



Padalsalai's Telegram Groups!

(தலைப்பிற்கு கீழே உள்ள லிங்கை கிளிக் செய்து குழுவில் இணையவும்!)

- Padalsalai's NEWS - Group
https://t.me/joinchat/NIfCqVRBNj9hhV4wu6_NqA
- Padalsalai's Channel - Group
<https://t.me/padasalaichannel>
- Lesson Plan - Group
<https://t.me/joinchat/NIfCqVWwo5iL-21gpzrXLw>
- 12th Standard - Group
https://t.me/Padalsalai_12th
- 11th Standard - Group
https://t.me/Padalsalai_11th
- 10th Standard - Group
https://t.me/Padalsalai_10th
- 9th Standard - Group
https://t.me/Padalsalai_9th
- 6th to 8th Standard - Group
https://t.me/Padalsalai_6to8
- 1st to 5th Standard - Group
https://t.me/Padalsalai_1to5
- TET - Group
https://t.me/Padalsalai_TET
- PGTRB - Group
https://t.me/Padalsalai_PGTRB
- TNPSC - Group
https://t.me/Padalsalai_TNPSC

One Mark Test - 1

www.Padasalai.Net

www.TrbTnpsc.com

Standard XII

MATHEMATICS

Time: 1.00 hr.

Marks: 50

Choose and write the correct answer:

50x1=50

1. If $\text{adj}(A) = \begin{pmatrix} 7 & 7 & -7 \\ -1 & 11 & 7 \\ 11 & 5 & 7 \end{pmatrix}$, then matrix $A =$

a) $\begin{pmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ -3 & 1 & 2 \end{pmatrix}$

b) $\begin{pmatrix} 1 & -2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{pmatrix}$

c) $\begin{pmatrix} -1 & 2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{pmatrix}$

d) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

☐

2. If $A = \begin{pmatrix} -3 & 4 \\ 6 & 2 \end{pmatrix}$, then $\text{adj} =$

a) $\begin{pmatrix} 2 & -4 \\ -6 & -3 \end{pmatrix}$

b) $\begin{pmatrix} 2 & 4 \\ 6 & 3 \end{pmatrix}$

c) $\begin{pmatrix} 2 & -3 \\ 6 & 4 \end{pmatrix}$

d) $\begin{pmatrix} 3 & 6 \\ 4 & -2 \end{pmatrix}$

☐

3. The rank of the matrix $\begin{pmatrix} 2 & 0 & -7 \\ 0 & 3 & 1 \\ 0 & 0 & 1 \end{pmatrix}$ is

a) 1

b) 2

c) 3

d) 4

☐

4. The inverse of the matrix $\begin{pmatrix} 2 & -1 \\ 5 & -2 \end{pmatrix}$ is

a) $\begin{pmatrix} -2 & 1 \\ -5 & 2 \end{pmatrix}$

b) $\begin{pmatrix} -2 & -1 \\ -5 & -2 \end{pmatrix}$

c) $\begin{pmatrix} -2 & -1 \\ -5 & 2 \end{pmatrix}$

d) $\begin{pmatrix} 2 & 1 \\ -5 & 2 \end{pmatrix}$

☐

5. If $A = \begin{pmatrix} 5 & 2 \\ 3 & 2 \end{pmatrix}$, then $|A| =$

a) -4

b) 4

c) 14

d) 16

☐

6. If $A^T A^{-1}$ is symmetric, then $A^2 =$

a) A^{-1}

b) $(A^T)^2$

c) A^T

d) $(A^{-1})^2$

☐

7. If $A = \begin{pmatrix} 2 & 3 \\ 5 & -2 \end{pmatrix}$ be such that $\lambda A^{-1} = A$, then λ is

a) 17

b) 14

c) 19

d) 21

☐

8. The rank of the matrix $\begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 6 & 8 \\ -1 & -2 & -3 & -4 \end{pmatrix}$ is

a) 1

b) 2

c) 4

d) 3

☐

9. If $A = \begin{pmatrix} \frac{3}{5} & \frac{4}{5} \\ x & \frac{3}{5} \end{pmatrix}$ and $A^T = A^{-1}$, then the value of x is

a) $-\frac{4}{5}$

b) $-\frac{3}{5}$

c) $\frac{3}{5}$

d) $\frac{4}{5}$

☐

10. If $A = \begin{pmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{pmatrix}$, then $|A| =$

www.TrbTnpSC.com

a) 0

b) 2

c) 1

d) 4



11. If $A = \begin{pmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{pmatrix}$, then $\text{adj}(\text{adj} A)$ is

a) $\begin{pmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{pmatrix}$

b) $\begin{pmatrix} 6 & -6 & 8 \\ 4 & -6 & 8 \\ 0 & -2 & 2 \end{pmatrix}$

c) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

d) $\begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$



12. If $(AB)^{-1} = \begin{pmatrix} 12 & -17 \\ -19 & 27 \end{pmatrix}$ and $A^{-1} = \begin{pmatrix} 1 & -1 \\ -2 & 3 \end{pmatrix}$, then $B^{-1} =$

