Padasalai's Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

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A.K.T ACADEMY MHSS, ALLAKURICHI

MATHEMATICS-ONE MARK TEST

CLASS : XI **FULL PORTION** **MARKS : 50 marks**

DATE : **TIME : 30 Mins**

1. If $A = \{(x, y): y = e^x, x \in R\}$ & $B = \{(x, y): y = e^{-x}, x \in R\}$ then $n(A \cap B)$ is

   1) Infinity 2) 0 3) 1 4) 2

2. If $n(A) = 2$ & $N(B \cup C) = 3, then\ n[(A \times B) \cup (A \times C)]$ is

   1) 2^3 2) 3^2 3) 6 4) 5

3. If $A = \{(x, y): y = sinx, x \in R\}$ & $B = \{(x, y): y = cosx, x \in R\}$ then $A \cap B$ contains

   1) No element 2) Infinitely many elements

   3) Only one element 4) Cannot be determined

4. The range of the function on $\frac{1}{1-2\sin x}$ is

   1) $(-\infty, -1) \cup \left(\frac{1}{3}, \infty\right)$ 2) $\left(-1, \frac{1}{3}\right)$ 3) $\left[-1, \frac{1}{3}\right]$ 4) $(-\infty, -1] \cup \left[\frac{1}{3}, \infty\right)$

5. Let f : R → R be defined by f(x) = 1 − |x|. Then the range of f is

   1) R 2) (1, ∞) 3) (-1, ∞) 4) (-∞, 1]

6. If $\frac{|x-2|}{x-2} \geq 0$, then x belongs to

   1) [2, ∞) 2) (2, ∞) 3) (-∞, 2) 4) (-2, ∞)

7. The value of $log_3 \frac{1}{81}$ is

   1) -2 2) -8 3) -4 4) -9

8. The equation whose roots are numerically equal but opposite in sign to the roots of $3x^2-5x-7=0$ is

   1) $3x^2-5x-7=0$ 2) $3x^2+5x-7=0$ 3) $3x^2-5x+7=0$ 4) $3x^2+x-7=0$

9. The number of roots of $(x+3)^4 + (x+5)^4 = 16$ is

   1) 4 2) 2 3) 3 4) 0

10. If $\pi < 2\theta < \frac{3\pi}{2}$, then $\sqrt{2+\sqrt{2+2cos4\theta}}$ equals to

    1) -2 cosθ 2) -2 sinθ 3) 2 cosθ 4) 2 sinθ

11. $\frac{\sin(A-B)}{cosAcosB} + \frac{\sin(B-C)}{\cos B \cos C} + \frac{\sin(C-A)}{\cos C \cos A}$ is

    1) sin A + sin B + sin C 2) 1 3) 0 4) cos A + cos B + cos C

12. In a ΔABC, IF

    A. $sin\frac{A}{2}sin\frac{B}{2}sin\frac{C}{2} > 0$ B. $\sin A \sin B \sin C > 0$, then

    1) Both A & B are true 2) Only A is true

    3) Only B is true 4) Neither A nor B is true

13. Which of the following is not true ?

    1) $sin\theta = -\frac{3}{4}$ 2) $cos\theta = -1$ 3) $tan\theta = 25$ 4) $sec\theta = \frac{1}{4}$

14. The number of 5 digit numbers all digits of which are odd is

    1) 25 2) 5^5 3) 5^6 4) 625

15. There are 10 points in a plane and 4 of them are collinear. The number of straight lines joining any two points is

    1) 45 2) 40 3) 39 4) 38

16. ${}^{(n-1)}C_r + {}^{(n-1)}C_{(r-1)}$ is

1) ${}^{(n+1)}C_r$ 2) ${}^{(n-1)}C_r$ 3) ${}^{n}C_r$ 4) ${}^{n}C_{r-1}$

17. $1 + 3 + 5 + 7 + \ldots. + 17$ is equal to

1) 101 2) 81 3) 71 4) 61

18. The coefficient of x^8y^{12} in the expansion of $(2x + 3y)^{20}$ is

1) 0 2) $2^8 3^{12}$ 3) $2^8 3^{12} + 2^{12} 3^8$ 4) ${}^{20}C_8\, 2^8\, 3^{12}$

19. The sum up to n terms of the series $\frac{1}{\sqrt{1}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{5}} + \frac{1}{\sqrt{5}+\sqrt{7}} + \cdots$ is

1) $\sqrt{2n+1}$ 2) $\frac{\sqrt{2n+1}}{2}$ 3) $\sqrt{2n-1}$ 4) $\frac{\sqrt{2n+1}-1}{2}$

