**14ME705/A**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular / Supplementary) DEGREE EXAMINATION** | | | |
| **Jan/Feb, 2021** | **Mechanical Engineering** | | |
| **Seventh Semester** | **Operations Management** | | |
| **Time:** Three Hours | | **Maximum :** 60 Marks | |
| *Answer* ***All*** *Questions from* ***Part - A.*** | | | (1X12 = 12 Marks) |
| *Answer Any* ***FOUR*** *Questions from* ***Part - B.*** | | | (4X12=48 Marks) |
| **Part - A** | | | |

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| 1 | Answer all questions | | (1X12=12 Marks) | |
|  | a) | List quantitative methods of Forecasting | |  |
|  | b) | Product layout | |  |
|  | c) | Job type production system | |  |
|  | d) | EOQ | |  |
|  | e) | Reorder point | |  |
|  | f) | MRP logic | |  |
|  | g) | Define loading | |  |
|  | h) | Pure Strategy in aggregate Planning | |  |
|  | i) | What is scheduling. | |  |
|  | j) | MRP II | |  |
|  | k) | List inventory control systems | |  |
|  | l) | Benefits of ERP. | |  |
| **Part - B** | | | | |
| 2 | a) | Discuss the forecasting techniques. | | 6M |
|  | b) | How does a good plant layout help to improve productivity? | | 6M |
|  | | | | |
| 3 | a) | Discuss the importance of facilities location decision in operations planning. | | 6M |
|  | b) | Distinguish between rural and urban sites. | | 6M |
|  | | | | |
| 4 | a) | What are the objectives of Materials Management? | | 6M |
|  | b) | An industry estimates that it will sell 24,000 units of its product for the forthcoming year. The ordering cost is Rs. 150 per order and the carrying cost per unit per year is 20% of the purchase price per unit. The purchase price per unit is Rs. 50. Find  a) Economic order quantity  b) No. of orders per year.  c) Time between successive orders. | | 6M |
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| 5 | a) | Explain the principles of MRP system. | | 6M |
|  | b) | Explain about ABC analysis. What is its importance in inventory control? | | 6M |
|  | | | | |
| 6 | “Mixed strategies are always superior to pure strategies in an aggregate production  planning exercise”. Comment on this statement. | | | 12M |
| **P.T.O.**  **14ME705/A** | | | | |
| 7 |  | A company produces calculators and has forecast demand over the next year four quarters as shown below. Each quarter has 60 days.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Quarter | 1 | 2 | 3 | 4 | | Units | 3200 | 2000 | 2800 | 3600 |   The company maintains a constant work force of 40 employees, and there are no subcontractors available who can meet its quality standards. The company can, however, go on overtime if necessary and encourage customers to back-order calculators. Production and cost data are as follows.  **Production Capacity:** initial inventory: 400 units, (final included in last period demand)  Regular time hours= 40 employees x (60 days/quarter) x 8 hr/day= 19,200 hr/period  Over time hours = 40 employees x (60 days/quarter) x 4 hr/day = 9600 hr/period  Standard labor hours/ unit = 15 hr  **Cost:**  labour: Regular time cost = Rs. 10/hr  Overtime cost = Rs. 15/hr  Material and overhead (Regular time) = Rs. 100/ unit  Material and overhead (Over time) = Rs. 60/ unit  Cost of unutilized capacity during regular time = Rs. 60/ unit  Back order costs: apportioned at Rs. 5/ unit/period.  Inventory carrying cost = Rs. 10/unit/period.  Formulate this problem as a transportation problem and solve. | | 12M |
|  | | | | |
| 8 | a) | Does ERP implementation require organizational preparation? Discuss. | | 6M |
|  | b) | Compute the EOQ, given the following:   |  |  | | --- | --- | | No. Of units bought at a time | Price per unit in Rs. | | Less than 1000 | 10.00 | | 1000 to 2999 | 9.85 | | 3000 and above | 9.70 | | The order cost is Rs.60 per order and the carrying cost is 20% of the price. Annual requirement of the item is 10,000 units. | | | | 6M |
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| 9 |  | Derive the equation for EOQ and state its assumptions. | | 12M |

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