

M.E. PRODUCTION ENGINEERING FIRST YEAR FIRST SEMESTER EXAM– 2025**Subject: PRODUCTION & INVENTORY CONTROL SYSTEM (PM)****Time: Three Hours (Part I & Part II)****Full Marks: 100****Part I (40 Marks)****Use Separate Answer scripts for each part.****Answer any Two questions from Part I .**

1. a) Mention the various types of operations scheduling problems. State the major objectives of job shop scheduling.
 b) Five jobs must be scheduled for batch processing on a mainframe computer system. The processing times and the promised times for each of the jobs are listed here.

Job	1	2	3	4	5
Processing time	40 min	2.5 hr	20	4 hr	1.5 hr
Promised time	11:00 AM	2:00 PM	2:00 PM	1: 00 PM	4:00 PM

- (12 + 8)
2. a) What is “Push” and “Pull” Production Control Systems? Explain with examples.
 b) What is Break-Even analysis? What is the objective of Break-Even Analysis?
 (10+10)
3. a) What is the role of MRP in a Production Planning & Control System? How has the modern ERP system been developed?
 b) How would you deal a scheduling problem with precedence constraints? Explain.
 (10 + 10)

[Turn over

M.E. PRODUCTION ENGINEERING, 1ST YEAR, 1ST SEMESTER EXAM 2025**SUBJECT: PRODUCTION & INVENTORY CONTROL SYSTEM (PM)****Time : Three hours****Full Marks : 100****Use a Separate Answer Script For Each Part****PART II (60 Marks)****(Answer any Three Question)**

4. a) Explain study of production systems briefly with suitable figure 10
- b) With the help of a suitable example of your own explain the Cause and Effect diagram. 6
- c) Explain briefly: Cycle of production functions; 4
5. a) Explain the followings in connection with time series analysis: 6
- (i) Cyclic Variation; (ii) Seasonal Variation.

- b) Quarterly unit demands for a product are given below : 14

YEAR	WINTER	SPRING	SUMMER	FALL
1	95	63	50	57
2	75	89	89	79
3	56	76	75	70
4	89	72	54	75
5	88	58	65	68

Using centre point moving average technique, determine the seasonal adjusted index for each quarter.

6. a) Explain the relationship between Acceptable Quality level (AQL) and producer's risk (α) and the relation between Lot Tolerance Percent Defective (LTPD) consumer's risk (β) in case of single sample percentage defective plan. 8
- b) Explain briefly different types of control chart and their significance in the view of quality control. 12
7. a) Explain economic production quantity briefly. 8
- b) M/s ABC entered into a contract with M/s XYZ for the purchase of 12,360 instruments from the latter at the rate of Rs 235 per instrument during the years 2024 and 2025. It has not, however, entered into a staggered delivery contract. The deliveries of the instruments will be made each time half a month after the order is placed. M/s ABC estimates its carrying costs at Rs 47 per instrument per annum. The costs of paper-work, follow-up, transport, and receipt-and-inspection work out to Rs 2,000. How frequently should M/s ABC place orders on M/s XYZ? What is the Re-order Point? 12