a) $\begin{pmatrix} 2 & -5 \\ -3 & 8 \end{pmatrix}$

b) $\begin{pmatrix} 8 & 5 \\ 3 & 2 \end{pmatrix}$

c) $\begin{pmatrix} 3 & 1 \\ 2 & 1 \end{pmatrix}$

d) $\begin{pmatrix} 8 & -5 \\ -3 & 2 \end{pmatrix}$



13. If $A = \begin{pmatrix} 2 & 0 \\ 1 & 5 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & 4 \\ 2 & 0 \end{pmatrix}$, then $|\text{adj}(AB)| =$

a) -40

b) -80

c) -60

d) -20



14. If $P = \begin{pmatrix} 1 & x & 0 \\ 1 & 3 & 0 \\ 2 & 4 & -2 \end{pmatrix}$ is the adjoint of 3×3 matrix A and $|A| = 4$, then x is

a) 15

b) 12

c) 14

d) 11



15. If A is a non-singular matrix such that $A^{-1} = \begin{pmatrix} 1 & 2 \\ -3 & -4 \end{pmatrix}$ then $(A^T)^{-1} =$

a) $\begin{pmatrix} -1 & 2 \\ 3 & 4 \end{pmatrix}$

b) $\begin{pmatrix} 1 & 2 \\ -3 & -4 \end{pmatrix}$

c) $\begin{pmatrix} -4 & -2 \\ 1 & -3 \end{pmatrix}$

d) $\begin{pmatrix} 1 & -3 \\ 2 & -4 \end{pmatrix}$



16. If A is a non-singular matrix such that $A^{-1} = \begin{pmatrix} 5 & 3 \\ -2 & -1 \end{pmatrix}$, then $(A^T)^{-1} =$

a) $\begin{pmatrix} 5 & -2 \\ 3 & -1 \end{pmatrix}$

b) $\begin{pmatrix} 5 & 3 \\ -2 & 1 \end{pmatrix}$

c) $\begin{pmatrix} -1 & -3 \\ 2 & 5 \end{pmatrix}$

d) $\begin{pmatrix} -5 & 3 \\ 2 & 1 \end{pmatrix}$



17. If $A = \begin{pmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{pmatrix}$ and $A(\text{adj} A) = \begin{pmatrix} k & 0 \\ 0 & k \end{pmatrix}$, then $k =$

a) 0

b) $\sin \theta$

c) $\cos \theta$

d) 1



18. If $A \begin{pmatrix} 1 & -2 \\ 1 & 4 \end{pmatrix} = \begin{pmatrix} 6 & 0 \\ 0 & 6 \end{pmatrix}$, then $A =$

a) $\begin{pmatrix} 1 & -2 \\ 1 & 4 \end{pmatrix}$

b) $\begin{pmatrix} 1 & 2 \\ -1 & 4 \end{pmatrix}$

c) $\begin{pmatrix} 4 & 2 \\ -1 & 1 \end{pmatrix}$

d) $\begin{pmatrix} 4 & -1 \\ 2 & 1 \end{pmatrix}$



19. If $A = \begin{pmatrix} 3 & 1 & -1 \\ 2 & -2 & 0 \\ 1 & 2 & -1 \end{pmatrix}$ and $A^{-1} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}$ then the value of a_{23} is

a) 0

b) -2

c) -3

d) -1



20. If $|\text{adj}(\text{adj} A)| = |A|^p$, then the order of the square matrix A is

a) 3

b) 4

c) 2

d) 5



Send Your Questions & Answer Keys to our email id - padasalai.net@gmail.com

Scanned by CamScanner

21. If $A = \begin{pmatrix} 7 & 3 \\ 4 & 2 \end{pmatrix}$, then $A^{-1} =$

www.TrbTnpsc.com

- a) A^{-1} b) $\frac{A^{-1}}{2}$ c) $3A^{-1}$ d) $2A^{-1}$ ☐

22. If A is a 3×3 non-singular matrix such that $AA^T = A^T A$ and $B = A^{-1}A^T$, then $BB^T =$

- a) A b) B c) I_3 d) B^T ☐

23. If $A = \begin{pmatrix} 3 & 5 \\ 1 & 2 \end{pmatrix}$, $B = \text{adj } A$ and $C = 3A$, then $\frac{|\text{adj } B|}{|C|} =$

- a) $\frac{1}{3}$ b) $\frac{1}{9}$ c) $\frac{1}{4}$ d) 1 ☐

24. If $A = \begin{pmatrix} 1 & \tan \frac{\theta}{2} \\ -\tan \frac{\theta}{2} & 1 \end{pmatrix}$ and $AB = I_2$, then $B =$

- a) $\left(\cos^2 \frac{\theta}{2}\right)A$ b) $\left(\cos^2 \frac{\theta}{2}\right)A^T$ c) $\left(\cos^2 \frac{\theta}{2}\right)I$ d) $\left(\sin^2 \frac{\theta}{2}\right)A$ ☐

