BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID-SEMESTER EXAMINATION SP/2025)

CLASS: BTech **SEMESTER: IV**
BRANCH: PIE **SESSION: SP/2025**

SUBJECT: PE218 PRODUCTION & OPERATIONS MANAGEMENT

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions, each of 5 marks and a total of 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Difference Between Continuous and Intermittent Production Systems?	[2]	1	II
Q.1(b)	The following table shows the average number of customers processed by several repair service units daily. The hourly wage rate is $25, the overhead rate is 1.0 times the labour cost, and the material cost is $5 per customer.	[3]	1	III

Unit	**A**	**B**	**C**	**D**
Employees	**4**	**5**	**8**	**3**
Customers Processed/Day	**36**	**40**	**60**	**20**

Compute the labour productivity and the multifactor productivity for each unit. Use an eight-hour day for multifactor productivity. Which service unit has the higher productivity?

Q.2(a)	What are the main advantages of quantitative forecasting techniques over qualitative techniques? What limitations do quantitative techniques have?	[2]	2	II
Q.2(b)	Explain each approach to developing a forecast. List their specific weaknesses a. Consumer surveys. b. Salesforce composite. c. Committee of managers or executives.	[3]	2	II
Q.3(a)	Briefly discuss and list the advantages and limitations of each of these aggregate planning strategies: a. Maintain a level output rate and let inventories absorb fluctuations in demand. b. Subcontracting.	[2]	2	II
Q.3(b)	Obtain the linear trend equation for the following data on new checking accounts at IDFC Bank and use it to predict expected new checking accounts for periods 15 through 18.	[3]	2	IV

Period	1	2	3	4	5	6	7
New Accounts	200	214	211	228	235	232	248
Period	8	9	10	11	12	13	14
New Accounts	250	253	267	281	275	280	288

PTO

Q.4(a) Given the following information, set up the aggregate planning problem in a transportation table and solve it for the minimum cost plan. [2] 2 IV

		period 1	2	3
Demand		550	700	750
Capacity				
	Regular	500	500	500
	Overtime	50	50	50
	Subcontract	120	120	100
Beginning inventory		100		
Cost				
	Regular time	$60 per unit		
	Overtime	80 per unit		
	Subcontract	90 per unit		
Inventory carrying cost		$1 per unit per month		

Q.5(a) What is scheduling, and what are its two significant factors? [2] 3 II

Q.5(b) Given the following cost information, use the assignment method to determine the best way to assign machines to jobs. Compute the total cost for your assignment plan. [3] 3 IV

		Machine A	B	C	D
Job	1	8	6	2	4
	2	6	7	11	10
	3	3	5	7	6
	4	5	10	12	9

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