

--	--	--	--	--	--	--	--	--	--



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech VII SEMESTER END EXAMINATIONS (REGULAR) - DECEMBER 2023

Regulation: UG-20

PRODUCTION PLANNING AND CONTROL

Time: 3 Hours

MECHANICAL ENGINEERING

Max Marks: 70

Answer ALL questions in Module I and II

Answer ONE out of two questions in Modules III, IV and V

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

MODULE – I

- (a) Mention the objectives of production planning and control (PPC). Describe in detail about the various functions of PPC. [BL: Understand| CO: 1|Marks: 7]
- (b) List the function of production control. Discuss different types of production systems and differentiate between them [BL: Understand| CO: 1|Marks: 7]

MODULE – II

- (a) Describe 'Least Square Method' of sales forecasting with its advantages and limitations. [BL: Understand| CO: 2|Marks: 7]
- (b) The demand for an item is 7000 units/year. The cost of unit is 10. The holding cost is given as 20% of unit cost. The ordering cost is 150 per order. Determine
 - EOQ
 - Number of orders per annum
 - Time interval between 2 consecutive cycles
 - Minimum total Annual inventory cost [BL: Apply| CO: 2|Marks: 7]

MODULE – III

- (a) Outline the concept of JIT. How does it help the manufacturing system to improve productivity? [BL: Understand| CO: 3|Marks: 7]
- (b) Identify the factors involved in ERP implementation. What should be done to avoid failure in ERP implementation? [BL: Understand| CO: 3|Marks: 7]
- (a) Distinguish between route card and route sheet. Why do you require these documents? Explain. [BL: Understand| CO: 4|Marks: 7]
- (b) List out various charts used in line of balance (LOB) and explain about each with a diagram. [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

- (a) Enlist any seven commonly used priority rules for job sequencing. Summarize the objective of aggregate planning. [BL: Understand| CO: 5|Marks: 7]

- (b) The precedence relationship of an assembly line is given in Table 1. The desired output capacity is 48 numbers per day. If the factory runs two shifts per day, each shift 8 hrs duration.
- Draw the precedence diagram [BL: Apply| CO: 5|Marks: 7]
 - Determine the cycle time
 - Balance the line. Calculate line efficiency, balance delay and smoothness index.

Table 1

Work element	Duration (min)	Immediate precedence
1	10	-
2	6	1
3	5	2
4	5	2
5	8	2
6	9	3,4,5
7	8	6

- Describe in detail any two aggregate planning methods. Enlist any four differences between loading and scheduling. [BL: Understand| CO: 5|Marks: 7]
- A manufacturer has four orders on hand as given in Table 2 which he has to schedule on four different machines. How would you schedule his orders? [BL: Apply| CO: 5|Marks: 7]

Table 2

Order no	Order size	Standard pieces per hour on machines			
		A	B	C	D
1	100	1	3/2	4/5	4/3
2	200	2	1	10/11	5/3
3	50	2	4/3	1	5/2
4	75	1	4/5	2/3	5/4
Machines hours available		80	150	250	100

MODULE – V

- Describe in detail about dispatching. Describe the common forms used for dispatching. [BL: Understand| CO: 6|Marks: 7]
 - What is material follow up? Interpret the role of purchase department in material follow up. [BL: Understand| CO: 6|Marks: 7]
- State various activities of a dispatcher. Explain about the dispatching procedure for an intermittent manufacturing system. [BL: Understand| CO: 6|Marks: 7]
 - With the help of a organizational charts, explain the centralized and decentralized system of dispatching. List the merits and demerits of centralized and decentralized system of dispatching. [BL: Understand| CO: 6|Marks: 7]