Strathmore UNIVERSITY

STRATHMORE BUSINESS SCHOOL

BACHELOR OF SCIENCE IN SUPPLY CHAIN & OPERATIONS MANAGEMENT

END OF SEMESTER EXAMINATION

SCM 3103: ADVANCED LOGISTICS AND TRANSPORTATION MANAGEMENT

DATE: Wed, 24th July 2024 **TIME:** 13:00 – 15:00

Instructions

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

QUESTION ONE (30 MARKS)

Case study: Optimizing Logistics and Transportation Management

Patson Electronics Limited (PEL), regional company, specialises in the manufacturing and distribution of consumer electronics. PEL has several obstacles when it comes to effectively managing its transportation and logistics because of its activities, which are spread throughout multiple countries. The organisation is committed to streamlining its supply chain procedures in order to save expenses, accelerate delivery, and raise customer satisfaction levels.

PEL sources raw materials from a variety of vendors worldwide and runs several manufacturing plants in several nations. The business must combine cost-effectiveness with on-time delivery, deal with shifting demand, inventory management, and transportation delays. As a transport and logistics manager you are tasked to implement advanced logistics and transportation management strategies to streamline operations, reduce costs and improve overall efficiency.

Read the above case study and respond to the following questions,

a) Assess **THREE** ways in which the geographical spread of PEL's operations impacts its transportation and logistics management. **(6 marks)**

b) Propose **FOUR** strategies that PEL can employ to mitigate transportation delays and minimize disruptions in its supply chain. **(8 marks)**

c) As PEL explores the implementation of load planning to mitigate expenses, discuss **FOUR** essential components they should consider when introducing this initiative. **(8 marks)**

d) PEL is contemplating the engagement of a clearing and forwarding agent due to the increasing volume of imports and exports resulting from its sourcing of raw materials from numerous global vendors and operating multiple manufacturing plants across different countries. Explore **FOUR** key roles that the clearing agent would undertake in this context. **(8 marks)**

QUESTION TWO (20 MARKS)

a) As a transport manager overseeing a sizable fleet, identify **FOUR** vehicle security measures that you can implement to safeguard your fleet. **(4 marks)**

b) To establish a robust supply chain model, companies must address various aspects of their supply chain infrastructure. Delve into **THREE** critical considerations within the supply chain infrastructure framework. **(6 marks)**

c) A company needs to transport 300 packages to different locations. They have vans that can carry 20 packages each and trucks that can carry 40 packages each. However, they only have 8 drivers available. The rental cost for a van is $200 and for a truck is $400. Calculate how many vans and trucks should be used for the transport for the least possible cost while ensuring all packages are delivered and not exceeding the available drivers. **(10 marks)**

QUESTION THREE (20 MARKS)

a) Urban transportation planners hold significant responsibility in shaping the development of our cities. Examine **FIVE** challenges commonly encountered in urban transportation planning. **(10 marks)**

b) A shipping company is considering purchasing two different types of cargo ships to expand its fleet. Ship Type A costs $5 million and requires an annual maintenance cost of $200,000. Ship Type B costs $3 million but has a higher variability in maintenance costs. There's a 40% chance that Ship Type B will incur maintenance costs of $150,000 per year and a 60% chance that it will incur maintenance costs of $250,000 per year. Using a decision tree, calculate the likely cost of the two alternative scenarios and recommend to the company which truck should choose. **(10 marks)**

QUESTION FOUR (20 MARKS)

a) Marine logistics is of utmost importance in today's interconnected global economy. Examine **FIVE** roles of marine logistics in contemporary global trade. **(10 marks)**

b) A transport company is planning to construct a new warehouse. The project involves several activities with different durations and dependencies. Activity A starts first, followed by Activity B then C. Activities D and E start simultaneously after A, B and C are completed.

Using the following activity timings, add the EST and LFT for each node and determine the critical path for this project. **(10 marks)**

Activity	A	B	C	D	E
Duration (days)	7	14	10	7	5

QUESTION FIVE (20 MARKS)

a) Logistics management plays an essential role in supply chain management optimization. Discuss **FOUR** objectives of logistics management. **(8 marks)**

b) Object-oriented Modeling is one approach which focuses on the natural elements or building blocks of a logistics supply chain. Explain **THREE** of its benefits. **(6 marks)**

c) Logistics decision support tools have seen continuous advancement since the inception of Operations Research, particularly accelerating in the last decade. Explore **THREE** prominent decision support tools utilized in Logistics Composite Modeling. **(6 marks)**