12th UNIT TEST – 1

MATHEMATICS

APPLICATION OF MATRICES AND DETERMINANTS

MARKS: 25 **TIME**: 45 min

SECTION – A

I) CHOOSE THE CORRECT ANSWER:- $5 \times 1 = 5$

1. If A is a 3×3 non – singular matrix such that $AA^T = A^TA$ and $B = A^{-1}A^T$, then $BB^T =$_____
   (1) A (2) B (3) I_3 (4) B^T
2. If $A = [2\ 0\ 1\ 5\ ]$ and $B = [1\ 4\ 2\ 0\ ]$ then $|adj\ (AB)| =$ _____
   (1) -40 (2) -80 (3) -60 (4) -20
3. If $A = [2\ 3\ 5\ -2\ ]$ be such that $\lambda A^{-1} = A$, then λ is _____
   (1) 17 (2) 14 (3) 19 (4) 21
4. The rank of the matrix $[1\ 2\ 3\ 2\ 4\ 6\ -1\ -2\ -3\ \ 4\ 8\ -4\ ]$ is_____
   (1) 1 (2) 2 (3) 4 (4) 3
5. If $\rho(A) = \rho[A|B]$, then the system $AX = B$ of linear equation is _____
   (1) Consistent and has a unique solution
   (2) Consistent
   (3) Consistent and has infinitely many solution
   (4) Inconsistent

SECTION – B

II) VERY SHORT ANSWER:- $2 \times 2 = 4$

1. Define – Inverse
2. If A is a non – singular matrix of odd order, prove that $|adj\ A|$ is positive

SECTION – C

III) SHORT ANSWER:- $2 \times 3 = 6$

1. Reduce the matrix $[0\ 3\ 1\ -1\ 0\ 2\ 4\ 2\ 0\ \ 6\ 5\ 0\ ]$ to row – echelor form
2. Find the inverse of $A = [1\ -1\ 0\ 1\ 0\ -1\ 6\ -2\ -3\ ]$ by Gauss-Jorden method

SECTION – D

IV) VERY LONG ANSWER:- $2 \times 5 = 10$

1. If $A = [-4\ 4\ 4\ -7\ 1\ 3\ 5\ -3\ -1\ ]$ and $B = [1\ -1\ 1\ 1\ -2\ -2\ 2\ 1\ 3\ ]$ find the products AB and BA and hence solve the system of equations $x - y + z = 4, x - 2y - 2z = 9, 2x + y + 3z = 1$.

2. A family of 3 people went out for dinner in a restaurant. The cost of two dosai, three idlies and two vadais is $Rs.150$. The cost of the two dosai, two idlies and four vadais is $Rs.200$. The cost of five dosai, four idlies and two vadais is $Rs.250$. The family has $Rs.350$ in hand and they ate 3 dosai and six idlies and six vadais will they be able to manage to pay the bill within the amount they had?

SRIHARI MATHEMATICS ACADEMY
(TUITION CUM COACHING CENTER),
2/276-G, K.G.NAGAR, KALANGAL(P.O), (VIA) SULUR (T.K),
COIMBATORE(D.T) – 641402
MOBILE NO: 8270939607 E-mail: rangarajankg@gmail.com