20. The value of $\frac{1}{2!} + \frac{1}{4!} + \frac{1}{6!} + \cdots$ is

1) $\frac{e^2+1}{2e}$ 2) $\frac{(e+1)^2}{2e}$ 3) $\frac{(e-1)^2}{2e}$ 4) $\frac{e^2+1}{2e}$

21. The value of $2 + 4 + 6 + \ldots. + 2n$ is

1) $\frac{n(n-1)}{2}$ 2) $\frac{n(n+1)}{2}$ 3) $\frac{2n(2n+1)}{2}$ 4) $n(n + 1)$

22. The slope of the line which makes an angle 45° with the line $3x - y = -5$ are

1) 1, -1 2) $\frac{1}{2}, -2$ 3) $1, \frac{1}{2}$ 4) $2, -\frac{1}{2}$

23. Equation of the straight line perpendicular to the line $x - y + 5 = 0$, through the point of intersection the y-axis and the given line

1) $x - y - 5 = 0$ 2) $x + y - 5 = 0$ 3) $x + y + 5 = 0$ 4) $x + y + 10 = 0$

24. The y-intercept of the straight line passing through (1,3) and perpendicular to $2x - 3y + 1 = 0$ is

1) $\frac{3}{2}$ 2) $\frac{9}{2}$ 3) $\frac{2}{3}$ 4) $\frac{2}{9}$

25. θ is acute angle between the lines $x^2 - xy - 6y^2 = 0$, then $\frac{2\cos\theta+3\sin\theta}{4\sin\theta+5\cos\theta}$ is

1) 12) $-\frac{1}{9}$ 3) $\frac{5}{9}$ 4) $\frac{1}{9}$

26. If $a_{ij} = \frac{1}{2}(3i-2j)$ and $A=[a_{ij}]_{2x2}$ is

1) $\begin{bmatrix} \frac{1}{2} & 2 \\ -\frac{1}{2} & 1 \end{bmatrix}$ 2) $\begin{bmatrix} \frac{1}{2} & -\frac{1}{2} \\ 2 & 1 \end{bmatrix}$ 3) $\begin{bmatrix} 2 & 2 \\ \frac{1}{2} & -\frac{1}{2} \end{bmatrix}$ 4) $\begin{bmatrix} \frac{1}{2} & -\frac{1}{2} \\ 1 & 2 \end{bmatrix}$

27. If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ a & 2 & b \end{bmatrix}$ is a matrix satisfying the equation $AA^T=9I$, where I is 3x3 identity matrix, then the ordered pair (a,b) is equal to

1) (2,-1) 2) (-2,1) 3) (2,1) 4) (-2,-1)

28. If the square of the matrix $\begin{bmatrix} \alpha & \beta \\ \gamma & -\alpha \end{bmatrix}$ is the unit matrix of order 2, then α,β and γ should satisfy the relation

1) $1+\alpha^2+\beta\gamma=0$ 2) $1-\alpha^2-\beta\gamma=0$ 3) $1-\alpha^2+\beta\gamma=0$ 4) $1+\alpha^2-\beta\gamma=0$

29. If $A = \begin{vmatrix} -1 & 2 & 4 \\ 3 & 1 & 0 \\ -2 & 4 & 2 \end{vmatrix}$ and $B = \begin{vmatrix} -2 & 4 & 2 \\ 6 & 2 & 0 \\ -2 & 4 & 8 \end{vmatrix}$, then B is given by

1) B=4A 2) B=-4A 3) B=-A 4) B=6A

30. Let A and B be two symmetric matrices of same order. Then which one of the following statement is not true?

1) A+B is a symmetric matrix 2) AB is a symmetric matrix

3) $AB=(BA)^T$ 4) $A^TB=AB^T$

31. If $\vec{a}+2\vec{b}$ and $3\vec{a}+m\vec{b}$ are parallel, then the value of m is

3 2) $\frac{1}{3}$ 3) 6 4) $\frac{1}{6}$

32. One of the diagonals of parallelogram ABCD with $\vec{a}$ and $\vec{b}$ as adjacent sides is $\vec{a}+\vec{b}$. The other diagonal $\overrightarrow{BD}$ is

$\vec{a}-\vec{b}$ 2) $\vec{b}-\vec{a}$ 3) $\vec{a}+\vec{b}$ 4) $\frac{\vec{a}+\vec{b}}{2}$

33. If $\lambda\hat{\imath}+2\lambda\hat{\jmath}+2\lambda\hat{k}$ is a unit vector, then the value of λ is

$\frac{1}{3}$ 2) $\frac{1}{4}$ 3) $\frac{1}{9}$ 4) $\frac{1}{2}$

34. If $\vec{a}$ *and* $\vec{b}$ are two vectors of magnitude 2 and inclined angle 60°, then the angle between $\vec{a}$ *and* $\vec{a}+\vec{b}$ is

