BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER: V**
BRANCH: P&IE **SESSION: MO/2022**

SUBJECT: PE304 PRODUCTION AND OPERATIONS MANAGEMENT

TIME: 2 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

				CO	BL
Q1	(a)	What is production planning and control? List its functions.	[2]	CO1	
Q1	(b)	Differentiate between continues and intermittent production systems.	[3]	CO1	

Q2 (a) Compute the multifactor productivity measure for each of the weeks shown for production of chocolate bars. What do the productivity figures suggest? Assume 40-hour weeks and an hourly wage of $12. Overhead is 1.5 times weekly labor cost. Material cost is $6 per pound. [2] CO1

Week	Output(units)	Workers	Material(lbs)
1	30,000	6	450
2	33,600	7	470
3	32,200	7	460
4	35,400	8	480

Q2 (b) A car dealer wants to forecast demand of Suzuki Swift for 9th month using exponential smoothing. The following table shows actual demand for Eight months. [3] CO2

Month	1	2	3	4	5	6	7	8
Actual Demand	180	168	159	175	190	205	180	182

Forecast for first month is 175. Suggest the management which smoothing constant $\alpha = .10$ or $\alpha = .50$, shall be selected for forecasting? Justify your answer.

Q3 (a) What are the main advantages that quantitative techniques for forecasting have over qualitative techniques? What limitations do quantitative techniques have? [2] CO2

Q3 (b) Room registrations in the Toronto Towers Plaza Hotel have been recorded for the past 9 years. To project future occupancy, management would like to determine the mathematical trend of guest registration. This estimate will help the hotel determine whether future expansion will be needed. Given the following time-series data, develop a regression equation relating registrations to time (e.g., a trend equation). Then forecast 2011 registrations. Room registrations are in the thousands: [3] CO2

2001: 17 2002: 16 2003: 16 2004: 21 2005: 20
2006: 20 2007: 23 2008: 25 2009: 24

PTO

Q4 (a) Why is an intermediate rage production plan called aggregate production plan? List various options of aggregate planning strategies. [2] CO2

Q4 (b) Given the following information set up the aggregate planning problem in a transportation table and solve for the minimum cost plan. [3] CO2

	Period			
	1	2	3	Costs
Demand		800	1000	Regular time $40 per unit
750				
Capacity				Overtime 50 per unit
Regular	700	700	700	Subcontract 70 per unit
Overtime	50	50	50	Inventory carrying cost $2 per unit per month
subcontract	150	150	130	
Beginning inventory		100		

Q5 (a) What is scheduling? Why is scheduling fairly simple for repetitive systems but fairly complex for job shops? [2] CO3

Q5 (b) The following table contains information on the cost to run three jobs on four available machines. Determine an loading(assignment) plan that will minimize costs. [3] CO3

	MACHINE				
	A	B	C	D	E
	1	12	16	14	10
Job	2	9	8	13	7
	3	15	12	9	11

:::::: 29/09/2022 ::::::M