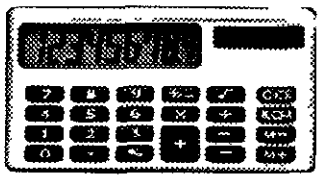
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

TRL308C

May/June 2011

LOGISTICS SYSTEMS (TRANSPORT ECONOMICS 308)

Duration 2 Hours 70 Marks

EXAMINERS :

FIRST :	MRS JN MATSOMA
SECOND :	PROF A BRITS
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Use of a non-programmable pocket calculator is permissible.

This examination script remains the property of the University of South Africa and may not be removed from the examination room.

This examination paper consists of 19 pages, including 2 pages for rough work.

INSTRUCTIONS:

1. **WRITE YOUR ANSWERS IN THIS EXAMINATION SCRIPT AND HAND IT TO THE INVIGILATOR WHEN YOU HAVE FINISHED.**
2. **ON THE FRONT COVER OF THIS EXAMINATION SCRIPT, DRAW A CIRCLE AROUND THE NUMBER OF THE LONG QUESTIONS THAT YOU ANSWERED.**
3. **READ THROUGH ALL OF THE QUESTIONS CAREFULLY.**

THIS EXAMINATION PAPER CONSISTS OF TWO SECTIONS [19 PAGES]:

SECTION A: ANSWER ALL THE COMPULSORY MULTIPLE-CHOICE QUESTIONS (20 MARKS)

SECTION B: ANSWER COMPLETE ANY TWO (2) OF THE THREE (3) LONG QUESTIONS (50 MARKS)

***PLEASE NOTE*: ONLY THE FIRST TWO (2) QUESTIONS THAT YOU ANSWER WILL BE MARKED. YOU WILL NOT BENEFIT IN ANY WAY IF YOU ANSWER ALL THREE (3) LONG QUESTIONS.**

TOTAL: 70 MARKS

SECTION A
ANSWER ALL OF THE QUESTIONS IN THIS SECTION.
TOTAL: 20 MARKS

QUESTION 1

Read each statement carefully and then choose the correct option. Indicate your answer by colouring in the letter corresponding to the correct option, for example: [C]

1.1 The radio frequency exchange consist of two technologies, one is used within relatively small areas, such as distribution centres, to facilitate two-way information exchange, the other one identifies containers as its moves through facilities or on transport equipment These technologies are known as **(1)**

(i) enterprise resource planning
(ii) radio frequency identification
(iii) radio frequency data communication
(iv) customer relationship management

[A] (i) and (ii)
[B] (ii) and (iii)
[C] (ii), (iii) and (iv)
[D] (i), (ii), (iii) and (iv)

1.2 The rationale for advanced planning and scheduling system consists of four components, The component that generates sales forecasts based on sales history and the one that defines and coordinates supply chain information resources and constraints, are known as **(1)**

(i) demand management
(ii) resource management
(iii) resource optimisation
(iv) resource allocation

[A] (i) and (ii)
[B] (ii) and (iii)
[C] (ii),(iii) and (iv)
[D] (i),(ii), (iii) and (iv)

1.3 The classification of a logistical system that refers to the flow of products, typically proceeds through a common arrangement of firms and facilities as it moves from origin to final destination, is called **(1)**

[A] echelon structure
[B] direct system
[C] combined system
[D] flexible system

1.4 Warehouses are used to store, sort and sequence materials and combine inventory for consolidated shipment facilities to the next destination customers in the supply chain Warehouses used to support customer accommodation are often referred to as _____ warehouses **(1)**

[A] supply-facing
[B] demand-facing
[C] value-facing
[D] manufacturing-facing

1.5 The method that assumes that a centre of gravity (or movement) represents the point where a warehouse will results in the lowest cost, is known as **(1)**

[A] ton-centre solution
[B] mile-centre solution
[C] ton-mile-centre solution
[D] time-ton-mile-centre solution

1.6 "If safety stock availability were established at 97 75 percent for combined probability of demand and lead time uncertainty, it would be anticipated that approximately 98 out of 100 items ordered would be delivered as specified" To which one of the following approaches in the logistics strategy does this example refer? **(1)**

[A] cost minimisation level
[B] threshold service level
[C] service sensitivity level
[D] safety stock level

1.7 The warehouse structure of the logistical system establishes the service that can be realised without changing the performance cycle or safety stock policy The above statement refers to **(1)**

[A] location modification
[B] performance cycle modification
[C] safety stock modification
[D] order cycle modification

1.8 Which of the following are steps in the process to finalise a company's strategy? **(1)**

(i) conducting a sensitivity analyses
(ii) measuring service availability and capability
(iii) determine the lowest-total-cost network
(iv) determine the location of warehouses

[A] (i) and (ii)
[B] (ii) and (iii)

[C] (ii), (iii) and (iv)
[D] (i), (ii), (iii) and (iv)

1.9 A model of mathematical programming that can be used in determining the location for a single facility, is known as **(1)**

[A] an analytic model
[B] an optimisation model
[C] a simulation model
[D] a ton-mile model

1.10 There are two techniques for location decisions The one is used when attempting to test the proposed logistical system in a real-world environment in order to investigate the effect of implementing a specific logistical system, the other one to determine the optimum location site for a single warehouse by means of weight, distance and time criteria These techniques are known as_____ and _____ techniques **(1)**

(i) mathematical
(ii) analytic
(iii) simulation
(iv) geographical

[A] (i) and (ii)
[B] (ii) and (iii)
[C] (ii), (iii) and (iv)
[D] (i), (ii), (iii) and (iv)

