

M.E. PRODUCTION ENGINEERING FIRST YEAR SECOND SEMESTER EXAM– 2025

Subject: ADVANCED MANUFACTURING PLANNING AND CONTROL

Time: Three Hours (Part I & Part II)

Full Marks: 100

Part I (60 Marks)

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Use Separate Answer scripts for each part.

Answer any Three questions from Part I.

1. Elaborate ERP implementation lifecycle with different phases for a manufacturing company.
(20)
2. Elaborate and explain the following lot-sizing rules with suitable example: Wagner-Whitin, Silver-Meal Heuristic.
(10 + 10)
3. a) Develop a basic model for Economic Order Quantity when a firm is producing the items. Explain the assumption.
b) Develop & Explain (Q, R) Inventory model with example.
(10 + 10)
4. a) Explain with example the various scenarios of Inventory Control subject to uncertain demand.
b) Explain Jonshon's algorithm for scheduling with suitable example.
(10 + 10)

..... END

[Turn over

M. Prod. E 1st Year 2nd Semester Examination – 2025

Ref. No:Ex/Prod/PE/T/123A

Subject: Advanced Manufacturing Planning and Control

Time: 3 Hours

Marks: 100

[Use separate answer script for each PART]

PART II (Marks 40)

(Answer any two questions)

1. Consider a four period problem with no initial inventory and the following data:

Period (t)	Demand Forecast (Dt)	Setup Cost (At)	Unit Variable Cost (Ct)	Unit Holding Cost per Period (Ht)
1	10	Rs. 20	Rs. 3	Rs. 2
2	20	Rs. 40	Rs. 3	Rs. 2
3	30	Rs. 30	Rs. 3	Rs. 1
4	40	Rs. 50	Rs. 3	Rs. 1

Use Wagner and Whitin algorithm to find optimal solution.

(20)

2. Expound the relationship of master production scheduling to other manufacturing planning and control activities.

(20)

3. The demand schedule of a product is shown below. The initial inventory and the final inventory before and after allocation are 20 and 25 units respectively. The regular time, overtime and subcontracting capacities are also indicated. No shortages are to be planned. Prepare the transportation table and show the optimum solution.

Supply Capacity (Units)

Period	Regular Time	Overtime	Subcontracting
1	60	18	1000
2	50	15	1000
3	60	18	1000
4	65	20	1000
5	50	12	1000

Demand

Periods	Unit
1	100
2	50
3	70
4	80
5	65

Other Data:

Initial: 20	Regular time cost/unit = Rs. 100/- Overtime cost/unit = Rs. 125/-
Final: 25	Subcontracting cost/unit = Rs. 130/- Carrying cost/unit/period = Rs. 20

(20)**4. Write short notes on any two:***(10+10=20)*

- a) Objectives in scheduling
- b) Capacity Requirements Planning (CRP)
- c) Silver-Meal Heuristic
- d) Hierarchical Planning process