

- IV. A. (a) An automobile factory manufactures a particular type of gears within the factory. This gear is used in the final assembly. The particulars of this gear are presented below: (6)

Demand rate,  $r = 14,000$  units/year  
 Production rate,  $k = 35,000$  units/year  
 Set-up cost,  $C_o = ₹500$  per set-up  
 Carrying cost,  $C_c = ₹15$ /unit/year  
 Find the EBQ and cycle time

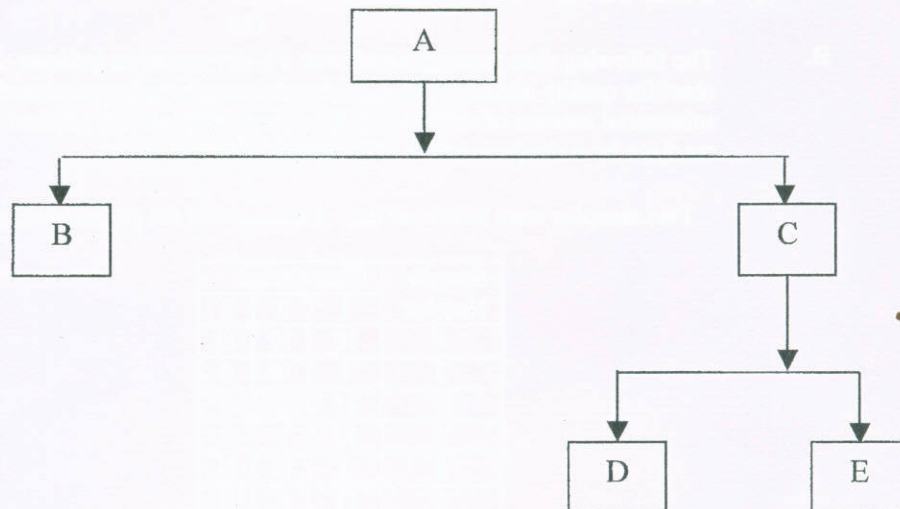
- (b) How will you fix ROL of a system in which the lead time is constant and the demand is varying? (4)

**OR**

- B. Consider the manufacture of a toy. The master production schedule to manufacture the toy is given in the following table:

| Week   | 1   | 2 | 3   | 4   | 5   | 6   | 7 | 8   |
|--------|-----|---|-----|-----|-----|-----|---|-----|
| Demand | 200 | – | 100 | 175 | 300 | 200 | – | 250 |

The Bill of materials structure is given in the following figure



The details of Bill of materials along with economic order quantity and stock on hand for the final product and subassemblies are shown in the following table. Complete the material requirements plan for the main product A as well as for the subassemblies B, C, D and E

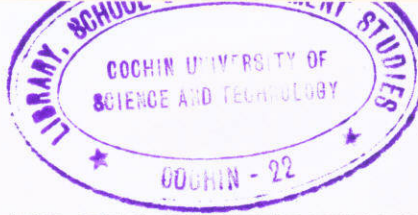
Details of Bill of Materials

| Part required | Order quantity | Number of units | Lead time (week) | Stock on hand |
|---------------|----------------|-----------------|------------------|---------------|
| A             | 350            | 1               | 2                | 200           |
| B             | 450            | 1               | 1                | 400           |
| C             | 400            | 1               | 1                | 375           |
| D             | 375            | 1               | 1                | 250           |
| E             | 400            | 1               | 2                | 425           |

- V. A. (a) Discuss the cost trade-off in maintenance management. (4)  
 (b) List the phases of production planning and control and explain them. (6)

**OR**

- B. (a) What is aggregate planning? Distinguish it from master production scheduling. (4)  
 (b) What are pure strategies followed in aggregate planning? Illustrate the evaluation of any one of them with a suitable example. (6)

**MBA DEGREE (FT) III SEMESTER EXAMINATION NOVEMBER 2011****SMS 2301 PRODUCTION AND OPERATIONS MANAGEMENT**

Time: 3 Hours

Maximum Marks : 50

- I. A. (a) Define operations management and the importance of its integration with other functions of management. (5)  
(b) List and explain different operations strategies. (5)

**OR**

- B. List and explain different types of production system with examples. (10)
- II. A. (a) What are types of quality cost? Explain them in detail. (5)  
(b) Define OC curve and explain its parameters (5)

**OR**

- B. The following data were obtained over a 5-day period to indicate  $\bar{X}$  and R control chart for quality characteristic of a certain manufacturing product that had required a substantial amount of rework. All the figures apply to the product made on a single machine by a single operator. The sample size was 3. (10)

Two samples were taken per day. Comment on the process using  $\bar{X}$  and R charts.

| Sample Number | Observation |    |    |
|---------------|-------------|----|----|
|               | 1           | 2  | 3  |
| 1             | 10          | 12 | 13 |
| 2             | 7           | 10 | 8  |
| 3             | 11          | 12 | 9  |
| 4             | 10          | 9  | 8  |
| 5             | 8           | 11 | 11 |
| 6             | 11          | 8  | 8  |
| 7             | 10          | 12 | 13 |
| 8             | 10          | 12 | 12 |
| 9             | 12          | 13 | 11 |
| 10            | 10          | 13 | 7  |

- III. A. (a) List and explain the factors affecting facility location. (6)  
(b) List and explain the benefits of Group Technology layout. (4)

**OR**

- B. (a) Explain the questions that are asked in the EXAMINE step of method study. (5)  
(b) A time study engineer has studied the time taken to machine crank shafts. He has taken 40 observations and these are summarized in the form of frequency distribution as shown below:

| Time (Minutes) | Frequency |
|----------------|-----------|
| 20             | 15        |
| 21             | 10        |
| 22             | 10        |
| 23             | 5         |

The performance rating of the operator machining the crank shaft is 110%. Find the standard time for machining the crank shaft by assuming allowance of 15%. (5)

(P.T.O.)