Padasalai's Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

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MODEL QUESTION PAPER
ONE MARK QUESTION PAPER

11th Standard

MATHEMATICS

Exam Time : 01:00:00 Hrs Total Marks : 50

CHOOSE THE CORRECT ANSWER 50 x 1 = 50

1) Let f:R→R be defined by f(x)=1-|x|. Then the range of f is
(a) R (b) $(1,\infty)$ (c) $(-1,\infty)$ (d) $(-\infty,1]$

2) The function f:R→R be defined by f(x)=sinx+cosx is
(a) an odd function (b) neither an odd function nor an even function (c) an even function (d) both odd function and even function

3) If n((A x B) ∩(A x C)) = 8 and n(B ∩ C) = 2, then n(A) is
(a) 6 (b) 4 (c) 8 (d) 16

4) For non-empty sets A and B, if A ⊂ B then (A x B) ∩ (B x A) is equal to
(a) A ∩ B (b) A x A (c) B x B (d) none of these.

5) The value of $log_3 \frac{1}{81}$ is
(a) -2 (b) -8 (c) -4 (d) -9

6) If 3 is the logarithm of 343 then the base is
(a) 5 (b) 7 (c) 6 (d) 9

7) The equation whose roots are numerically equal but opposite in sign to the roots $3x^2-5x-7=0$ is
(a) $3x^2-5x-7=0$ (b) $3x^2+5x-7=0$ (c) $3x^2-5x+7=0$ (d) $3x^2+x-7$

8) The number of roots of $(x+3)^4+(x+5)^4=16$ is
(a) 4 (b) 2 (c) 3 (d) 0

9) The maximum value of $4\sin^2x+3\cos^2x+\sin\frac{x}{2}+\cos\frac{x}{2}$ is
(a) $\frac{1}{8}$ (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\frac{1}{\sqrt{2}}$

10) If $\pi < 2\theta < \frac{3\pi}{2}$, then $\sqrt{2+\sqrt{2+2\cos 4\theta}}$ equals to
(a) $-2\cos\theta$ (b) $-2\sin\theta$ (c) $2\cos\theta$ (d) $2\sin\theta$

11) A wheel is spinning at 2 radians/second. How many seconds will it take to make 10 complete rotations?
(a) 10π seconds (b) 20π seconds (c) 5π seconds (d) 15π seconds

12) If $\tan x = \frac{1}{7}$, $\tan y = \frac{1}{3}$ then x + y is:
(a) $\frac{\pi}{4}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{2}$ (d) π

13) The number of five digit telephone numbers having at least one of their digits repeated is
(a) 90000 (b) 10000 (c) 30240 (d) 69760

14) There are 10 points in a plane and 4 of them are collinear. The number of straight lines joining any two points is
(a) 45 (b) 40 (c) 39 (d) 38

15) The number of rectangles that a chessboard has
(a) 81 (b) 99 (c) 1296 (d) 6561

16) If ${}^nC_4, {}^nC_5, {}^nC_6$ are in AP the value of n can be
(a) 14 (b) 11 (c) 9 (d) 5

17) The coefficient of x^5 in the series e^{-2x} is
(a) $\frac{2}{3}$ (b) $\frac{2}{3}$ (c) $\frac{-4}{15}$ (d) $\frac{4}{15}$

18) The coefficient of x^8y^{12} in the expansion of $(2x + 3y)^{20}$ is
(a) 0 (b) 28312 (c) $2^8 3^{12} + 2^{12} 3^8$ (d) ${}^{20}C_8\, 2^8\, 3^{12}$

19) $1 - 2x + 3x^2 - 4x^3 + \ldots$, $|x| < 1$ is:

(a) $(1-x)^{-2}$ (b) $(1+x)^{-2}$ (c) $(1-x)^2$ (d) $(1+x)^2$

20) $\frac{1}{1!}+\frac{1}{3!}+\frac{1}{5!}+\ldots$ is:

