1

07

07

GUJARAT TECHNOLOGICAL UNIVERSITY ME-SEMESTER II- EXAMINATION - SUMMER 2015

Subject Name: Operations Planning and Control Techniques Time: 2:30 PM - 5:00 PM **Total Marks: 70** Instructions: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. Define Manufacturing Planning & Control. Explain MPC as a central focus for 07 **(a)** computer integrated manufacturing. Explain factors affecting forecast and types of forecasting in decision making. 07 **(b)** Q.2 Compute MAD and MAPE using following demand and forecast data: 07 **(a)** Period 1 2 3 4 5 6 220 220 225 Demand 185 200 250 Forecast 200 225 210 190 220 245

(a) Explain Delphi method of forecasting. **(b)** (b) Explain Exponential smoothing.

OR

A paint shop has recorded the demand for a particular colour during the past 6 07 **(b)** weeks as shown below:

Week	1 st week	2 nd week	3 rd	4 th week	5 th week	6 th week
			week			
Demand	20	17	19	25	26	22

- (i) Calculate a 3-week moving average for the data to forecast demand for the next week.
- Calculate a weighted average forecast for the data, using equal weights (ii) for successive older data.
- Using least square method of linear regression analysis, forecast the sales for 9^{th} , 10^{th} , 11^{th} and 12^{th} week. The relevant last 8 weekøs sales data are given Q.3 **(a)** 07 below:

Week	1	2	3	4	5	6	7	8
Sales	100	160	220	160	180	270	250	260
T 1 1 T			0					

(b) Explain Production planning & control.

OR

The below mentioned is the forecast for a group of valves manufactured in an Q.3 07 **(a)** industry:

Quarter	1	2	3	4	5	6	7	8	
Demand	400	380	600	700	650	450	320	430	
The firm coloulates that it costs \mathbf{P}_{α} 160/ nor unit to increase the production									

The firm calculates that it costs Rs. 160/- per unit to increase the production rate, Rs. 200/- per unit to decrease the production rate, Rs. 60/- per unit per quarter to carry the items on inventory. Compare the cost incurred in the pure strategies (a) Varying work force size and (b) Changing the inventory levels, if the beginning inventory at quarter 1 is 300.

Date: 30/05/2015

Enrolment No.

Q.1

Subject Code: 2724605

(b) Explain how to formulate linear programming model for optimal production. 07 Consider period, demand, regular time capacity and overtime capacity as data for formulation.

Q.4 (a) The bill of material structure for a toy is given in following figure:

			C	
Week	1	2	3	4
Demand	180	90	160	270

The details of BOM with EOQ, stock on hand for final product (A) & subassemblies (B, C) are shown in following table.

Part	EOQ	No. of units	Lead	Stock on
			time(week)	hand
А	300	1	1	150
В	400	1	1	350
С	350	1	1	325

Complete the material requirement plan for product A and parts B & C.

(b) Define Inventory. Explain purposes of inventory and inventory costs. OR

07

07

Q.4	(a)	A company r below.	nanufact	ures iroi	n box. T	The MPS	of the f	final asse	embly is	as shown	07
		Month	1	2	3	1	5	6	7	8	

	WIOIIIII	1	4	5	+	5	0	/	0		
	Projected		3500	3000	4500		1000	4000	5500		
	requirement										
	The initial sto	ock on	hand is	1150 u	inits. Tł	ne carry	ying cos	t is Rs.	2.5 per		
	unit/month and the lead time is one month. The ordering cost per order is										
	Rs. 6000. Find MRP solution using EOQ method and total inventory cost.										
(b)	Explain MRP and MRP II.									07	
(a)	Explain bottleneck, non-bottleneck and capacity constrained resource.									07	
(b)	Compare synchronous manufacturing to MRP & JIT.									07	
	OR										
(a)	Explain V, A &	& T pla	nt.							07	
(b)	(i) Explain dr	um, buf	fer and r	ope.						07	

(b) (i) Explain drum, buffer and rope.(ii) Explain ABC analysis applied to stores.

Q.5

Q.5
