

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT*(An Autonomous Institute U/s UGC Act 1956)***MBA SEMESTER-II, SEMESTER END EXAMINATION – WINTER 2025****SUBJECT CODE: 1MB1201****DATE: 19-01-2026****SUBJECT NAME: QUANTITATIVE METHODS****TIME: 09:00 AM to 12:00 AM****TOTAL MARKS: 70****Instructions**

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **35 marks**, with a total of **70 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A**Marks BL CO****Q.1 Multiple-Choice Questions****[05]****(a)** Which of the following best defines quantitative methods?**1 U 1****(i)** Techniques that use numerical and statistical tools for decision-making**(ii)** Methods based on intuition and experience**(iii)** Strategies relying only on qualitative observations**(iv)** Analyzing data without structured techniques**(b)** Quantitative methods are widely used in which of the following areas?**1 U 1****(i)** Scientific research**(ii)** Engineering**(iii)** Business and economics**(iv)** All of these**(c)** In a transportation problem, the objective is to:**1 A 2****(i)** Minimize sales**(ii)** Minimize transportation cost**(iii)** Maximize production**(iv)** Maximize time**(d)** North-West Corner Rule starts allocation from:**1 A 2****(i)** The highest cost cell**(ii)** The central cell**(iii)** The top-left cell**(iv)** The bottom-right cell**(e)** Queuing theory deals with:**1 A 2****(i)** Waiting lines**(ii)** Decision trees

Q.2 Attempt Any Two**[10]**

- (a) Define quantitative and qualitative data. Give two examples of each. **5 U 1**
- (b) Define quantitative methods. Explain its scope. **5 U 1**
- (c) Explain in your own words why businesses need to collect data. **5 U 1**

Q.3 Attempt Any Two**[10]**

- (a) Solve following problem using least call cell method and North West Corner Cell Method. **5 A 2**

	D1	D2	D3	D4	Supply (availability)
S1	19	30	50	10	7
S2	70	30	40	60	9
S3	40	8	70	20	18
Demand (requirement)	5	8	7	14	34

- (b) What is transportation problem? Explain types of transportation problem. **5 A 2**
- (c) Solve following problem using Vogel's Approximation Method **5 A 2**

	D1	D2	D3	D4	Supply (Si)
O1	4	6	8	5	300
O2	3	7	4	6	350
O3	5	9	7	3	250
Demand (Dj)	200	300	250	150	

Q.4 Attempt Any Two**[10]**

- (a) Suppose you run a small shop. What kind of data would you collect to understand your customers better? **5 U 1**
- (b) Why is data analysis important in supply chain management? Explain with one practical example? **5 U 1**
- (c) How queuing theory works? Explain application and benefits of queuing theory. **5 A 2**

SECTION B

	Marks	BL	CO
Q.5 Multiple-Choice Questions	[05]		
(a) A long-term upward or downward movement in data is known as:	1	R	3
(i) Seasonality			
(ii) Trend			
(iii) Irregularity			
(iv) Noise			
(b) Which type of moving average gives more importance to recent data?	1	R	4
(i) Simple Moving Average			
(ii) Weighted Moving Average			
(iii) Centred Moving Average			
(iv) None of the above			
(c) Which of the following is a correct example of an objective function?	1	R	4
(i) $x + y \geq 100$			
(ii) $Z = 50x + 30y$			
(iii) $x - y \leq 50$			
(iv) $x, y \geq 0$			
(d) Which of the following is a goal in transportation optimization	1	U	3
(i) Maximizing cost			
(ii) Delaying delivery			
(iii) Minimizing transportation cost			
(iv) Reducing warehouse space			
(e) Which of the following forecasting techniques uses past data to identify patterns such as trend and seasonality for predicting future demand?	1	U	3
(i) Linear programming			
(ii) Time series analysis			
(iii) Transportation method			
(iv) Simplex method			
Q.6 Attempt Any Two	[10]		
(a) Write importance of time series analysis.	[5]	U	3
(b) What is linear regression? What is the best Fit Line in linear regression?	[5]	U	3
(c) Explain the concept of transportation optimization.	[5]	A	4
Q.7 Attempt Any Two	[10]		
(a) State and explain components of time series data.	5	U	3
(b) What is integration of transportation & warehouse optimization? Discuss with example.	5	A	4
(c) What is objective function and constraints in linear programming?	5	A	4

Q.8 Attempt Any Two

[10]

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|---|---|---|---|
| (a) Discuss the concept of moving average. | 5 | U | 3 |
| (b) Explain the concept of warehouse optimization. | 5 | U | 3 |
| (c) Discuss the concept of exponential smoothing average. | 5 | A | 4 |
