EVERWIN MATRIC. HR. SEC. SCHOOL

STD: XII Material of the month – MARCH

Maths

1. A^{-1} exist if & only if A is _____.
   a) singular b) non-singular c) scalar
   d) diagonal
2. If $AA^T=I$ then the square matrix A is called _____.
   a) orthogonal b) singular c) non-singular d) inverse
3. Transforming a non-singular matrix A to the form I_a by applying elementary row operations is called _____ method.
   a) Gauss-Jordon b) Gauss-Elimination
   c) Cramer's Rule d) Matrix inversion
4. The rank of a zero matrix is _____.
   a) 1 b) 2 c) 0 d) 3
5. The minimum rank for a non-zero matrix is _____.
   a) 0 b) 1 c) 2 d) 3
6. In a 3x3 matrix, if $|A|=0$ then the rank of a matrix is _____.
   a) 0 b) 1 c) 2 d) 3
7. In a 2x2 matrix, if $|A| \neq 0$ then the rank of a matrix is _____.
   a) 0 b) 1 c) 2 d) 3
8. The rank of the identity matrix I_n is _____.
   a) 1 b) 0 c) n d) n^2
9. The adjoint of $\begin{pmatrix} 2 & -3 \\ 4 & -1 \end{pmatrix}$ is _____.
   a) $\begin{pmatrix} 2 & -3 \\ 4 & -1 \end{pmatrix}$ b) $\begin{pmatrix} -1 & 3 \\ -4 & 2 \end{pmatrix}$ c) $\begin{pmatrix} 1 & 3 \\ -4 & -2 \end{pmatrix}$ d) $\begin{pmatrix} -2 & 3 \\ -4 & 1 \end{pmatrix}$
10. A square matrix A of order n is invertible if & only if _____.
    a) $\rho(A)=n$ b) $\rho(A)<n$ c) $\rho(A)=\rho(AB)$ d) $\rho(A) \neq \rho(AB)$
11. $a_{i1}A_{j1} + a_{i2}A_{j2} + \ldots\ldots\ldots + a_{in}A_{jn} = |A|$ if
    a) $i \neq j$ b) i=j c) i<j d) i>j
12. The inverse of A exist if _____ matrix.
    a) A is singular b) non-singular c) rectangular d) zero
13. If A is non-singular and A,B,C all are square matrices of order n and AB=AC then _____.
    a) B≠C b) B=C c) B=A d) C=A
14. If $|\text{adj } A| = 64$ then the value of $|A|$=
    a) 16 b) ±8 c) 4 d) 32
15. If adj $A=\begin{pmatrix} 2 & -1 \\ 3 & -1 \end{pmatrix}$ then A=_____
    a) $\begin{pmatrix} -2 & 1 \\ -3 & 1 \end{pmatrix}$ b) $\begin{pmatrix} -1 & 1 \\ -3 & 2 \end{pmatrix}$ c) $\begin{pmatrix} -1 & -1 \\ 3 & 2 \end{pmatrix}$ d) none of these
16. Identify the correct statement:
    a) If A is symmetric then adj A is skew symmetric
    b) If A is symmetric then adj A is also symmetric
    c) If A is symmetric then A^T is non symmetric
    d) If A is symmetric then A^T is skew symmetric matrix
17. If adj $A=\begin{pmatrix} 1 & -1 \\ 2 & 0 \end{pmatrix}$ adj $B=\begin{pmatrix} 3 & 4 \\ -1 & 2 \end{pmatrix}$ then find adj AB=
    a) $\begin{pmatrix} 1 & 3 \\ -3 & 11 \end{pmatrix}$ b) $\begin{pmatrix} 4 & 2 \\ 6 & 8 \end{pmatrix}$ c) $\begin{pmatrix} 2 & -4 \\ 1 & 3 \end{pmatrix}$ d) $\begin{pmatrix} 11 & -3 \\ 3 & 1 \end{pmatrix}$
18. Uncoded matrix are (27 24) and (57 44) with Encoding matrix $\begin{pmatrix} 4 & 3 \\ 1 & 1 \end{pmatrix}$ then clue word is _____.
    a) BOOK b) COME c) HELP d) NOSE
19. $\begin{pmatrix} cos\theta & -sin\theta \\ sin\theta & cos\theta \end{pmatrix}$ is not _____ matrix.
    a) orthogonal b) skew symmetry c) symmetry
20. The rank of the matrix $\begin{bmatrix} 2 & -4 \\ -1 & -2 \end{bmatrix}$ is
    a) 1 b) 2 c) 0 d) 8
21. The rank of the matrix $\begin{bmatrix} 7 & -1 \\ 2 & 1 \end{bmatrix}$ is
    a) 9 b) 2 c) 1 d) 5
22. If A and B are matrices conformable to multiplication then $(AB)^T$ is
    a) A^TB^T b) B^TA^T c) AB d) BA
23. $(A^T)^{-1}$ is equal to
    a) A^{-1} b) A^T c) A d) $(A^{-1})^T$
24. If $\rho(A)=r$ then which of the following is correct?
    a) all the minors of order r which do not vanish
    b) A has atleast one minor of r which does not vanish and all higher order minors vanish
    c) A has atleast one (r+1) order minor which vanishes
    d) all (r+1) and higher order minors should not vanish
25. Which of the following is not elementary transformation?
    a) $R_i \leftrightarrow R_j$ b) $R_i \rightarrow 2R_i + R_j$ c) $C_i \rightarrow C_j + C_i$ d) $R_i \rightarrow R_i + C_j$
26. Equivalent matrices are obtained by
    a) taking inverses b) taking transposes c) taking adjoints
    d) taking finite number of elementary transformations
27. In echelon form, which of the following is incorrect?
    a) Every row of A which has all its entries 0 occurs below every row which has a non-zero entry
    b) The first non-zero entry in each non-zero row is 1
    c) The number of zeros before the first non-zero element in a row is less than the number of such zeros in the next row
    d) Two rows can have same number of zeros before the first non-zero entry

