QN	**FYBSc Sem1 Mathematics Paper I** **Matrix Algebra** **Question Paper for internal exam (For 20marks)**	**Ans**
1	A system of linear equations $AX = B$ is said to be non-homogeneous. If B is ……. (A) Null Matrix (B) Non zero matrix (C) Singular matrix (D) None of these	**B**
2	A system of linear equations $AX = B$ is said to be consistent if system has ……. (A) No solution (B) Unique solution (C) Solution (D) None of these	**C**
3	A system of linear equations $AX = B$ is said to be inconsistent if system has ……. (A) No solution (B) Unique solution (C) Solution (D) None of these	**A**
4	A system of linear equations $AX = B$ is said to be consistent if system has ……. (A) $\rho(A) \neq \rho(A,B)$ (B) $\rho(A) = \rho(A,B)$ (C) $\rho(A) < \rho(A,B)$ (D) None of these	**B**
5	A system of linear equations $AX = B$ is said to be inconsistent if system has ……. (A) $\rho(A) \neq \rho(A,B)$ (B) $\rho(A) = \rho(A,B)$ (C) $\rho(A) < \rho(A,B)$ (D) None of these	**A**
6	A system of linear equations $AX = B$ of n unknowns such that $\rho(A) = \rho(A,B) = n$ then system has …….. solution. (A) No (B) Unique (C) Infinite (D) None of these	**B**
7	A system of linear equations $AX = B$ of n unknowns such that $\rho(A) = \rho(A,B) < n$ then system has …….. solution. (A) No (B) Unique (C) Infinite (D) None of these	**C**

8	A homogeneous system of three linear equations in three unknowns has a unique solution if ……. (A) $\|A\| = 0$ (B) $\|A\| \neq 0$ (C) $\|A\| = 1$ (D) None of these	**B**
9	A homogeneous system of three linear equations in three unknowns has a trivial solution if ……... (A) $\|A\| = 0$ (B) $\|A\| \neq 0$ (C) $\|A\| = 1$ (D) None of these	**B**
10	A homogeneous system of three linear equations in three unknowns has a infinite number of solution if ……... (A) $\|A\| = 0$ (B) $\|A\| \neq 0$ (C) $\|A\| = 1$ (D) None of these	**A**
11	A homogeneous system of three linear equations in three unknowns has a non trivial solution if ……... (A) $\|A\| = 0$ (B) $\|A\| \neq 0$ (C) $\|A\| = 1$ (D) None of these	**A**
12	If A is non singular matrix then solution of system of linear equations $AX = B$ is given by …… (A) $X = BA^{-1}$ (B) $X = AB$ (C) $X = A^{-1}B$ (D) None of these	**C**
13	If A is an orthogonal matrix if $\|A\| =$ …… (A) I (B) 0 (C) ± 1 (D) None of these	**C**
14	If A is an orthogonal matrix then $A^{-1} =$ …… (A) A (B) A' (C) I (D) None of these	**B**
15	The product of two orthogonal matrices is …….. (A) Orthogonal (B) Not orthogonal (C) Proper orthogonal (D) None of these	**A**

16	If $A = \begin{bmatrix} cos\theta & -sin\theta \\ sin\theta & cos\theta \end{bmatrix}$ then A is ……. (A) Improper orthogonal (B) Proper orthogonal (C) Not orthogonal (D) None of these	**B**
17	If $A = \begin{bmatrix} cos\theta & sin\theta \\ sin\theta & -cos\theta \end{bmatrix}$ then A is ……. (A) Improper orthogonal (B) Proper orthogonal (C) Not orthogonal (D) None of these	**A**
18	Let A be a nonzero square matrix and X be a nonzero (vector) column matrix. If there exist a number λ such that $AX = \lambda X$ then λ is called ……. of the matrix A. (A) Eigen vector (B) Eigen value (C) Not eigen value (D) None of these	**B**
19	Let A be a nonzero square matrix and X be a nonzero (vector) column matrix. If there exist a number λ such that $AX = \lambda X$ then X is called …… of the matrix A. (A) Eigen vector (B) Eigen value (C) Not eigen value (D) None of these	**A**
20	Let A be a nonzero square matrix then characteristic polynomial of A is …….. (A) $\lvert A - \lambda I \rvert = 1$ (B) $\lvert A - \lambda I \rvert = 0$ (C) $\lvert A - \lambda I \rvert$ (D) $(A - \lambda I)$	**C**
21	Let A be a nonzero square matrix then characteristic Equation of A is …….. (A) $(A - \lambda I) = 0$ (B) $\lvert A - \lambda I \rvert = 0$ (C) $\lvert A - \lambda I \rvert$ (D) None of these	**B**
22	Let A is non zero square matrix k is a non zero scalar. If λ is eigen value of A then eigen value of kA is …….. (A) $k\lambda$ (B) λ (C) $\frac{k}{\lambda}$ (D) None of these	**A**
23	If λ is an eigen value of a non singular matrix A then an eigen value of A^m is …….. (A) λ (B) λ^m (C) 2λ (D) None of these	**B**

24	If λ is an eigen value of a non singular matrix A then an eigen value of A^{-1} is …….. (A) λ (B) $\frac{1}{\lambda}$ (C) $-\lambda$ (D) None of these	**B**
25	If λ is an eigen value of a non singular matrix A then an eigen value of $adjA$ is …….. (A) $\frac{\lvert A\rvert}{\lambda}$ (B) $\lambda\lvert A\rvert$ (C) $\frac{\lambda}{\lvert A\rvert}$ (D) None of these	**A**
26	If λ is an eigen value of a non singular matrix A then an eigen value of A^2 is …….. (B) λ (B) λ^2 (C) 2λ (D) None of these	**B**
27	If $A = \begin{bmatrix} 2 & 2 \\ 1 & 3 \end{bmatrix}$ then the characteristic polynomial of A is …….. (A) $\lambda^2 - 5\lambda + 8$ (B) $\lambda^2 - 5\lambda + 4$ (C) 2λ (D) None of these	**B**
28	If origin is shifted to the point (h, k) the direction of axes remains same then translation of point (x, y) is ……. (A) $(x - h, y - k)$ (B) $(x + h, y + k)$ (C) (x, y) (D) None of these	**B**
29	The translation of the point (x, y) by h units in the x-direction and k units in y direction is …… (A) $(x + h, y + k)$ (B) $(x - h, y - k)$ (C) (x, y) (D) None of these	**A**
30	The translation of the point $(2,3)$ by 3 units in the x-direction and 4 units in y direction is …… (A) $(-5, 7)$ (B) $(7, 5)$ (C) $(5, 7)$ (D) None of these	**C**