

QP Code: 82954

Time: 3 hrs

Marks: 80

- N. B.: 1. Question 1 is Compulsory
 2. Attempt any three questions out of the remaining five.
 3. All questions carry equal marks.
 4. Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR 20
- List Production and operation systems function
 - Write short note on Capacity requirement Planning
 - Explain Product Life cycle
 - List out quantitative forecasting methods and describe any one of the forecasting method
 - List out Factors influencing Plant Layout in facility planning
 - Write notes on Agile Manufacturing production system

- 2a) Given the following data Prepare a Forecast Demand for 7 the period for using the following approaches 10

Period	1	2	3	4	5	6
Demand	70	75	65	68	65	62

- 3-Period Moving average
- Weighted average using weights of 0.5, 0.3 and 0.2
- Exponential Smoothing with smoothing constant 0.3

- Q2 b) List Manufacturing Resource Planning modules and Explain the following manufacturing planning structure **any one structure** (i) Master Production Schedule (MPS) (ii) Material Requirement Planning (MRP) (iii) Shop Floor Control 10

- Q3 a) What is time series analysis? What are the components of time series? How the forecast is made from the time series? 10

- Q3b) The total requirements for a material from an MRP schedule are given in the following table: 10

Total Demand	1	2	3	4	5	6	7	8
	200	400	900	500	200	200	200	1400

The annual demand for this end item is estimated to be 25,000 units over a 50 week per year schedule, or an average of 500 units per week. It costs Rs. 800 to change over the machines in the final assembly department to this end item when a production lot is begun. It costs Rs. 1.10 per unit when one unit of this product must be carried in inventory from one week to another; therefore, when one unit of this product is in ending inventory, it must be carried over as beginning inventory in the next week and incurs the Rs. 1.10 per unit carrying cost. Develop the total carrying costs over the eight week schedule for the lot-for-lot method:

82954

Lot for Lot (LFL) Use The following format

	Weeks								Costs		
	1	2	3	4	5	6	7	8	Carrying	Ordering	Total
Net Requirements											
Beginning Inventory											
Production Lots											
Ending Inventory											

Q4 a) Find the solution of Sequencing Problem **5Jobs x 3 Machine** Problem Determine Optimum Processing Time , Machine 1 idle time , Machine 2 idle time . Machine 3 idle time

Jobs / Machines	1	2	3	4	5
Machine -1	7	9	5	6	10
Machine-2	4	5	2	2	3
Machine-3	3	8	7	5	4

Q4 b) Explain the various terms associated with ERP. Explain the steps of creating ERP Systems in Manufacturing Industry

Q5 a

For the following data, draw network diagram. Find the critical path, slack time after calculating the earliest expected time and the latest allowable time

Activity	Duration	Activity	Duration	Activity	Duration
1-2	4	3-8	2	9-12	2
1-3	7	4-9	1	10-12	3
2-4	5	5-9	2	11-13	1
2-5	3	6-10	4	12-13	6
2-6	3	7-10	3		
3-7	4	8-11	8		

Q5b) Explain Synchronous manufacturing: systems in detail.

Q6 a) Explain Pillars of Lean Manufacturing in and detail.

Q6b) What is aggregate planning? Explain aggregate planning strategies in detail