1.11 _____ is the magnitude of stock-out rather than the probability thereof **(1)**

[A] Performance cycle
[B] Fill rate
[C] Safety stock
[D] Reorder point

1.12 The transport decision concerned with the allocation of short-term resources such as daily or weekly routes, is known as a **(1)**

[A] strategic transport decision
[B] tactical transport decision
[C] strategic routing decision
[D] transport analysis decision

1.13 Which one of the following categories of transport techniques uses mathematical (linear) programming to identify the best routes? **(1)**

[A] heuristic approaches
[B] interactive approaches
[C] combination of three approaches
[D] exact approaches

1.14 When formulating a logistical strategy, it is necessary to evaluate the relationship between alternative customer service levels and associated cost A system designed to achieve a least-total-cost driven purely by a cost-to-cost trade-off, is known as **(1)**

[A] cost minimisation level
[B] threshold service level
[C] service sensitivity level
[D] safety stock level

1.15 Suppose you open a dairy to sell milk Your average daily demand is 20 litres of milk and the average performance cycle is 10 days What is your reorder point? **(1)**

[A] 20 litres
[B] 200 litres
[C] 30 litres
[D] 2 litres

1.16 Which of the following is included in the application orientated modules of the supply chain information systems information framework? **(1)**

(i) enterprise integration and administration
(ii) enterprise planning and monitoring
(iii) communication technology
(iv) financial and operations reporting

[A] (i) and (ii)
[B] (ii) and (iii)
[C] (ii), (iii) and (iv)
[D] (i), (ii), (iii) and (iv)

1.17 "To protect against stock-out when demand exceeds forecast, safety stock is added to base inventory " To which type of uncertainty, that directly impact the inventory policy, does this statement refer? **(1)**

[A] demand uncertainty
[B] performance cycle uncertainty
[C] safety stock with uncertainty
[D] fill rate uncertainty

1.18 Information-sharing technology is critical to facilitate logistics and supply chain planning and operations Which one of the following logistics communication systems allows supply chain members to quickly track and communicate movement details with high accuracy and timeliness? **(1)**

[A] barcode and scanning
[B] radio frequency exchange
[C] internet
[D] global data synchronisation

1.19 One of the major components of supply chain information systems designed to assist in evaluating the supply chain alternatives and advise supply chain decision making, is known as **(1)**

[A] enterprise resource planning systems
[B] communication systems
[C] execution systems
[D] planning systems

1.20 The supply chain information systems are the thread that links logistics activities into an integrated process and consist of four levels of functionality Which one of the following is characterised by formalised rules, procedures and standardised communications, large volume transactions and an operational day-to-day focus? **(1)**

[A] transaction system
[B] management control
[C] logistics decision analysis
[D] strategic planning

[20]

SECTION B

ANSWER ANY TWO (2) OF THE THREE (3) QUESTIONS IN THIS SECTION.

TOTAL: 50 MARKS

QUESTION 2

Pretoria Portland Cement Company Ltd (PPC) is a cement company situated in Pretoria that sells its product over a broad geographical market area. It decided to open a small warehouse for its customers in Johannesburg.

Assume that the company's **average shipment size** is **1 000 kg** from Pretoria to Johannesburg and the cost of transport is **R50 per 100 kg**

The cost of transport within the Johannesburg area is **R15 per 100 kg**, however for the volume of shipment amounting to **5 000 kg** or greater is **R10 per 100 kg.**

2.1.1 How much would the freight rate of a local shipment per 1 000 kg be? **(4)**

2.1.2 How much would the freight rate of a local shipment per 7 000 kg be? **(4)**

2.1.3 How much should the average distribution cost be if a warehouse could be established in the Johannesburg area? **(2)**

[10]

2 1 1 How much would the freight rate of a local shipment per 1 000 kg be? **(4)**

2 1 2 How much would the freight rate of a local shipment per 7 000 kg be? **(4)**

2 1 3 How much should the average distribution cost be if a warehouse could be established in the Johannesburg area? **(2)**

2 2 "Enterprise resource planning and enterprise execution planning are known as the major components of logistics information systems" **(15)**
Do you support the above statement or not? State and discuss three reasons for your answer

QUESTION 3

	The City Centre Tile Market situated in Groenkloof has received a number of customer complains related to incomplete orders as a result of shortages in stock and other delivery failures. Advise them on how a pre-planned strategy can be used to improve customer service by referring to the following:		
3.1.1	Four alternative ways to meet specific service requirement	**(9)**	
3.1.2	A structure showing flexibility in the logistics operating system	**(6)**	
			(15)

3 1 1 Four alternative ways to meet specific service requirement **(9)**

3 1 2 A structure showing flexibility in the logistics operating system **(6)**

3 2 Explain the last step to be followed when conducting a trade-off between service and cost, by illustrating with a figure how logistics cost and the number of warehouses is weighed against each other **(10)**

[25]

QUESTION 4

Discuss transport decisions as one of the methods or techniques of developing the logistics network. Refer to the following:

4.1 Five transport problems that need to be analysed when a logistics network is being developed **(5)**
4.2 The techniques to analyse transportation **(10)**
4.3 Three types of data required to analyse transport **(10)**

[25]

4 1 Five transport problems that need to be analysed when a logistics network is being developed **(5)**

4 2 The techniques to analyse transportation **(10)**

4 3 Three types of data required to analyse transport **(10)**

[25]

TOTAL [70]

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ROUGH WORK