Q.1 $A = \begin{bmatrix} 2 & 3 & 4 \\ 0 & 4 & 2 \\ 0 & 0 & 3 \end{bmatrix}$ Eigenvalues of adjA are

    (a) 8, 8, 9

    (b) 8, 12, 13

    (c) 8, 12, 18

    (d) 8, 8, 10

Q.2 $A = \begin{bmatrix} 2 & 3 & 4 \\ 0 & 4 & 2 \\ 0 & 0 & 3 \end{bmatrix}$ eigen values of $A^2 - 2A + I$ are

    (a) 49, 111, 121

    (b) 49, 50, 51

    (c) 49, 55, 57

    (d) 49, 121, 25

Q.1 Two eigen value of of the matrix A are 1 each. the eigen values of A^{-1} are

    (a) 1, 1, 1

    (b) 1, 1, 1/2

    (c) 1, 1, 1/3

    (d) 1, 1, 1/5

Q.4 Product of eigen values of $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$ is

    (a) 6

    (b) 7

    (c) 8

    (d) 9

Q1 Product of eigen values of

$$A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix} \text{ is}$$

(a) −34

(b) −35

(c) −36

(d) −37

Q2 If 3 and 6 are two eigen values of $A = \begin{bmatrix} 11 & 3 \\ 1 & 5 & 1 \\ 3 & 7 & 7 \end{bmatrix}$

then the eigen values of A^{-1} are

(a) $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$

(b) $\frac{1}{2}, \frac{1}{6}, \frac{1}{7}$

(c) $\frac{1}{3}, \frac{1}{6}, \frac{1}{4}$

(d) $\frac{1}{3}, \frac{1}{6}, \frac{1}{8}$

Q3 If $A = \begin{bmatrix} -1 & 2 & 3 \\ 0 & 3 & 5 \\ 0 & 0 & -2 \end{bmatrix}$

then eigen values of A^2 are

(a) 1, 3, 2

(b) 1, 3, 9

(c) 1, 9, 4

(d) 1, 1, 2

Q4 Sum of eigen values of $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & -1 & -1 \end{bmatrix}$ is

(a) −2

(b) 3

(c) 6

(d) 7

Q1 The maximum value of rank of a 4×5 matrix is

(a) 2

(b) 3

~~(c)~~ 4

(d) 5

Q2 The sum of two eigen values and trace of a 3×3 matrix are equal, then value of $|A|$ is

~~(a)~~ 0

(b) 1

(c) 2

(d) 3

Q3 If the product of two eigen values of matrix $\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$ is 16 then third eigen value is

(a) 1

~~(b)~~ 2

(c) 3

(d) 4

Q4 If $A = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$ Then eigen values of A^{-1} are

(a) $\frac{1}{2}, \frac{1}{2}, \frac{1}{4}$

~~(b)~~ $\frac{1}{2}, \frac{1}{3}, \frac{1}{5}$

(c) $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$

(d) $\frac{1}{2}, \frac{1}{3}, \frac{1}{7}$

③

Practice Questions (MTH 165)

Q1. Sum and Product of eigen values of
$$\begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix} \text{ are}$$

(a) 7, 5
(b) 7, 7
(c) 7, 8
(d) 7, 9

Q2. The eigen values of $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ are

(a) 0, 0, 0
(b) 0, 0, 1
(c) 0, 0, 3
(d) 1, 1, 1

Q3. Value of p for which $A = \begin{bmatrix} 3 & p & p \\ p & 3 & p \\ p & p & 3 \end{bmatrix}$ is of

rank 1 is

(a) 0
(b) 1
(c) 2
(d) 3

Q4. The sum of the squares of the eigen values of
$$\begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix} \text{ is}$$

(a) 35
(b) 36
(c) 37
(d) 38

(4)

Q₁ Rank of null matrix is always

(a) 0
(b) 1
(c) 2
(d) 3

Q₂ If A is non-zero matrix of order 3 and it is singular matrix then what are the possibilities of rank(A)?

(a) 0,1
(b) 0,2
(c) 0,3
(d) 1,2

Q₃

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 3 & 2 & 1 \end{bmatrix}$$

rank of A is

(a) 1
(b) 2
(c) 3
(d) 4

Q₄

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 8 \\ 3 & 2 & 1 \end{bmatrix}$$

r(A) is

(a) 0
(b) 1
(c) 2
(d) 3

⑤

Q. If A is null matrix then rank of A is

- (a) 0
- (b) 1
- (c) 2
- (d) 3

Q. If A is not a null matrix then rank (A) is

- (a) 0
- (b) -1
- (c) ≥ 1
- (d) none of above

Q. If A is non-singular matrix of order n then rank of A is

- (a) 0
- (b) 1
- (c) 2
- (d) n

Q. If A is a singular matrix of order n then rank of A is

- (a) n
- (b) n+1
- (c) n+2
- (d) $< n$

Q. If I_n is a unit matrix of order n×n then rank of (I_n) is

- (a) 1
- (b) 2
- (c) 3
- (d) n

⑥

Q₁ The inverse of a square matrix A exists iff
- (a) $A = 0$
- (b) $|A| = 0$
- (c) $|A| \neq 0$
- (d) $adj\, A \neq 0$

Q₂ Rank of the matrix whose all elements are equal is
- (a) 0
- (b) 1
- (c) L
- (d) 3

Q₃ $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ rank of (A) is
- (a) 0
- (b) 1
- (c) 2
- (d) 3

Q₄ $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ rank of A is
- (a) 0
- (b) 1
- (c) 2
- (d) 3

Q₅ $A = \begin{bmatrix} 2 & 3 & 4 \\ 0 & 0 & 2 \\ 0 & 0 & 8 \end{bmatrix}$ $r(A)$ is
- (a) 0
- (b) 1
- (c) 2
- (d) 3

⑦