



## TECHNICAL UNIVERSITY OF MOMBASA

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*Faculty of Engineering and Technology in Conjunction with Kenya Institute of  
Highways & Building Technology (KIHBT)*

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

**UNIVERSITY EXAMINATION FOR 2017/2018:**

**HIGHER DIPLOMA IN TECHNOLOGY  
ELECTRICAL POWER ENGINEERING**

**EEE 3205: ENGINEERING MANAGEMENT & PROFESSIONAL PRACTICE I**

**END OF SEMESTER EXAMINATION**

**SERIES: DECEMBER 2017**

**TIME: 2 HOURS**

**DATE:** Pick Date Select Month Pick Year

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of **FIVE** Questions; each question carries 20 Marks. Attempt any **THREE** Questions.

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

### QUESTION ONE

- (a) i. State any two sources of prime costs in project estimation **(2 marks)**  
(ii) Distinguish between the following personnel concerning engineering projects:-  
  - Site manager
  - Clerk of works
  - Sub-contractor**(6 marks)**
- (b) Define the term contract **(2 marks)**
- (c) Explain four circumstances under which:-  
(i) A valid contract may be rendered void  
(ii) An offer may be terminated **(4 marks)**
- (d) Explain the following terms as essentials for valid contract  
(i) Retention period  
(ii) Variation  
(iii) Lawful **(6 marks)**

### QUESTION TWO

- (a) State the merits of :-  
(i) Planned maintenance  
(ii) Break down maintenance  
(iii) Statistical quality control **(6 marks)**
- (b) Outline the steps required by planned preventive maintenance system to ensure efficient use of machines in a workshop. **(4 marks)**
- (c) Explain how replacement may be preferred to either repair or services of a machine. **(4 marks)**
- (d) Draw the optimum provision graph and explain the importance of the point of optimum level maintenance. **(6 marks)**

### QUESTION THREE

- (a) State the objectives of the following processes in production situation.  
(i) Method study  
(ii) Work measurement **(7 marks)**

(b) Based on work measurement for costing of physical work in construction projects, explain the following;

(i) Piece work

(ii) Hourly rate

(iii) Fixed time

**(6 marks)**

(c) Explain the phrase “fitness of purpose” as used in quality control

**(3 marks)**

(d) Calculate the value of reliability for a batch of 3000 items, when a sample of 300 items was tested and 50 of them were found defective in a statistical quality control method.

**(4 marks)**

#### **QUESTION FOUR**

(a) i. Explain the meaning of the term automation as used in manufacturing

(ii) State four benefits of a (i) above

**(5 marks)**

(b) Outline the key activities of post tender stage of an engineering construction contract

**(5 marks)**

(c) An electrical sub-contractor undertook a project with activities as listed in Table Q4 below. Use network analysis to:

(i) Show the critical path on the network

(ii) Show the duration of the whole project

(iii) Determine float for activities D, J and M.

**TABLE Q4**

<b>Activity</b>	<b>Duration in Months</b>	<b>Node number (Event)</b>	<b>Activity</b>	<b>Duration in Months</b>	<b>Node No. (Event)</b>
A	1	1-3	K	3	6-10
B	2	1-3	L	4	8-9
C	2	1-4	M	2	9-10
D	3	2-5	N	2	10-11
E	0	3-6	O	1	11-12
F	3	3-7			

G	2	4-7			
H	1	5-6			
I	2	5-8			
J	2	6-9			

**(10 marks)**

**QUESTION FIVE**

(a) State four advantages of delegation in management **(4 marks)**

(b) Describe the activities of the client at the pre-tender stage in contract management **(4 marks)**

(c) Describe what you understand by portfolio management for a production firm. **(6 marks)**

(d) Explain the following tools and techniques as used in layout of plants for production

(i) Flow process chart

(ii) Machine models **(6 marks)**