25. If A , B and C are invertible matrices of some order, then which one of the following is not true?

- a) $\text{adj } A = |A|A^{-1}$ b) $\text{adj}(AB) = (\text{adj } A)(\text{adj } B)$ c) $\det A^{-1} = (\det A)^{-1}$ d) $(ABC)^{-1} = C^{-1}B^{-1}A^{-1}$ ☐

26. $\sum_{n=1}^{102} i^n =$

- a) $-1+i$ b) i c) $-i$ d) $-1+2i$ ☐

27. $i i^2 i^3 \dots i^{40} =$

- a) 0 b) -1 c) i d) 1 ☐

28. $\left(\frac{1+i}{1-i}\right)^3 - \left(\frac{1-i}{1+i}\right)^3 =$

- a) $2i$ b) $-2i$ c) i d) $-i$ ☐

29. If $\frac{z+3}{z-5i} = \frac{1+4i}{2}$, then $z =$

- a) $2-3i$ b) $-2+3i$ c) $2+3i$ d) $-2-3i$ ☐

30. Which one of the points i , $-2+i$, $-1+i$ and 3 is farthest from the origin?

- a) i b) $-2+i$ c) $-1+i$ d) 3 ☐

31. Modulus of $\frac{2i}{3+4i}$ is

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

32. Principal argument of $z = i$ is

- a) 0 b) π c) $\frac{\pi}{2}$ d) $-\frac{\pi}{2}$ ☐

33. Principal argument of $z = -i$ is

- a) $-\frac{\pi}{2}$ b) 0 c) π d) $-\pi$ ☐

34. Modulus of $12+5i$ is

- a) 12 b) 5 c) 13 d) 0 ☐

35. If $\left|z - \frac{3}{2}\right| = 2$, then the least value of $|z|$ is

- a) 1 b) 2 c) 3 d) 5 ☐

36. If $|z| = 1$, then the value of $\frac{1+z}{1+\bar{z}}$ is

www.TrbTnpsc.com

a) z

b) $\bar{z}$

c) $\frac{1}{z}$

d) 1

☐

37. If $\frac{z-1}{z+1}$ is purely imaginary, then $|z|$ is

a) $\frac{1}{2}$

b) 1

c) 2

d) 3

☐

38. The value of $\left(\frac{1+\sqrt{3}i}{1-\sqrt{3}i}\right)^{10}$ is

a) $\text{cis } \frac{2\pi}{3}$

b) $\text{cis } \frac{4\pi}{3}$

c) $-\text{cis } \frac{2\pi}{3}$

d) $-\text{cis } \frac{4\pi}{3}$

☐

39. If α and β are the roots of $x^2 + x + 1 = 0$, then $\alpha^{2020} + \beta^{2020}$ is

a) -2

b) -1

c) 1

d) 2

☐

40. The principal argument of $\frac{3}{-1+i}$ is

a) $-\frac{5\pi}{6}$

b) $-\frac{2\pi}{3}$

c) $-\frac{3\pi}{4}$

d) $-\frac{\pi}{2}$

☐

41. The product of all four values of $\left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}\right)^{\frac{1}{4}}$ is

a) -2

b) -1

c) 1

d) 2

☐

42. If z_1, z_2 and z_3 are complex numbers such that $z_1 + z_2 + z_3 = 0$ and $|z_1| = |z_2| = |z_3| = 1$, then

$$z_1^2 + z_2^2 + z_3^2 =$$

a) 3

b) 2

c) 1

d) 0

☐

43. The solution of the equation $|z| - z = 1 + 2i$ is

a) $\frac{3}{2} - 2i$

b) $-\frac{3}{2} + 2i$

c) $2 - \frac{3}{2}i$

d) $2 + \frac{3}{2}i$

☐

44. The conjugate of a complex number is $\frac{1}{i-2}$, then the complex number is

a) $\frac{1}{i+2}$

b) $\frac{-1}{i+2}$

c) $\frac{-1}{i-2}$

d) $\frac{1}{i-2}$

☐

45. $i^n + i^{n+1} + i^{n+2} + i^{n+3} =$

a) 0

b) 1

c) -1

d) i

☐

46. If $|z - 2 + i| \leq 2$, then the greatest value of $|z|$ is

a) $\sqrt{3} - 2$

b) $\sqrt{3} + 2$

c) $\sqrt{5} - 2$

d) $\sqrt{5} + 2$

☐

47. If z is a complex number such that $z \in \frac{C}{R}$ and $z + \frac{1}{z} \in R$, then $|z|$ is

a) 0

b) 1

c) 2

d) 3

☐

48. If z is a non-zero complex number, such that $2iz^2 = \bar{z}$ then $|z|$ is

a) $\frac{1}{2}$

b) 1

c) 2

d) 3

☐

49. The principal argument of $(\sin 40^\circ + i \cos 40^\circ)^5$ is

a) -110°

b) -70°

c) 70°

d) 110°

☐

50. Modulus of $\sqrt{3} - i$ is

a) 2

b) 0

c) 1

d) 4

☐