

TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF BUSINESS

DEPARTMENT OF MANAGEMENT SCIENCE

UNIVERSITY EXAMINATION FOR:

BACHELOR OF COMMERCE – PROCUREMENT

BPC 4406: INVENTORY MANAGEMENT

END OF SEMESTER EXAMINATION

ORDINARY PAPER

SERIES: AUGUST 2019

TIME: 3 HOURS

DATE: Pick Date 2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of five questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE (COMPULSORY) – 30 Marks

- a) Warehousing is used for the storage of inventories during all phases of the logistics process. Discuss any **FIVE** reasons why it is necessary for a firm to store inventories of any kind, while inventory carrying costs can be very high. **[10 marks]**
- b) Discuss **FOUR** main activities that take place within a warehouse. **[8 marks]**
- c) Explain the **FOUR** methods of item picking in a warehouse. **[8 marks]**
- d) Define those terms associated with computer application in inventory management
- i) Bar codes. **[2 marks]**
 - ii) Radio frequency identification **[2 marks]**

Question TWO

Distinguish between Dependent and Independent demand items, outlining an inventory management system which would be suitable for each category of items. **[20 marks]**

Question Three

- a) Explain the main principles of the Just-In-Time (JIT) approach to inventory management. **[10 marks]**
- b) Discuss factors need to be considered before a warehouse design can be drawn up. **[10 marks]**

Question Four

- a) Discuss the effect of the JIT approach upon purchasing operations. **[10 marks]**
- b) In any picking operation there will be a trade-off between the need to stock the full range of products in a small area as possible and holding quantities that minimize replenishment. Describe the five objectives your picking operation should look to achieve. **[10 marks]**

Question Five

Distinguish between Private and Public Warehousing. What are the Advantages and Disadvantages of each type? **[20 marks]**

Question One

- a) Warehousing is used for the storage of inventories during all phases of the logistics process. Discuss any **FIVE** reasons why is it necessary for a firm to store inventories of any kind, while inventory carrying costs can be very high. **[10 marks]**
 - Reduce the risk of supplier failure or uncertainty safety and buffer stocks are held to provide some protection against such contingencies as strikes, transport breakdowns due to floods or snow, crop failures, wars and similar factors.
 - Protect angst lead time uncertainties, such as where supplier's replenishment and lead times are not known with certainty. In such cases an investment in safety tocks is necessary if customer service is to be maintained at acceptable levels.

- Meet unexpected demands or demands for customization of products as with agile production.
- Smooth seasonal or cyclical demand.
- Take advantage of lots or purchase quantities in excess of what is required for immediate consumption to take advantage of price and quantity discounts.
- Hedge against anticipated shortage and price increases, especially in time of high inflation or as a deliberate policy of speculation.
- Ensure rapid replenishment of items in constant, demand, such as maintenance supplies and office stationery.

b) Discuss **FOUR** main activities that take place within a warehouse. **[8 marks]**

c) Explain the **FOUR** methods of item picking in a warehouse. **[8 marks]**

- Basic order picking
- Batch picking
- Ware picking
- Zone picking.

Define those terms associated with computer application in inventory management:

iii) Bar codes. **[2 marks]**

iv) Radio frequency identification **[2 marks]**

Question Two

Distinguish between Dependent and Independent demand items, outlining an inventory management system which would be suitable for each category of items. **[20 marks]**

The main differences between independent and dependent demand.

Independent Demand	Dependent Demand
<ul style="list-style-type: none"> • Independent demand items are finished goods or other end items 	<ul style="list-style-type: none"> • Dependent demand items are typically subassemblies or components use during the production of a finished or end product.
<ul style="list-style-type: none"> • Demand for independent items cannot be precisely forecast 	<ul style="list-style-type: none"> • Demand is delivered from the number of units to be produced for example, demand for 1000 cars will give rise to a derived demand for 5000 car wheels.

Inventory Management System

Independent associated with	Dependent associated with
<ul style="list-style-type: none"> • ABC analysis • Fixed order quantities • Continuous and periodic review systems 	<ul style="list-style-type: none"> • Materials requirement Planning (MRPL) • Manufacturing Resource Planning (MRPL) • Enterprise Resource Planning (ERP) • Optimized Production Technology (OPT)

Question Three

a. Explain the main principles of the Just-In-Time (JIT) approach to inventory management. **[10 marks]**

- Zero defects all products with more than meet the quality expectation of the customer.
- Zero set-up time has no set-up time resulted in shorter production time, shorter production cycles and smaller inventories.
- Zero inventories – inventories, including work in process, finished goods and sub-assemblies, will be reduced to zero – this is the opposite of the traditional manufacturing philosophy of maintaining buffer stocks as a precaution against unreliable suppliers of fluctuating demand.
- Zero handling the elimination, so far as possible, of all non-value adding activities.
- Zero lead time is some markets, this is impossible, but the aim is to increase flexibility by using small batches of components or assemblies.

b. Discuss factors need to be considered before a warehouse design can be drawn up.

[10 marks]

- Physical characteristics of the product store.
- Stock holding volumes.
- Through put.
- Equipment available for storage and handling cost data.
- Existing equipment and building constraints.
- Statutory requirement.
- Market trends.
- Labour availability and quality.
- Service level requirement.
- Safety and security.

Question Four

a. Discuss the effect of the JIT approach upon purchasing operations. **[10 marks]**

Solution

- Liaison with the design function. The emphasis should be on performance rather than design specifications. Looser specifications enable suppliers to be more cost-effective by being more innovative with regard to the quality and function aspects of supplies. In JIT purchasing value analysis is an integral part of the system and should include suppliers.
- Liaison with suppliers – to ensure that they understand thoroughly the importance of consistency maintain lead times and high level of quality.
- Investigation of the potential of suppliers – within reasonable proximity of the purchaser to increase certainty of delivery and reduction of lead time.

- Establishing strong, long term relationships with suppliers in manual effort to reduce costs and share savings.
 - Establishment of an effective supplier certification programme which ensures that quality specifications are met before components leave the supplier so that receiving inspections are eliminated.
 - Evaluation of supplier performance and the solving of difficulties as an exercise in cooperation.
- b. In any picking operation there will be a trade-off between the need to stock the full range of products in a small area as possible and holding quantities that minimize replenishment. Describe the five objectives your picking operation should look to achieve.

Question Five

Distinguish between Private and Public Warehousing. What are the Advantages and Disadvantages of each type? **[20 marks]**

Solution

Private warehouse can be used to handle basic inventory levels required for least-cost logistics in markets where the volume justifies ownership while public warehouses a form of outsourcing, can be used in those areas where volume is not sufficient to justify ownership and/or to store peak requirements.

Public Warehousing

Advantages

- 1) Conservation of capital
- 2) The ability to increase warehouse space to cover peak requirements
- 3) Reduced risk
- 4) Economies of scale
- 5) Flexibility
- 6) Specific knowledge of costs.

Disadvantages

- 1) Problem to effective communication
- 2) Specialized services may not be available
- 3) Space may not be available when needed.

Private Warehousing

Advantages

- 1) Greater degree of control of management
- 2) Flexibility
- 3) Less costly over the long term
- 4) Utilization of human resource.
- 5) Tax benefit.

Disadvantages

- 1) Loss flexibility
- 2) Risk in investment materials.