Code No: 156CQ

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, August/September - 2021
PRODUCTION PLANNING AND CONTROL
(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Distinguish between Production planning and Production control with suitable examples.
b) Discuss the major factors contributing to the complexity of production control. [7+8]

2.a) What is meant by 'Decomposition of a Time Series'? Explain with examples.
b) Here are the quarterly data for the past two years. From these data, prepare a forecast for the upcoming year using decomposition. [7+8]

Period	Actual
1	300
2	540
3	885
4	580
5	416
6	760
7	1191
8	760

3.a) What is an inventory system and what purpose does it serve? Explain.
b) Given the following information, formulate an inventory management system. The item is demanded 50 weeks a year.

Item Cost	Rs.10.00	Standard deviation of weekly demand	25 per week
Order cost	Rs. 250.00	Lead time	1 week
Annual holding Cost(%)	33% of item cost	Service probability	95%
Annual demand	25,750		
Annual demand	515 per week		

a) State the order quantity and reorder point.
b) Determine the annual holding and order costs.
c) If a price break of Rs. 50 per order was offered for purchase of quantities of over 2, 000, would you take advantage of it? How much would you save annually? [6+9]

4.a) Define mixed strategy. Why would a firm use a mixed strategy instead of a simple pure strategy?
b) What are the major limitations of using the transportation method for aggregate planning? [8+7]

5. The following tasks must be performed on an assembly line in the sequence and times specified:

Task	Task Time(Seconds)	Tasks that must precede
A	50	-
B	40	-
C	20	A
D	45	C
E	20	C
F	25	D
G	10	E
H	35	B,F,G

a) Draw the schematic diagram.
b) What is the theoretical minimum number of stations required to meet a forecast demand of 400 units per eight-hour day?
c) Use the longest-task-time rule and balance the line in the minimum number of stations to produce 400 units per day. [5+5+5]

6.a) What are factors affecting the routing procedure? Explain their significance.
b) What is Alternative routing? When is it considered? Discuss in detail. [8+7]

7.a) Distinguish between single machine scheduling and flow shop scheduling.
b) Consider the following 2 machines and 6 jobs flow shop problem.

Job	Machine 1	Machine 2
1	5	7
2	10	8
3	8	13
4	9	7
5	6	11
6	12	10

Obtain the optimal schedule and the corresponding make span in the above problem. [7+8]

8.a) Discuss briefly the role of expediting and the procedures followed for expediting in production control.
b) Discuss, in detail, any two computer application areas of production planning and control. [7+8]

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