



STRATHMORE UNIVERSITY BUSINESS SCHOOL
BACHELOR OF SCIENCE IN SUPPLY CHAIN AND OPERATIONS MANAGEMENT
END OF SEMESTER EXAMINATION
SCM 2102: PRODUCTION AND OPERATIONS MANAGEMENT

Date: Thursday, 27th July, 2023

Time: 2 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

QUESTION ONE (40 MARKS)

- a) A firm that produces furniture has received two orders for chairs: one for 200 chairs and one for 300 chairs. The 200-unit order is due for delivery at the start of week 5 of the current schedule, and the 300-unit order is due for delivery at the start of week 8. Each chair consists of two back supports and four leg supports. The leg supports are made by the firm and fabrication takes one week. The back supports are ordered and lead time is two weeks. Assembly of the chairs requires one week. There is a scheduled receipt of 70 leg supports in the beginning of week one.

Required:

1. Develop a master production schedule. **(2 Marks)**
 2. Explode the Bill of Materials. **(3 Marks)**
 3. Determine the size and timing of planned-order releases necessary to meet delivery requirements. **(15 Marks)**
- b) You have been tasked as the chief production officer at company ABC to embed quality of design in the products you will be launching in a years' time. Explain any **TWO (2)** dimensions of quality that you will consider. **(4 Marks)**
- c) Discuss any **TWO** current trends in the field of production and operations management. **(4 Marks)**
- d) Describe any **THREE (3)** steps in production and operations planning. **(3 Marks)**
- e) Explain what you understand by the following terms:
1. Service package. **(3 marks)**
 2. Operations management. **(2 marks)**
 3. Facility layout. **(2 marks)**
- f) Distinguish between the **TWO (2)** major processes of operations management. **(2 Marks)**

QUESTION TWO (10 marks)

- a) As the Production and Operations designer at the IKEA furniture store, explain what to consider when coming up with furniture x (furniture X represents a product of your own choice). **(8 Marks)**
- b) What does the IKEA effect tell you about the design of products? **(2 Marks)**

QUESTION THREE (10 MARKS)

An end item X is composed of two Bs and one C. Moreover, each B requires three Ds and one E, and each D requires four Es. Similarly, each C is made up of two Es and two Fs. The items at each level are components of the next level up and, as in a family tree, are parents of their respective components. The available inventory on hand of each items B, C, D, and E are 4, 10, 8, and 60 respectively. Note that the quantities of each item in the product structure tree refer only to the amounts needed to complete the assembly at the next higher level. Use this information to do the following:

- a) Draw the product tree diagram. **(1 mark)**
- b) Determine the quantities of B, C, D, E, and F needed to assemble one unit of X. **(2 marks)**
- c) Determine the quantities of these components that will required to assemble 10 Xs, taking into account the quantities on hand of various components. **(4 marks)**
- d) Distinguish between MRP I and MRP II. **(3 Marks)**

QUESTION FOUR (10 MARKS)

You have just been employed as a production design consultant and your first job is to map the process for the product design that you would like to launch. Evaluate any FIVE (5) steps involved. **(10 Marks)**

QUESTION FIVE (10 MARKS)

Explain the importance of any FIVE components of computer aided manufacturing. **(10 Marks)**

TOTAL = 60 MARKS