(a) $\frac{e^{-1}}{2}$ (b) $\frac{e+e^{-1}}{2}$ (c) $\frac{e-e^{-1}}{2}$ (d) none of these

21) If $7x^2$ - 8xy +A = 0 represents a pair of perpendicular lines, the A is

(a) 7 (b) -7 (c) -8 (d) 8

22) The lines x + 2y - 3 = 0 and 3x - y + 7 = 0 are:

(a) parallel (b) neither parallel nor perpendicular (c) perpendicular (d) parallel as wellas perpendicular

23) Find the nearest point on the line 3x + y = 10 from the origin is:

(a) (2, 1) (b) (1, 2) (c) (3, 1) (d) (1,3)

24) The slope of the line joining A and B where A is (-1, 2) and B is the point of intersection of the lines 2x + 3y = 5 and 3x + 4y = 7 is:

(a) -2 (b) 2 (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

25) Find the angle between the lines $3x^2$,- 10xy - $3y^2$ = 0

(a) 90° (b) 45° (c) 60° (d) 30°

26) Which one of the following is not true about the matrix $\begin{bmatrix}1&0&0\\0&0&0\\0&0&5\end{bmatrix}$?

(a) a scalar matrix (b) a diagonal matrix (c) an upper triangular matrix (d) a lower triangular matrix

27) If $A=\begin{bmatrix}1&-1\\2&-1\end{bmatrix}$,$B=\begin{bmatrix}a&1\\b&-1\end{bmatrix}$ and $(A+B)^2=A^2+B^2$, then the values of a and b are

(a) a = 4, b =1 (b) a =1, b = 4 (c) a = 0, b = 4 (d) a = 2, b = 4

28) If $A=\begin{bmatrix}a&x\\y&a\end{bmatrix}$ and if xy =1, then $\det(A\,A^T)$ is equal to

(a) $(a-1)^2$ (b) $(a^2+1)^2$ (c) a^2-1 (d) $(a^2-1)^2$

29) The matrix A satisfying the equation $\begin{bmatrix}1&3\\0&1\end{bmatrix}A=\begin{bmatrix}1&1\\0&-1\end{bmatrix}$ is

(a) $\begin{bmatrix}1&4\\-1&0\end{bmatrix}$ (b) $\begin{bmatrix}1&-4\\1&0\end{bmatrix}$ (c) $\begin{bmatrix}1&4\\0&-1\end{bmatrix}$ (d) $\begin{bmatrix}1&-4\\1&1\end{bmatrix}$

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

(a) A + B is a symmetric matrix (b) AB is a symmetric matrix (c) $AB = (BA)^T$ (d) $A^T B = AB^T$

31) If $\lambda\hat{i}+2\lambda\hat{j}+2\lambda\hat{k}$ is a unit vector, then the value of λ is

(a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{9}$ (d) $\frac{1}{2}$

32) If $|\vec{a}|=13$, $|\vec{b}|=5$ and $\vec{a}.\vec{b}=60^o$ then $|\vec{a}\times\vec{b}|$ is

(a) 15 (b) 35 (c) 45 (d) 25

33) The projection of $\vec{b}$ on $\vec{a}$ is

(a) $\left(\frac{\vec{a}.\vec{b}}{|\vec{b}|}\right)\vec{b}$ (b) $\frac{\vec{a}.\vec{b}}{|\vec{b}|}$ (c) $\frac{\vec{a}.\vec{b}}{|\vec{a}|}$ (d) $\left(\frac{\vec{a}.\vec{b}}{|\vec{a}|}\right)$

34) If $|\vec{a}|$=4 and $-3\le\lambda\le 2$ then the range of $|\lambda\vec{a}|$ is

(a) [0, 8] (b) [-12, 8] (c) [0, 12] (d) [8, 12]

