



NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

THEORY EXAMINATION.

End Sem. Question Paper

Month and Year of the Examination: 19 May 2025.

Programme: B.Tech (Mech.)

Subject: Industrial Engineering (IE).

Course No: MEPC-212,

Number of Questions to be attempted: 5,

Total No. of Questions: 5;

Roll No. 6826

Semester: 4th Semester.

Branch: Mechanical Eng.

Maximum Marks: 50.

Time allowed: 3 Hours.

Total No. of Pages used: 1.

NOTE: Attempt all five questions.

1. Following Table I. Gives below comparative study of cost of several items for two years. Compute the percentage change in all the productivity indexes. (10).

Items	Number of outputs (all of one kind) @ Rs. 50,000 per unit	Direct labour hours (variable with year)	Direct labor cost (in Rs.)	Capital depreciation (in Rs.)	Capital book value (in Rs.)	Total indirect cost (in Rs.)	Foreign exchange used	Energy used (a Rs. 4 per watt)	Raw material used (@ Rs. 1000 per ton)	Service of consultant hired (in Rs.)
Year-1	100	5000	4000	5000	20000	40000	450\$	500 Kw	10 Tons	1000
Year-2	200	8000	45000	6000	25000	46000	100\$	1800 Kw	16 Tons	15000

2. (a) Explain the objective and basic principle of Sales Forecasting for needs, and its related Collective opinion methods & Moving Average method explained. (5).
 (b) The sale of the cycles in a shop in four consecutive months are given as 70, 68, 82, 95. Exponentially smoothing average method with a smoothing factor of ($\alpha = 0.4$) is used in forecasting. What is expected number of sales in the next month examined? (5).

3. (a) Difference b/w the fixed position layout and Product layout design influence in assemble manufacturing environments. (4).
 (b) Five critical factors affecting in selection of material handling equipment's, and its comparison among the conventional & AGV handling equipment adoption for high degree of Industrial flexibility. (6).

4. (a) A production manager for a tire company has inspected the number of defective tiers in five random samples with 20 tiers in each sample. The table 2, below shows that the number of defective tiers in each sample of 20 tiers. Calculate the control limit. (5).

Sample	I	II	III	IV	V
No. of Defective tiers.	3	2	1	2	2
No. of tiers In each sample.	20	20	20	20	20
Proportion defective	0.15	0.10	0.05	0.10	0.10

- (b) Difference between the ABC and VED Analysis where, selection criteria based on Industrial drug manufacturing. (5).

5. Writes a short notes on following:

- (a) Industry 4.0
 (b) Lean Production.

- (c) Macro & Micro Motion study
 (d) Multi-factor Productivity.