

Bachelor of Electronics and Telecommunication Engineering Examination, 2025
 (4th Year, 2nd Semester)
Industrial Management

Time: Three Hours

Full Marks: 100

Different parts of the same question should be answered together

1. Answer any two from (a), (b) and (c) in this block 2 x 10 = 20

(a) Enumerate fourteen principles of management as prescribed by Henry Fayol. What are the cons of MBO? 7 + 3

(b) Explain basic formation procedure of joint stock companies. What are the advantages of joint stock companies? 7 + 3

(c) Summarise functions of management. 10

2. Answer any two from (a), (b) and (c) in this block 2 x 15 = 30

(a) Activity Immediate Predecessor(s) Duration (Weeks)

A	-----	6
B	-----	5
C	A	4
D	B, C	9
E	B, C	11
F	D	10
G	E	8
H	E	12

(i) Draw a network diagram.

(ii) Find project completion time and the critical path by activity on arrow method.

(iii) How much are the floats of 'B' & 'G'?

6 + 6 + 3

(b) During the last 8 quarters, Kolkata port has unloaded large quantities of grain from ships. The ports operations manager wants to compute MAD, MSE, & MAPE from the data furnished in the following table for $\alpha = 0.1$. Compute these forecasting errors on behalf of the operations manager of Kolkata port. 5 + 5 + 5

Quarter	Actual tonnage unloaded	Forecast for $\alpha = 0.1$
1	180	175
2	168	175.5
3	159	174.75
4	175	173.18
5	190	173.36
6	205	175.02
7	180	178.02
8	180	178.22

[Turn over

(c) Saraswati Publishing Company produces books for the retail market. Demand for a current book is expected to occur at a constant rate of 7,000 copies. The cost of one copy of book is Rs. 1,450. The carrying cost is based on an 18% annual rate of the product cost per unit. Annual setup cost is Rs. 1,500 per setup. Annual production volume is 25,000 copies. There are 250 working days per year. Set time for production run is 15 working days. Use the production lot size model to determine the following:

5 x 3

- i. Minimum cost production lot size.
- ii. Number of production runs per year.
- iii. Total annual cost.

3. Answer any two from (a), (b) and (c)

2 x 10 = 20

(a) Explain cost of quality. Describe causes of variable in a statistical quality control chart.

5 + 5

(b) A producer of boats has estimated the following distribution of demand for a particular kind of boat:

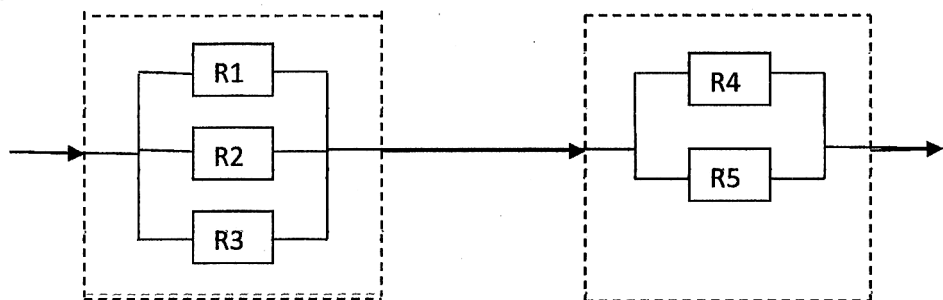
Number demanded:	0	1	2	3	4
Probability:	0.14	0.22	0.27	0.18	0.19

Each boat costs him Rs.9,000 and he sells each boat for Rs. 13,000. Any boat that is left unsold at the end of each season must be disposed off for Rs. 7,000 each. Prepare a payoff matrix, and compute number of boats to be stocked in order to maximise his profit.

6 + 4

(c) What do you understand by reliability? What is 'maintainability'? Compute the reliability of the following system consisting of subsystem A and subsystem B:

2 + 2 + 6



Subsystem A

Subsystem B

Reliability of component 1 (R1) = 90%; likewise, R2 = 85%, R3 = 99%, R4 = 85%, and R5 = 90%

4. Answer any two from (a), (b) and (c)

2 x 10 = 20

(a) Solve the following game by subgame method:

	Player B			
	-5	2	-3	5
Player A	8	7	5	-4

10

(b) Apply VAM to find out initial basic solution of the following transportation problem (write every critical step) .

10

Transportation Costs per Unit of Sigma Induction Cooker

From \ To	Dhulian	Englishbazar	Falta	Total Supply (No. of Units)
Andul	Rs. 64	Rs. 48	Rs. 56	300
Bangaon	Rs. 48	Rs. 56	Rs. 72	450
Chandannagar	Rs. 56	Rs. 64	Rs. 64	510
Total Demand (No. of Units)	360	540	360	

(c) Using the following cost matrix, determine the optimal job assignment and the cost of assignments. All costs are in rupee value.

10

		Job				
		1	2	3	4	5
Mechanic	A	10	3	3	2	8
	B	9	7	8	2	7
	C	7	5	6	2	4
	D	3	5	8	2	4
	E	9	10	9	6	10

5. Answer any one from (a) and (b) in this block

1 x 10 = 10

(a) Enumerate basic requirements of an industrial relation programme. What are the functions of trade union?

5 + 5

(b) What non-financial incentives do industries offer? Describe straight piece rate system of wage incentive plan.

4 + 6