35) $lim_{x\to o}\frac{8^x-4^x-2^x+1^x}{x^2}=$

(a) 2 log 2 (b) 2(log2)^2 (c) log 2 (d) 3 log 2

36) $lim_{x\to 3}[x]=$

(a) 2 (b) 3 (c) does not exist (d) 0

37) If f : $R \to R$ is defined by f(x)=$\lfloor x-3 \rfloor + |x-4|$ for $x \in R$, then $lim_{x\to 3^-} f(x)$ is equal to

(a) -2 (b) -1 (c) 0 (d) 1

38) $lim_{x\to 0} \frac{xe^x - \sin x}{x}$ is

(a) 1 (b) 2 (c) 3 (d) 0

39) If x=a sin θ and y= b cos θ,then $\frac{d^2y}{dx^2}$is

(a) $\frac{a}{b^2}sec^2\theta$ (b) $-\frac{b}{a}sec^2\theta$ (c) $-\frac{b}{a^2}sec^3\theta$ (d) $-\frac{b^2}{a^2}sec^3\theta$

40) If $y = \frac{(1-x)^2}{x^2}$,then $\frac{dy}{dx}$ is

(a) 8 (b) 1 (c) 4 (d) 5

41) If $f(x) = \begin{cases} x-5 & \text{if } x \le 1 \\ 4x^2-9 & \text{if } 1 < x < 2 \\ 3x+4 & \text{if } x \ge 2 \end{cases}$,then the right hand derivative of f(x) at x = 2 is

(a) 0 (b) 2 (c) 3 (d) 4

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

(a) 3 (b) 2 (c) 1 (d) 4

43) If$\int f'(x)e^{x^2}dx = (x-1)e^{x^2} + c$,then f(x) is

(a) $2x^3 - \frac{x^2}{2} + x + c$ (b) $\frac{x^3}{2} + 3x^2 + 4x + c$ (c) x^3+4x^2+6x+c (d) $\frac{2x^3}{3} - x^3 + x + c$

44) $\int \frac{e^{6\log x} - e^{5\log x}}{e^{4\log x} - e^{3\log x}} dx$ is

(a) x+c (b) $\frac{x^3}{3} + c$ (c) $\frac{3}{x^3} + c$ (d) $\frac{1}{x^2} + c$

45) $\int \frac{\sec x}{\sqrt{\cos 2x}} dx$ is

(a) $\tan^{-1}$ (sin x)+c (b) $2\sin^{-1}$(tan x)+c (c) $\tan^{-1}$(cos x)+c (d) $\sin^{-1}$(tan x)+c

46) $\int e^{\sqrt{x}} dx$ is

(a) $2\sqrt{x}(1 - e^{\sqrt{x}}) + c$ (b) $2\sqrt{x}(e^{\sqrt{x}} - 1) + c$ (c) $2e^{\sqrt{x}}(1 - \sqrt{x}) + c$ (d) $2e^{\sqrt{x}}(\sqrt{x} - 1) + c$

47) If A and B are two events such that A⊂B and P(B) $\neq o$,then which of the following is correct?

(a) $P(A/B) = \frac{P(A)}{P(B)}$ (b) P(A/B)< P(A) (c) P(A/B) ≥ P(A) (d) P(A/B) > P(B)

48) There are three events A, B, and C of which one and only one can happen. If the odds are 7 to 4 against A and 5 to 3 against B, then odds against C is

(a) 23: 65 (b) 65: 23 (c) 23: 88 (d) 88: 23

49) In a certain college 4% of the boys and 1% of the girls are taller than 1.8 meter. Further 60% of the students are girls. If a student is selected at random and is taller than 1.8 meters, then the probability that the student is a girl is

(a) $\frac{2}{11}$ (b) $\frac{3}{11}$ (c) $\frac{5}{11}$ (d) $\frac{7}{11}$

50) If m is a number such that m ≤ 5, then the probability that quadratic equation $2x^2$+2mx+m+1=0 has real roots is

(a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (d) $\frac{4}{5}$

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