

JK Lakshmipat University Jaipur

INSTITUTE OF MANAGEMENT

Mid Term Examination-I, February, 2019

BBA, Semester II

Roll No.....

QT09 : Fundamentals of Mathematics

Time: 1.5 hours

Max. Marks: 20

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Scientific Calculators are not allowed.

Q1. (a) Which of the following sets are equal for x belongs to a set of rational numbers? (5)

(i) $A = \{x : x^2 = 7\}$

(ii) $B = \{x : x + 4 = 4\}$

(iii) $C = \{x : x^2 + 2 = 8\}$

(b) Let $P = \{1, 2, 3, 4, 5\}$, $Q = \{4, 5, 6, 7\}$ and $R = \{1, 3, 5, 7, 9\}$. Find the cardinality of the set $P \cap Q \cap R$.

Q2. (a) Given $\begin{bmatrix} x+y-1 & z-t+3 \\ x-y+1 & z+t-3 \end{bmatrix} = \begin{bmatrix} 2 & 4 \\ 3 & 5 \end{bmatrix}$, find x, y, z, t . (5)

(b) if $A = \begin{bmatrix} 1 & 2 & -1 \\ 2 & 0 & 3 \\ 0 & 1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -1 & 1 \\ 0 & 0 & 2 \\ 4 & -3 & 2 \end{bmatrix}$, verify the result

$$(A+B)^2 = A^2 + AB + BA + B^2$$

Q3. (a) Explain the difference between Diagonal matrix, scalar matrix and identity matrix (5)

with the help of appropriate example.

(b) What do you understand by 'Set'. Can we define a group of green vegetables and a group of any 10 green vegetables as sets. Justify your answer.

Q4. Solve the following system of linear equations using matrix inversion method (5)

$$x + y + z = 3$$

$$x + 2y + 3z = 4$$

$$x + 4y + 9z = 6$$

OR

Q5. Solve the following system of linear equations using Cramer's rule

(5)

$$5x + 3y + 7z = 4$$

$$3x + 26y + 2z = 9$$

$$7x + 2y + 11z = 5$$