



MODULE : LOGISTICS MANAGEMENT SYSTEMS B

CODE : LBS3B01/LMS23B3

DATE : 23 NOVEMBER 2017

DURATION : 3 HOURS

TOTAL MARKS : 180

EXAMINER : DR S CARSTENS

MODERATOR : MS U KUSSING

NUMBER OF PAGES : 4 PAGES

INSTRUCTIONS TO CANDIDATES:

- Answer all the questions.
- Question papers must be handed in.
- This is a closed book assessment.
- Read the questions carefully and answer only what is asked.
- Number your answers clearly.
- Write neatly and legibly.
- Structure your answers by using appropriate headings and sub-headings.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

WM is a widget manufacturer in South Africa and distributes widgets through their network of distribution centres (DCs) and warehouses nationally. WM has their own vehicle fleet consisting of 4x2 truck tractors and semi-trailers (long-haul), as well as smaller 5-ton rigid trucks for local deliveries. The raw materials and components used in the manufacturing process are supplied by local suppliers, as well as international suppliers. WM has been operating since 1975 and has recently started to experience pressure on their profit margins as a result of a very competitive widget market in South Africa.

Industry forecasts indicate that the levels of competition in this market will increase in future. At WM's strategic planning session it was agreed that one area of the business that needs to be addressed is their logistics. Therefore, WM contracted a supply chain and logistics consultancy company to assist them to address their logistics issues. The company was adamant that potential solutions should be investigated that relate not only to the current market, but also the future widget market.

The consultants have initially identified two broad areas where WM could improve to become more competitive i.e. cost and service levels. At subsequent meetings, after investigating the company's operations, the consultants have identified specific issues that need to be addressed which include the following:

- The lack of proper information for optimal decision making
- Significant demand variations
- Significant inventory level variations
- High warehousing cost compared to industry standards
- High transport cost compared to industry standards

The consultants indicated that WM should focus more on a supply chain approach in an effort to address the above mentioned issues.

QUESTION 1

(41 MARKS)

- a) Since the consultants have indicated that WM should focus on supply chain management, what advice could you give them relating to a framework for managing supply chain information? (25)
- b) Identify and describe the 4 basic supply chain software solution categories that WM should consider implementing. (16)

QUESTION 2

(27 MARKS)

- a) Describe the types of inventory (stock) that may be part of WM's inventory? (12)
- b) WM orders a component from a local supplier which currently delivers the orders to the manufacturing plant at a transport rate of R2.00/unit. The associated transit time is 8 days. However, the supplier has indicated that they can reduce the transit time by 2 days, but the transport rate will increase to R2.50/unit. Should WM consider this offer?

Assume the following additional information:

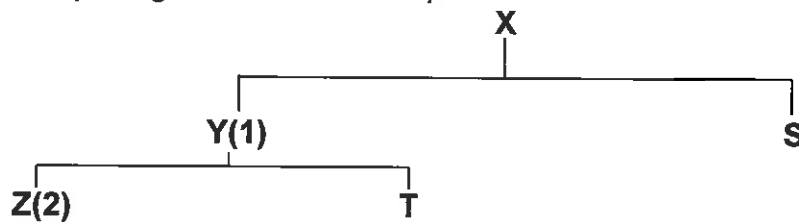
Annual orders	3600 units
Order cost	R200
Value per unit	R100
Inventory carrying cost	25%
In-transit carrying cost	10%

Note: Assume 360 days/annum.

(15)

QUESTION 3**(40 MARKS)**

- a) Explain how WM may reduce inbound inventory levels through the implementation of a MRP system by referring to the objectives of the system, as well as its associated positive influences. (13)
- b) Use the following information to illustrate the logic of the MRP process by completing a MRP matrix for parts Y and Z:



Product X has planned order releases of 30 in week 2 and 30 in week 4.

Part Y Lead time: 2 weeks Lot size: 50	Week				
	0	1	2	3	4
Gross requirements					
Scheduled receipts					
Inventory on hand	30				
Net requirements					
Planned order receipts					
Planned order releases					

Part Z Lead time: 1 week Lot size: minimum 90	Week				
	0	1	2	3	4
Gross requirements					
Scheduled receipts					
Inventory on hand	25				
Net requirements					
Planned order receipts					
Planned order releases					

(17)

- c) The high inventory levels experienced by WM may be a result of the lack of understanding demand variations. Explain how a DRP system may address the inventory level issue (definition) and also how the logistics function may benefit by the implementation of such a system. (10)

QUESTION 4**(40 MARKS)**

- a) A significant contributor to high transport cost may be the location of the facilities. To this end the consultants analysed the existing logistics network. They proposed that the relocation of the manufacturing plant in Johannesburg may reduce transport costs. Evaluate the proposed plant relocation with the following information:

Facility locations, transport volumes and rates

Facility	Locations		Transport volume (units)	Transport rate (cent/unit/km)
	X (km)	Y (km)		Plant to DC
Current plant location	91	400		
Proposed plant location	140	450		
Johannesburg DC	25	250	600	60
Durban DC	300	375	450	80
Cape Town DC	15	175	550	110

- Would the centre-of-gravity method indicate a similar plant location as the proposed location? (20)
- b) Even though the warehousing cost was identified as being high, warehousing has certain benefits. Explain the economic benefits of warehousing. (10)
- c) Explain the benefits of a Warehouse Management System to convince the management of WM to consider implementing such a system. (10)

QUESTION 5**(32 MARKS)**

- a) Although its objectives are different, an ERP system is closely linked to supply chain management software and could supply information relevant to supply chain decisions. Discuss the application-oriented modules of ERP. (14)
- b) Explain how an APS system may assist WM with their supply chain management approach by referring to its characteristics. (6)
- c) Explain how APS systems handle supply chain planning difficulties by explaining the APS components. (12)

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