



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)  
*A Centre of Excellence*

*Faculty of Engineering & Technology*

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
**Institutional Based Programme**

**UNIVERSITY EXAMINATION FOR BACHELOR OF ENGINEERING IN  
MECHANICAL ENGINEERING**

EME 4409: INDUSTRIAL MANAGEMENT

**SPECIAL/SUPPLEMENTARY EXAMINATION**

SERIES: MAY/JUNE 2012

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer booklet*
- *Non-programmable calculator*
- *Drawing Instruments*

This paper consists of **FIVE** questions in **TWO** sections **A & B**

Answer question **ONE (COMPULSORY)** plus any other **TWO** questions

This paper consists of **TWO** printed pages

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**SECTION A (compulsory)**

**Question 1 (30 Marks)**

- a) List and describe any **THREE** ideal factory site locational factor considerations (4 marks)
- b) Explain why plant layout decisions affect:  
i) Flow of materials  
ii) Equipment utilization (8 marks)
- c) Distinguish between process and fixed production layout types giving a typical example in each case (10 marks)

- d) Explain any **THREE** goals of material handling that promote productivity (3 marks)

**Question 2 (20 marks)**

- a) Explain any **THREE** advantages of MRP system (6 marks)
- b) Explain the other cost that are not included in the inventory material cost (12 marks)
- c) Define lead time in procurement (2 marks)

**Question 3 (20 marks)**

- a) Define productivity in the manufacturing context indicating how it is calculated (5 marks)
- b) Outline the steps involved in conducting a time study (5 marks)
- c) Explain any **THREE** Therbligs used in motion study (6 marks)
- d) Distinguish between method study and work measurement (4 marks)

**Question 4 (20 marks)**

- a) Explain any **TWO** material handling principles (8 marks)
- b) (i) Explain any **TWO** potential injuries and the resulting improper material handling  
(ii) What **FOUR** precautions can be observed to avoid injuries when handling materials (12 marks)

**Question 5 (20 marks)**

- a) Table 1 shows **THREE** random samples of four parts designed to be 50mm long that were collected at one hour intervals from a production line. Establish the control limits for these parts using a 99.74% confidence interval value of 0.729. Sketch the resulting mean chart. (16 marks)

**Table 1**

Sample	Length (mm)			
1	51	50	50	49
2	54	49	51	50
3	49	49	50	48

- b) List any **FOUR** dimensions that describe quality of a product (4 marks)