

MHT CET 2024 Mathematics Memory Based Question Paper PDF

Ques 1. The statement $(p \wedge (\sim q)) \vee ((\sim p) \wedge q) \vee ((\sim p) \wedge (\sim q))$ is equivalent to $\vee$

- A. $(\sim p) \vee (\sim q)$
- B. $p \vee (\sim q)$
- C. $p \vee q$
- D. $(\sim p) \vee q$

Ans. A

Ques 2. If $B = \begin{bmatrix} 3 & a & -1 \\ 1 & 3 & 1 \\ -1 & 1 & 3 \end{bmatrix}$ is the adjoint of a 3×3 matrix A and $|A| = 4$ then a is equal to

Ans. 1

Ques 3. If $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$, then $A^{-1} =$

Ans. $\begin{bmatrix} \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \\ -4 & 3 & -1 \\ \frac{5}{2} & -\frac{3}{2} & \frac{1}{2} \end{bmatrix}$

Ques 4. The value of $\sin(\cot^{-1}(x))$ is

- A $1/\sqrt{(1 + x^2)}$
- B $\sqrt{(1 + x^2)}$
- C $1/(x\sqrt{(1 + x^2)})$
- D $x\sqrt{(1 + x^2)}$

Ques 5. If $y = 5\cos x - 3\sin x$ then $(d^2y)/(dx^2) + y$ equals

- A $8\sin x \cos x$
- B $3\sin x \cos x$

- C 1
D 0

Ques 6. A wire of length 20 units is divided into two parts such that the product of one part and cube of the other part is maximum, then product of these parts is

- A 5
B 75
C 15
D 70

Ques 7. The integral of $\sec^{\frac{2}{3}}x \operatorname{cosec}^{\frac{4}{3}}x dx$ from $\pi/6$ to $\pi/3$ is equal to

- A. $3^{5/6} - 3^{2/3}$
B. $3^{7/6} - 3^{5/6}$
C. $3^{5/3} - 3^{1/3}$
D. $3^{4/3} - 3^{1/3}$

Ques 8. The distribution function $F(X)$ of discrete random variable X is given by

X	1	2	3	4	5	6
$F(X = x)$	0.2	0.37	0.48	0.62	0.85	1

Then $P[X = 4] + P[x = 5] =$

- A 0.14
B 0.85
C 0.37
D 0.23

Ques 9. If the lines $(x-k)/2 = (y+1)/3 = (z-1)/4$ and $(x-3)/1 = (y-9/2)/2 = z/1$ intersect, then the value of k is

- A $1/2$

B -1

C 1

D 3/2

Ques 10. Which of the following alkane is tertiary?

Ques 11. From the options given below, which one of the following is a primary amine?

Ques 12. In 2-chloro-3,4-dimethylhexane, how many chiral C atoms are present?

Ques 13. Find pH if pK_b , $[base]$ and $[salt]$ were given.

Ans. $pOH = pK_b - \log [base]/[salt]$

Ques 14. Find total volume of unit cell, radius was provided.

Ques 15. IUPAC name for 2,5-dimethylpentanol was asked. Structure was provided.