEL PAPERS

MATHS – IB
MODEL PAPER-I
Time: 3Hrs **Marks:75**

SECTION-A

I Answer ALL the following Questions. 10 x 2 = 20m

1. If the area of the triangle formed by the straight lines x=0, y=0, and 3x+4 y = a (> 0) is 6 sq. unit find the value of 'a'.
2. Find the perpendicular distance from the point (3, 4) to the line 3x-4y+10 =0.
3. Find the ratio in which xz-plane divides the line joining A (-2, 3, 4) and B (1, 2, 3).
4. Find the equation to the plane parallel to the xz-plane and passing through (0, 4, 4).
5. Show that $\underset{x\to 0}{Lt}\frac{\sqrt{x+1}-1}{x}=\frac{1}{2}$
6. Evaluate $\underset{x\to\infty}{1t}\frac{x^2+5x+2}{2x^2-5x+1}$
7. If $f(x)=1+x+x^2+x^3+.....+x^{100}$ then find $f^1(1)$
8. If $x=e^{\sinh y}$ then show that $\frac{dy}{dx}=\frac{1}{x\cosh y}$
9. Find the approximate value of $\sqrt[3]{65}$
10. Verify the Lagrange's mean value theorem. $f(x)=\sin x-\sin 2x\, on[0,\pi]$

SECTION-B

II Answer any five of the following questions 5 x 4 = 20m

11. A (2, 3), B (-3, 4) are two points. If a point P moves such that the area of Δ PAB is 8.5 square units, then find the locus of P.
12. If the transformed equation of a curve is $17x^2-16xy+17y^2=225$ when the axes are rotated through an angle 45^0 then find the original equation of the curve.
13. If the straight lines $ax+by+c=0, bx+cy+a=0, cx+ay+b=0$ are concurrent, then prove that $a^3+b^3+c^3=3abc$
14. $$f(x)=\begin{cases}\frac{\cos ax-\cos bx}{x^2} & if\ x\neq 0\\ \frac{1}{2}(b^2-a^2) & if\ x=0\end{cases}$$ Show that continuous at x=0 where a and b are real
15. Find the derivative of the function $f(x)=\cos^2 x$ from first principles.
16. Show that equation of the tangent to the curve $x^3+y^3=3axy$ at any point $P(x_1,y_1)$ is $(x_1^2-ay_1)x+(y_1^2-ax_1)y=ax_1y_1$
17. A container in the shape of an inverted cone has height 8m and radius 6m at the top .If it is filled with water at the rate of 2 cubic m/min. How fast is the height of water changing when the level is 4m?

SECTION-C

III Answer any five of the following questions 5x 7 = 35m

18. Find the orthocenter of the triangle formed by the lines $x+2y=0, 4x+3y-5=0, 3x+y=0$
19. The equation to the pair of bisectors of angles between the pair of lines $ax^2+2hxy+by^2=0$ is $h(x^2-y^2)=(a-b)xy$
20. Find the condition for the chord $lx+my=1$ of the circle $x^2+y^2=a^2$ to subtend a right angle at the origin.
21. Find the direction cosines (l,m,n) of the lines which are connected by the relation $l+m+n=0, 2lm+mn-2nl=0,$ Also find the acute angle between the lines .
22. If $y=x\sqrt{a^2+x^2}+a^2\log\left(x+\sqrt{a^2+x^2}\right)$ then show that $\frac{dy}{dx}=2\sqrt{a^2+x^2}$
23. If the tangent at any point on the curve $x^{2/3}+y^{2/3}=a^{2/3}(a>0)$ intersects the coordinate axes in A, B then show that the length A B is constant.
24. From a rectangular sheet of dimensions $30cm\times 80cm,$ four equal squares of side x cm are removed at the corners, and the sides are then turned up so as to form an open rectangular box. Find the value of x, so that the volume of the box is the greatest?

