Strathmore UNIVERSITY

STRATHMORE BUSINESS SCHOOL

BACHELOR OF SCIENCE IN SUPPLY CHAIN AND OPERATIONS MANAGEMENT

END OF SEMESTER EXAMINATION

SCM 2102: PRODUCTION AND OPERATIONS MANAGEMENT

DATE: Wed 31st July 2024 **TIME:** 08:00 – 10:00

Instructions

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

QUESTION ONE (40 MARKS)

a) Two classmates in the supply chain course at Strathmore University have created a yogurt-making plant. They have received orders for yogurts: 400 vanilla yogurts and 300 strawberry yogurts. The 400-unit order is due for delivery at week 5 of the current schedule, and the 300-unit order is due for delivery at the start of week 8. Each yogurt consists of 2 liters of milk, 10 grains of kefir, and 50 pieces of pods (vanilla and strawberry). The fruit pods are made by the firm, and their fermentation takes one week. The kefir grains are ordered, and the lead time is two weeks. Yogurt mixing requires one week. There is a scheduled receipt of three kefir grains at 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) Outline any four product quality dimensions that you need to be achieved in the case of yoghurt manufacturing above. **(8 Marks)**

c) Discuss any **SIX** current trends in production and operations management. **(12 Marks)**

QUESTION TWO (10 MARKS)

a) What does the IKEA effect tell you about product design based on the video of the IKEA effect watched in class? **(2 Marks)**

b) Discuss the various elements of a service package. **(6 Marks)**

c) Outline any **TWO** facility layout strategies. **(2 Marks)**

QUESTION THREE (10 MARKS)

An end item X comprises 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 of 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: Determine the quantities of these components required to assemble 10 Xs, considering the quantities on hand of various components. **(10 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. Before then, you need to let the staff know the main elements of human resources. Outline the **FIVE** functionalities of human resources. **(10 Marks)**

QUESTION FIVE (10 MARKS)

i. Distinguish between order qualifiers and order winners. Use a practical example. **(2 Marks)**

ii. Using any **FOUR** points, demonstrate how firms can attack through operations. **(8 Marks)**