Ex/IEE/HS/B/Prod/T/423/2024

Bachelor of Instrumentation & Electronics Engineering Examination, 2024

(4th Year, 2nd Semester)

Industrial Management

Time: Three Hours | Full Marks: 100

Different parts of the same question should be answered together

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

(a) Describe location factor for raw material and component sources. Explain 'process production'. **5 + 5**

(b) State merits and demerits of scientific management. Describe scope of management. . **5 + 5**

(c)

Year	Expenditure (Rs. in Crore)
2018	25
2019	30
2020	35
2021	45
2022	55

Project the business expenditure on new plant equipment for the year 2024 by trend projection method. **10**

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

How PERT differs from CPM? From the information provided in the following table, draw out the network diagram and find the critical path. How long the project will take to be completed? **5 + 5 + 4 + 1**

Activity	Predecessors	Duration (Days)
A	----	6
B	A	4
C	B	7
D	A	2
E	D	4
F	E	10
G	----	2
H	G	10
I	J, H	6
J	----	13
K	A	9
L	C, K	3
M	I, L	5

8 + 2 + 2 + 3

(b) Make initial allocation of the following transportation problem by north-west corner rule, then optimise the total transportation cost by applying stepping stone method:: **5 + 10**

Transportation Costs per Unit of Sigma Induction Cooker

From \ To	Dhulian	Englishbazar	Falta	Total Supply (No. of Units)
Andul	Rs. 8	Rs. 6	Rs. 7	100
Bangaon	Rs. 6	Rs. 7	Rs. 9	150
Chandannagar	Rs. 7	Rs. 8	Rs. 8	170
Total Demand (No. of Units)	120	180	120	

(c) Obtain the optimal strategies for both the players and the value of the game for two person zero-sum game whose payoff matrix is given as follows (apply sub-game method only): **15**

		Player B	
		B1	B2
Player A	A1	- 6	7
	A2	4	- 5
	A3	- 1	-2
	A4	- 2	5
	A5	7	- 6

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

(a) Explain Bath Tub curve. Enumerate basic quality control tools. . **5 + 5**

(b) Write a short note on maintainability. What are the ways to improve reliability? **7 + 3**

(c) State attributes of corrective maintenance. What are its merits and demerits? **5 + 5**

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4. Answer any one from (a) and (b) in this block. **1 x 15 = 15**

(a) Which wastages in production scenario does JIT address? State the requirements of JIT. What obstacles do organisations face for implementing JIT? **5 + 5 + 5**

(b) i) Derive EOQ model with appropriate assumptions, diagram and notations. **8**

ii) Piyasa is a manufacturer of canned soft drinks. Its daily consumption of empty cans is 1,000 pieces per day over 260 business days a year. The procurement cost per piece of the cans is Rs. 5.00. The ordering cost for this item has been estimated at Rs. 100 per order. The carrying cost is 20% of the procurement cost per year. It takes 5 business days for the company to receive empty cans from the vendor. No quantity discounts are available, and also no stock outs are to be

tolerated. How many pieces of cans should Piyasa order at a time? How much is the re-order point? Compute the total annual variable cost. **3 + 2 + 2**

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5. Answer any one from (a) and (b) in this block **1 x 15 = 15**

(a) Summarise the process of organisation. Illustrate and explain scalar organisation including its advantages, disadvantages and applications. **5 + 10**

(b) **(i)** . There are two industries manufacturing two types of plugs. The standard time per piece is 1.5 minutes. The output of the two industries is 300 and 200 respectively per shift of 8 hours. What is the productivity of each industry per shift of each hour? What is the productivity of each industry per week (6 days) on the basis of double shift? What practices will you advocate to improve worker's productivity? **3 + 2 + 5**

(ii) Describe types of productivity measures. **5**