



TECHNICAL UNIVERSITY OF MOMBASA

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Faculty of Engineering and Technology  
Department of Mechanical & Automotive Engineering  
UNIVERSITY EXAMINATION FOR:  
BSc. / B. Eng. Mechanical Engineering  
EMG 2516 : INDUSTRIAL MANAGEMENT  
SPECIAL/SUPPLEMENTARY EXAMINATION  
SERIES: SEPTEMBER 2018  
TIME: 2 HOURS  
DATE: Pick Date Sep 2018

**Instruction to Candidates:**

You should have the following for this examination

- *Answer booklet*
- *Non-Programmable scientific calculator*

This paper consists of **FIVE** questions. Attempt any other **THREE** questions.  
Maximum marks for each part of a question are as shown.

**Do not write on the question paper.**

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**Question ONE**

- Explain the Just –In-Time or Zero inventory essentials and give **THREE** challenges facing this system of inventory control(4marks)
- Explain the term capacity planning and give **THREE** types of capacities used in industrial management (4marks)
- Given that Kenya has a deficit of 200,000 houses per year due to the ever growing population, an investor wants to put a real estate construction company to build affordable residences to minimise the deficit. His selection for the facility layout lies between three towns; Nairobi, Eldoret and Mombasa. Develop at least six critical success factors and use the factor rating method to choose the best location (6marks)
- Discuss the main functions of management and give **THREE** objectives of management (6marks)

## Question TWO

- a) Differentiate between economies of scale and diseconomies of scale(4marks)
- b) Explain **FOUR** principles of materials handling used in manufacturing industries(6marks)
- c) Discuss material handling with respect to the following plant layouts and give **TWO** material handling equipment for each  
Fixed position  
Process layout  
Product layout (8marks)
- d) List any **FOUR** principles of plant layout (2marks)

## Question THREE

- a) Given that the annual demand for a certain product is 9360 units/year, the order quantity is 3900/order, the order cost is \$450/order and the holding cost is \$150/unit /year. Determine the following using Economic Order Quantity (EOQ) method of inventory control
  - i. Total annual cost
  - ii. Economic Order quantity (5marks)
- b) Business forecasting has many dimensions and varieties depending upon the utility and application. Explain **THREE** types of demand forecasting used in industrial management (5marks)
- c) Give **FOUR** factors to consider when planning material handling flow system (4marks)
- d) Discuss the following theories of management
  - i. Henri Fayol management theory
  - ii. Behavioral theory
  - iii. Frederick Taylor management theory (6marks)

## Question FOUR

- a) Discuss the following three deterministic models used in inventory control
  - i. Economic Ordering Quantity (EOQ) Model,
  - ii. ABC Analysis,
  - iii. FSN Model ( 6 marks)
- b)
  - i) A mould machine produces 1500 units per day. The production cost per unit is KES 150. It is seen that 75% of the units conform to specifications and 60% of the non-conforming units can be reworked at an additional expense of KES. 50

per unit, the rest 40% of the nonconforming units are scrapped. Calculate the cost per good unit

- ii) After implementation of process control program, it is seen that 80% of the units conform to specifications and 60% of the non-conforming units can be reworked at additional expense of KES. 50 per cop, the rest is required to be scrapped. What is the cost per good unit? (5marks)

d) Potential locations at Tanzania, Uganda and Kenya have the cost structures shown in the Table for a product expected to sell for \$150. Using break even analysis

- Find the most economical location for an expected to sell volume of 50,000 units per year.
- What is the expected profit if the site selected in (a) is used?
- For what output range is each location best? (9marks)

Potential location	Fixed cost/yr (\$)	Variable cost/unit (\$)
Tanzania	150,000	75
Uganda	200,000	50
Kenya	400,000	25

### Question FIVE

- Define the term Forecasting as used in capacity planning and give **FOUR** reasons why forecasting is important (5marks)
- Explain the major steps involved in forecasting and give **FOUR** characteristic of a good forecast (5marks)
- Define the term TQM and give **THREE** functions of a quality management system (4marks)
- Give **THREE** types of material handling methods used in industrial management (3marks)
- With the aid of a sketch discuss Maslow's hierarchy of needs for employees (3marks)