



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

**FIRST YEAR FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN
ELECTRICAL AND ELECTRONICS ENGINEERING**

SUPPLEMENTARY EXAMINATION

EPC 103: INTRODUCTION TO ENGINEERING PROFESSION

DATE: 31/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Attempt ANY THREE Questions. ALL the Questions have Equal marks.

1.
 - a) Explain the following types of maintenance
 - i) Running maintenance
 - ii) Predictive maintenance. (4 marks)
 - b) Define the term “ Work ethic ”. (2 marks)
 - c) Define the following terms as per the electric power Act , 1997.
 - i) Electrical installation
 - ii) Electrical Contractor. (6 marks)
 - d) Define the term “ quality control”. (2 marks)
 - e) Explain the following costs related to Quality Control
 - i) Preventive cost
 - ii) Appraisal cost . (4 marks)
 - f) Outline two functions of the Kenya Bureau of Standards in the service Industry. (2 marks)

2. a) Explain the following terms
- i) Code of Conduct
 - ii) Integrity (4 marks)
- b) i) State any three importance of ethics in Engineering (3 marks)
- ii) Explain two significance of values in society. (2 marks)
- c) State any two powers that are conferred to the Electricity regulatory Board by the electric Power Act. (2 marks)
- d) Explain the following classes of electrical installation licenses granted by the electrical regulatory board.
- i) Class C2
 - ii) Class B (4 marks)
- e) i) State three advantages of Aluminum as a conductor material. (3 marks)
- ii) State two characteristic properties of a soldering flux. (2 marks)
3. a) State any two of the following
- i) Advantages of preventive maintenance
 - ii) Causes of machine breakdown (4 marks)
- b) Define the following electrical materials
- i) Conductor
 - ii) Insulator (4 marks)
- c) Explain the following electrical materials
- i) Nickel
 - ii) PVC (6 marks)
- d) State any four materials used in the following class of insulators
- i) Class 'A'
 - ii) Class 'B' (4 marks)
- e) State the maximum permissible continuous temperature in $^{\circ}\text{C}$ for the following class of insulating materials.
- i) Class 'B'
 - ii) Class 'H' (2 marks)

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- a) Give any two causes of the following faults that occurs in portable electric tools.
 - (i) Flashing at brushes
 - (ii) Machine does not start when switched "ON". (4 marks)
 - b) State the following
 - i) Two objective of preventive maintenance.
 - ii) Two disadvantages of breakdown maintenance. (4 marks)
 - c) State the registration fee paid for the application of the following approved licenses of electrical contractors.
 - (i) Class 'C1'
 - ii) Class "A2" (2 marks)
 - d) Explain, as per Rule 8 of the Electric Power act, any two requirements to comply with in undertaking Electrical Installation work . (4 marks)
 - e) Describe the following tools used in workshops;
 - i) Bench Vice
 - ii) Hacksaw. (6 marks)
- 5.
- a) Describe the following parts of the centre lathe.
 - (i) The Headstock
 - (ii) The tail stock (4 marks)
 - b) Explain any two maintenance procedures for a portable electrical tool. (4 marks)
 - c) Engineers are expected to uphold and advance the integrity, honor and dignity of the engineering profession. Explain any four fundamental principles that should be observed by the members of the Engineering board of Kenya. (8 marks)
 - d) State the following
 - i) Two objectives of quality control .
 - ii) Two advantages of quality control. (4 marks)