2/12/2024 MECH SEM-VIII C SCHEME OPC QP. CODE : 10067211

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

a) List Production and operation function
b) Explain Product Life cycle
c) List out quantitative forecasting methods and describe any one of the method
d) Write short note on Capacity Requirement Planning
e) Explain the objectives, constraints and terminology of Line balancing.
f) 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	61	66	57	60	67	62

1. **3-Period** Moving average
2. Weighted average using weights of **0.5, 0.3 and 0.2**
3. Exponential Smoothening **with smoothening constant 0.4**

Q2 List Manufacturing Resource Planning modules and Explain the following manufacturing planning structure **any one structure** (i) Master Production Schedule (MPS) (ii) Material Requirement Planning 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**: Lot for Lot (LFL) Use The following format**

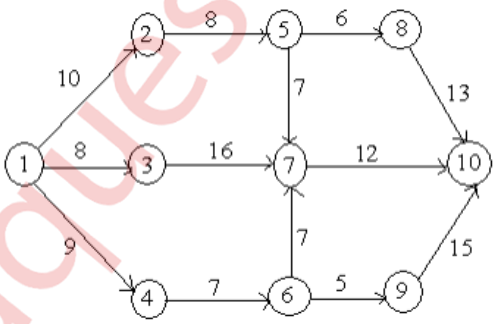
	Weeks								Costs		
	1	2	3	4	5	6	7	8	Carrying	Ordering	Total
Net Requirements											
Beginning Inventory											
Production Lots											
Ending Inventory											

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** 10

Jobs / Machines	1	2	3	4	5
Machine -1	8	10	6	7	11
Machine-2	5	6	2	3	4
Machine-3	4	9	8	6	5

Q4 b) . Explain the various terms associated with ERP. Explain the steps of creating ERP Systems in Manufacturing Industry 10

Q5 a . From the flow diagram below. Determine EST, EFT, LST, LFT and critical path duration time 10



Q5b) Explain Just In Time Manufacturing system in detail. 10

Q6 a) Explain Pillars of Lean Manufacturing in detail. 10

Q6b) What is aggregate planning? Explain aggregate planning strategies in detail 10