# The Open University of Sri Lanka
# Faculty of Engineering Technology

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| Study Programme | : Bachelor of Technology Hons in Engineering |
| Name of the Examination | : Final Examination |
| **Course Code and Title** | : **DMX4335/ MEX4135  Production Management** |
| Academic Year | : 2020/ 2021 |
| Date | : February 01, 2021 |
| Time | : 1400 hrs. – 1700 hrs. |
| Duration | : 3  hours |

**General instructions**
1. Read all instructions carefully before answering the questions.
2. This question paper consists of 07 questions. All questions carry equal marks.
3. Answer **any 05** questions only.

Q1.

i. Discuss the importance of demand forecasting in the fields of manufacturing?

**(5 Marks)**

ii. The recorded monthly demand data for an item is given in the table 1-1.

*Table 1 - 1*

| Month | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|
| Demand | 80 | 78 | 85 | 75 | 76 | 81 | 72 | 78 | 82 | 74 | 78 | 80 |

(a). Calculate three month moving average forecast for months from April to December

**(6 Marks)**

iii. The demand for a certain product is 2500 units per year. The fixed administrative cost of placing an order is Rs. 1500. If each item cost Rs. 15000 and the stock holding cost is Rs. 25000 per unit per year, calculate

    a. Economic lot size **(5 Marks)**

    b. How often orders should be placed **(3 Marks)**

    c. Total average yearly inventory cost. **(3 Marks)**

Q5.   i. Briefly explain objectives of a good facilities layout. **(6 Marks)**

    ii. Explain three layout plans; that can be used in a manufacturing organization.

**(6 marks)**

    ii. Group Technology is considered as an effective concept. What are the methods available for grouping components of similar families? List at least three (3) of them.

**(8 Marks)**

Q6   i. Explain "preventive maintenance" and "breakdown maintenance" specifying advantages and disadvantages. **(6 Marks)**

    ii. What is the purpose of introducing "work study" in a manufacturing organization. Discuss at least three benefits. **(6 Marks)**

    iii. What are the ergonomic factors that may lead to better performance of workers? Explain four ergonomic factors applicable in a textile manufacturing organization.

**(8 Marks)**

Q7.   i   Briefly explain following terms

        a. Critical path method

        b. Early start time

        c. Late start time **(6 Marks )**

    ii   A project consists of six activities. Duration and precedence of each activity is given in the table 7-1 below.

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Table 7-1

| Activity | Preceding Activity | Duration |
|----------|--------------------|----------|
| A | - | 8 |
| B | A | 4 |
| C | A | 9 |
| D | B | 6 |
| E | C, D | 3 |
| F | D | 3 |
| G | F, E | 4 |

a. Draw the network diagram. **(6 Marks)**

b. Calculate early start, late start, early finishing, latest finishing days of all the activities. **(6 Marks)**

c. Find the critical path and total project duration. **(2 Marks)**