MATHS – IIA
MODEL PAPER-II
Time: 3Hrs **Marks:75**

SECTION-A

I Answer all of the following questions 10 x 2 = 20m

1. If A r g z_1 A r g z_2 are $\pi/5, \pi/3$ then find Arg $(z_1)+Arg(z_2)$
2. If $z=x+iy, |z|=1,$ find the locus of z.
3. If 1, ω,ω^2 are the cube roots of unity, then P.T. $\frac{1}{1+2\omega}+\frac{1}{2+\omega}=\frac{1}{1+\omega}$
4. If $x^2-6x+5=0$ and $x^2-12x+P=0$ have a common root then find P.
5. If 1, 2, 3 and 4 are the roots of $x^4+ax^3+bx^2+cx+d=0$, then find the values of a, b, c and d.
6. $If^{(n+1)}p_5 : n_{P_5}=3:2$ then find n.
7. Find the term independent of x in the expansion of $\left(\sqrt{\frac{x}{3}}+\frac{3}{2x^2}\right)^{10}$
8. Prove that $C_0+2.C_1+4.C_2+8.C_3+.....+2n.C_n=3^n$
9. Find the mean deviation about mean for the data 3, 6,10,4,9,10.
10. If mean & variance of a binomial variable x are 2.4 & 1.44 respectively find $P(1<X\le 4)$

SECTION-B

II Answer any five of the following questions 5 x 4 = 20m

11. If the point P denotes the complex number $z=x+iy$ in the Argand plane and if $\frac{z-i}{z-1}$ a purely imaginary number is, find the locus of P.
12. If $\frac{x-P}{x^2-3x+2}$ takes all real values $\forall x\in$ R then find the bounds for P.

13. Find the number of ways of selecting 11 member cricket team from 7 batsmen, 6 bowlers and 2 wicket keepers so that the team contains 2 wicket keepers and at least 4 bowlers.
14. If the letters of the word EAMCET are permuted in all possible ways and the words are arranged in dictionary order, then find the rank of EAMCET.
15. If A and B are independent events with P (A) =0.2, P (B) = 0.5, find
    i) P (A/B) ii) P (B/A)
    iii) $P(A\cap B)$ iv) $P(A\cup B)$
16. A speaks truth in 75% of the cases and B in 80% of the cases. What is the probability that their statements about an incident do not match.
17. Find partial fractions of $\frac{x^3}{(x-a)(x-b)(x-c)}$

SECTION-C

III Answer any five of the following questions 5x 7 = 35m

18. If $\cos\alpha+\cos\beta+\cos\gamma=0 \sin\alpha+\sin\beta+\sin\gamma,$ then show that $\cos^2\alpha+\cos^2\beta+\cos^2\gamma=3/2$ $=\sin^2\alpha+\sin^2\beta+\sin^2\gamma.$
19. Solve $18x^3+81x^2+121x+60=0,$ given that a root is equal half the sum of the remaining roots.
20. If the coefficients of $r^{th},(r+1)^{th},(r+2)^{th}$ terms in the expansion of $(1+x)^n$ are in A.P then show that $n^2-(4r+1)n+4r^2-2=0$
21. If $x=\frac{1.3}{3.6}+\frac{1.3.5}{3.6.9}+\frac{1.3.5.7}{3.6.9.12}+.....$ then prove that $9x^2+24x=11$.
22. State and Prove Addition theorem on probability.
23. A cubical die is thrown. Find the mean and variance of X, giving the number on the face that shows up.
24. Find the mean deviation about the mean for the given data using 'step deviation method':

Marks obtained	0-10	10-20	20-30	30-40	40-50
No of students	5	8	15	16	6

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Scholarships

OakNorth STEM Scholarship Program 2022

Description:
OakNorth STEM Scholarship Program 2022 aims to provide financial support to meritorious and underprivileged girl students pursuing graduation in STEM (Science, Technology, Engineering, Mathematics) subjects from government colleges/ universities.

Eligibility:
Girl students from Haryana who have passed Class 12 and are currently pursuing graduation (any year) in STEM-related subjects from government universities/colleges are eligible. The annual family income of the applicants must be less than INR 6 lakh from all sources. Applicants must have scored an aggregate of 60% marks or above in Class 12 (or equivalent) examination. Students studying in the 2nd, 3rd, or 4th year of STEM courses must score at least 60% in the previous class/semester.

Prizes & Rewards: INR 30,000
Last Date to Apply: 15-03-2023
Application mode: OakNorth STEM Scholarship Program 2022
Short Url: www.b4s.in/namasthe/ONSS1