

JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA
PGDM / PGDM (M) / PGDM (SM)
FIFTH TRIMESTER (Batch 2022-24)
END TERM EXAMINATIONS, JANUARY 2024

Course Name	Materials and Inventory Management	Course Code	20257
Max. Time	2 hours	Max. Marks	40 MM

INSTRUCTIONS:

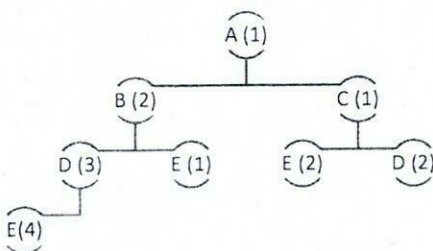
- a. All questions are compulsory.
- b. Use of simple/scientific calculators is allowed

- Q.1. (a) Discuss EOQ model with instantaneous supply and no shortages allowed. If shortages will be allowed in the model, how the EOQ changes? (6 Marks)
- (b) A television company requires 8000 speakers a month. The initial cost for catering the order is \$12000. The unit production cost is \$10 per piece. The holding cost is \$0.30 per piece per month. Estimate the EOQ and the cycle time, if the shortage cost is \$1.10 per unit time of shortage. (6 Marks)

- Q.2. For the data on the processing times of 6 jobs on 3 machines, determine the optimal sequence that will minimize the total elapsed time. Also, find the idle time of the machines. (10 Marks)

	Jobs	1	2	3	4	5	6
Processing time (in minutes)	Machine A	3	12	5	2	9	11
	Machine B	8	6	4	6	3	1
	Machine C	13	14	9	12	8	13

- Q.3. Using the following product structure tree and the inventory status file, determine the quantities of B, C, D and E needed to assemble 20 units of A. (8 Marks)



Inventory status file	
Items	Units available in inventory
B	5
C	10
D	8
E	50

- Q.4. (a) What is Procurement strategy. Explain and share any 4 strategies with examples?
- (b) What is selective inventory control? Discuss various methods used and related criteria for the same. (4 + 6 Marks)

Formula Sheet

$$Q^* EOQ = \sqrt{\frac{2DS}{H}} \quad (\text{Basic EOQ Model})$$

$$Q^* EOQ = \sqrt{\frac{2DS}{H} \left(\frac{H+C_s}{C_s} \right)}$$

$$M^* = \sqrt{\frac{2DS}{H} \left(\frac{C_s}{H+C_s} \right)}$$

$$TVC^* = \sqrt{2DSH \left(\frac{C_s}{H+C_s} \right)}$$

EOQ model
with shortages

$$Q^* EOQ = \sqrt{\frac{2DS}{H} \left(\frac{P}{P-d} \right)}$$

$$TVC^* = \sqrt{2DSH \left(\frac{P-d}{P} \right)}$$

EOQ Model
with non-instantaneous
supply

$$\text{Monetary unit size inventory} = \sqrt{\frac{2DS}{i}}$$

$$\text{Service level} = \frac{\text{no. of orders per year} - \text{no. of stockout tolerated per yr.}}{\text{no. of orders per year}}$$