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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
FOURTH YEAR, SECOND SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY
KBA 2415 – FUNDAMENTALS OF PROCUREMENT AND SUPPLIES

Date: 14TH APRIL 2023
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

Warehouse Simulation for Choosing Optimal Picking Algorithm

Kuehne+Nagel, a leading global provider of logistics solutions, was involved in planning a new warehouse for one of their clients. The warehouse would process 13K order lines or 750 picking cartons per day. The project included the development of the best algorithm for multi-order picking. It was planned that the orders in the warehouse would be served by workers with trolleys (or fangos). Workers with trolleys would pick the goods and put them in cartons by order. Kuehne+Nagel experts used Any Logic simulation to choose the right algorithm for building optimal picking tours.

Trolleys planned for usage in this warehouse can carry up to 8 cartons at a time, 4 of which are positioned on the trolley's weighing scales. Weighing scales are used to increase picking accuracy by issuing an alarm signal when the weight of the picked goods does not match that in the master data.

The operator is able to fill only those cartons positioned on the scales. When a carton on the scales becomes full, he swaps it with the next empty one that he carries. So, only 4 cartons are always available for simultaneous filling. In addition, the articles for one carton can be stored at any location along the operator's route. These were the reasons the warehouse needed a strict algorithm for building optimal picking tours to service incoming orders

- Assuming that Kuehne+Nagel experts came up with the required algorithm, State and explain on the factors to consider when setting and selecting a warehouse location (6 Marks)
- Elaborate on the key environmental aspects to consider when increasing sustainability of the organizations distribution channels at Kuehne+Nagel considering that they focused on Trolleys planned for usage in their warehouse would only carry up 8 cartons at a time. (6 Marks)
- When a carton on the scales becomes full, he swaps it with the next empty one that he carries. Explain the roles of a warehouse in improving efficiency in the supply chain. (6 Marks)
- The output statistics included the average number of cartons filled per tour, total duration of serving orders, total tours' distance, average trolley utilization, and mean time of a tour, In relation to the case study reflect on Michael porter's inbound and outbound logistics discuss and explain the supportive activities of supply chain management (6 Marks)
- Elaborate on the six basic rights of the supply chain in relation to the case study above. (6 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss any five techniques of provisioning and inventory control. (10 Marks)
- b) Discuss six advantages that a using computer aided software in improving inventory control. (6 Marks)
- c) Explain the difference of multimodal and intermodal transportation (4 Marks)

QUESTION THREE (20 MARKS)

- a) Discuss the significance of vehicles routing and scheduling in logistics efficiency. (8 Marks)
- b) Discuss the five functions of physical distribution system (6 Marks)
- c) Elaborate on the components of physical distribution (6 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the various techniques used in network planning (10 Marks)
- b) Elaborate on the importance of information and communication in aid of a successful supply chain network (10 Marks)

QUESTION FIVE (20 MARKS)

- a) Explain on any two inventory control techniques (6 Marks)
- b) What are the features of containerization? (8 Marks)
- c) Identify and Explain on the factors to consider when choosing Transport Mode (6 Marks)