



Roll no.....

End Semester Examination, December 2024

BBA (LSCM)/B.Com(H)/ B.Com(ACCA)/ BBA (ACCA)

QUALITY MANAGEMENT (OEC057)

Time: 2.5 hrs.

MaxMarks: 50

Note: **All Questions are compulsory.** Marks are indicated against each question.

PART-A

Q.1 Attempt any 5 questions: 2X5=10 marks

- (a) Find the 10th term of the arithmetic progression (AP): 3, 7, 11, 15, ... [CO-1] [L-2] 2
- (b) If the 1st term of a geometric progression (GP) is 2 and the common ratio is 3, find the 5th term. [CO-1] [L-2] 2
- (c) Calculate the harmonic mean (HM) of the series: 4, 5, and 8. [CO-1] [L-2] 2
- (d) How many ways can 5 students be arranged in a line? [CO-2] [L-2] 2
- (e) In how many ways can a committee of 3 members be selected from a group of 6 people? [CO-2] [L-2] 2
- (f) Find the sum of the first 15 terms of the series: 5, 15, 45, ... (GP). [CO-1] [L-2] 2
- (g) Determine the total number of arrangements for the word "MATHS." [CO-2] [L-2] 2

PART-B

Q.2

- (a) Find the inverse of the following 3x3 matrix:

$$\begin{bmatrix} 2 & 3 & 1 \\ 1 & 0 & 4 \\ 3 & 2 & 5 \end{bmatrix}$$

[CO-3] [L-4] 10 marks

OR

- (b) Find the inverse of the following 3x3 matrix:

$$\begin{bmatrix} 4 & 2 & 1 \\ 0 & 1 & 3 \\ 5 & 3 & 2 \end{bmatrix}$$

[CO-3] [L-4] 10 marks

Q.3(a) Using the Analytical Hierarchy Process (AHP), rank the following decision criteria: cost, quality, and delivery time, given their pairwise comparison matrix:

$$\begin{bmatrix} 1 & 3 & 1/2 \\ 1/3 & 1 & 1/4 \\ 2 & 4 & 1 \end{bmatrix}$$

[CO-4] [L-5] 10 marks

OR

(b) What is Multi Criteria Decision Making. How the DEMETEL is used as a tool?
Provide steps to apply DEMETEL in the decision-making process.

[CO-4] [L-5] 10 marks

Q.4

- (a) Differentiate the following function with respect to x: $f(x) = 5x^3 - 4x^2 + 7$.
For $X=3, -4, 5, -6, 7$. [CO-5] [L-5] 10 marks

OR

(b) Evaluate the integral:

$\int (3x^2 - 5x + 2) dx$ For U.L= 3, L. L= -4 [CO-5] [L-5] 10 marks

Q.5. In how many different ways can the letters of the word "COMMITTEE" be arranged such that:

- a) The two 'M's are always together.
- b) All vowels (O, I, E) appear in the same relative order as in the word "COMMITTEE" (i.e., O before I, I before E)?

[CO-3] [L-4] 10 marks

OR

In a class of 15 students, a committee of 6 members is to be formed. Calculate how many different committees can be formed under the following conditions:

- 1. A specific student must always be included in the committee.
- 2. Another specific student cannot be included in the committee.

[CO-3] [L-4] 10 marks