1)30° 2) 60° 3) 45° 4) 90°

35. $\lim_{x\to\infty}\frac{\sin x}{x}$

1)1 2) 0 3) ∞ 4) −∞

36. $\lim_{x\to\infty}\frac{\sqrt{x^2-1}}{2x+1}=$

1) 1 2) 0 3) -1 4) $\frac{1}{2}$

37. $\lim_{x\to 0}\frac{xe^x-\sin x}{x}$ is

1) 1 2) 2 3) 3 4) 0

38. Let a function f be defined by $f(x)=\frac{x-|x|}{x}$ for $x\neq 0$ and $f(0)=2$. Then f is

1) Continuous nowhere 2) Continuous everywhere

3) Continuous for all x except x = 1 4) Continuous for all x except x = 0

39. If $f(x)=x^2-3x$, then the points at which $f(x)=f'(x)$ are

1) both positive integers 2) both negative integers

3) both irrational 4) one rational and another irrational

40. $x=\frac{1-t^2}{1+t^2}, y=\frac{2t}{1+t^2}$ then $\frac{dy}{dx}$ is

1) $-\frac{y}{x}$ 2) $\frac{y}{x}$ 3) $-\frac{x}{y}$ 4) $\frac{x}{y}$

41. If is given that f'(a) exists, then $\lim_{x\to a}\frac{xf(a)-af(x)}{x-a}$ is

1) f(a)-af'(a) 2) f'(a) 3) –f'(a) 4) f(a)+af'(a)

42. The number of points in R in which the function $f(x)$ =|x-1)+|x-3|+sin x is not differentiable, is

1) 3 2) 2 3) 1 4) 4

43. $\int\frac{e^x(1+x)}{\cos^2(xe^x)}dx$ is

1) $\cot(xe^x+c)$ 2) $\sec(xe^x+c)$ 3) $\tan(xe^x+c)$ 4) $\cos(xe^x+c)$

44. $\int \tan^{-1}\sqrt{\frac{1-\cos 2x}{1+\cos 2x}}dx$ is

1) x^2+c 2) $2x^2+c$ 3) $\frac{x^2}{2}+c$ 4) $-\frac{x^2}{2}+c$

45. $\int \frac{1}{e^x-1}dx$ is

1) $\log|e^x|-\log|e^x-1|+c$ 2) $\log|e^x|+\log|e^x-1|+c$

3) $\log|e^x-1|-\log|e^x|+c$ 4) $\log|e^x+1|-\log|e^x|+c$

46. $\int \frac{1}{x\sqrt{(\log x)^2-5}}dx$ is

1) $\log\left|x+\sqrt{x^2-5}\right|+c$

2) $\log\left|\log x+\sqrt{\log x-5}\right|+c$

3) $\log\left|\log x+\sqrt{(\log x)^2-5}\right|+c$

4) $\log\left|\log x-\sqrt{(\log x)^2-5}\right|+c$

47. A, B & C try to hit a target simultaneously but independently. Their respective probabilities of hitting the target are $\frac{3}{4},\frac{1}{2},\frac{5}{8}$. The probability that the target is hit by A or B but not by C is

1) $\frac{21}{64}$ 2) $\frac{7}{32}$ 3) $\frac{9}{64}$ 4) $\frac{7}{8}$

48. A matrix is chosen at random from a set of all matrices of order 2, with elements 0 or 1 only. The probability that the determinant of the matrix chosen is non zero will be

1) $\frac{3}{16}$ 2) $\frac{3}{8}$ 4) $\frac{1}{4}$ 4) $\frac{5}{8}$

49. If two events A & B are independent such that $P(A)=0.35$ & $P(A\cup B)=0.6$, *then* $P(B)$*is*

1) $\frac{5}{13}$ 2) $\frac{1}{13}$ 3) $\frac{4}{13}$ 4) $\frac{7}{13}$

50. It is given that events A & B are such that $P(A)=\frac{1}{4}, P\left(\frac{A}{B}\right)=\frac{1}{2}$ & $P\left(\frac{B}{A}\right)=\frac{2}{3}$.Then P(B) is

1) $\frac{1}{6}$ 2) $\frac{1}{3}$ 3) $\frac{2}{3}$ 4) $\frac{1}{2}$

QN NO	ANS	QN NO	ANS	QN NO	ANS	QN NO	ANS	QN NO	ANS
1		11		21		31		41	
2		12		22		32		42	
3		13		23		33		43	
4		14		24		34		44	
5		15		25		35		45	
6		16		26		36		46	
7		17		27		37		47	
8		18		28		38		48	
9		19		29		39		49	
10		20		30		40		50	