28. If $\Delta \neq 0$ then the system is
    a) Consistent and has unique solution
    b) Consistent and has infinitely many solutions
    c) Inconsistent
    d) Either consistent or inconsistent
29. In the system of 3 linear equations with three unknowns, if $\Delta=0$ and one of Δ_x, Δ_y or Δ_z is non-zero then the system is
    a) consistent b) inconsistent
    c) consistent and the system reduces to two equations
    d) consistent and the system reduces to a single equation
30. In the system of 3 linear equations with three unknowns, if $\Delta=0$, $\Delta_x=0$, $\Delta_y=0$ or $\Delta_z=0$ and atleast one 2x2 minor of $\Delta \neq 0$ then the system is
    a) consistent b) inconsistent
    c) consistent and the system reduces to two equations
    d) consistent and the system reduces to a single equation
31. In the system of 3 linear equations with three unknowns, if $\Delta=0$ and all 2x2 minors of $\Delta=0$ and atleast one 2x2 minor of Δ_x or Δ_y or Δ_z is non-zero then the system is
    a) consistent b) inconsistent
    c) consistent and the system reduces to two equations
    d) consistent and the system reduces to a single equation
32. In the system of 3 linear equations with three unknowns, if $\Delta=0$ and all 2x2 minors of Δ, Δ_x or Δ_y, Δ_z are zeros and atleast one non-zero element is in Δ then the system is
    a) consistent b) inconsistent
    c) consistent and the system reduces to two equations
    d) consistent and the system reduces to a single equation
33. Every homogeneous system (linear)
    a) is always consistent b) has only trivial solution
    c) has infinitely many solution d) need not be consistent
34. If $\rho(A)=\rho[A\ B]$ then the system is
    a) consistent and has infinitely many solution
    b) consistent and has a unique solution
    c) consistent d) inconsistent
35. If $\rho(A)=\rho[A\ B]=$ the number of unknowns then the system is
    a) consistent and has infinitely many solution
    b) consistent and has a unique solution
    c) consistent d) inconsistent
36. $\rho(A) \neq \rho(A, B)$ then the system is
    a) consistent and has infinitely many solution
    b) consistent and has a unique solution
    c) consistent d) inconsistent
37. In the system of 3 linear equations with three unknowns, $\rho(A)=\rho(A, B)=1$ then the system
    a) has unique solution
    b) reduces to 2 equations and has infinitely many solution
    c) reduces to a single equation and has infinitely many solution
    d) is inconsistent
38. In the homogeneous system with three unknowns, $\rho(A)=$number of unknowns then the system has
    a) only trivial solution
    b) reduces to 2 equations and has infinitely many solution
    c) reduces to a single equation and has infinitely many solution
    d) is inconsistent
39. In the system of 3 linear equations with three unknowns, in the non homogeneous system $\rho(A)=\rho(A\ B)=2$ then the system
    a) has unique solution
    b) reduces to 2 equations and has infinitely many solution
    c) reduces to a single equation and has infinitely many solution
    d) is inconsistent
40. In the homogeneous system $\rho(A)<$ the number of unknowns then the system has
    a) only trivial solution
    b) trivial solution and infinitely many non-trivial solutions
    c) only non-trivial solutions
    d) no solution
41. Cramer's rule is applicable only (with three unknowns) when
    a) $\Delta \neq 0$ b) $\Delta=0$ c) $\Delta=0$, $\Delta x \neq 0$ d) $\Delta x=\Delta y=\Delta z=0$
42. Which of the following statement is correct regarding homogeneous system?
    a) always inconsistent b) has only trivial solution
    c) has only non-trivial solutions
    d) has only trivial solution only if rank of the coefficient matrix is equal to the number of unknowns