



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

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

EPC 103: INTRODUCTION TO ENGINEERING PROFESSION

DATE: 2/8/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

Answer Question One and Any Other Two Questions

SECTION A: COMPULSORY QUESTION

1. a) Describe the following types of maintenance
 - i) Preventive maintenance
 - ii) Breakdown maintenance (4 marks)
- b)
 - i) Define the term code of conduct (2 marks)
 - ii) State three functions of a code of conduct in an organization (3 marks)
 - iii) State two methods of promoting the code of conduct in an organization. (2 marks)
- c) Define the following terms as per the electric power Act, 1997.
 - i) Electrical installation license
 - ii) Telecommunication plant (4 marks)
- d)
 - i) Explain the term “quality control”
 - ii) State any three factors that contribute to the marketability of quality product. (5 marks)

- e) Outline two roles of the Kenya Bureau of Standards in the service Industry (2 marks)
- f) Describe the following tools used in workshops
 - i) Hand file
 - ii) Centre Punch (6 marks)
- g) State any two advantages of copper as a conduct material (2 marks)

SECTION B – ATTEMPT ANY TWO QUESTIONS

2.
 - a) Explain the following terms
 - i) Ethics
 - 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 (6 marks)
 - e) State three advantages of Aluminum as a conductor material. (3 marks)
3.
 - a) State the following
 - i) Two objectives of quality control .
 - ii) Two advantages of quality control. (4 marks)
 - b) Outline any two of the following
 - i) Advantages of preventive maintenance
 - ii) Causes of machine breakdown (4 marks)
 - c) Define the following electrical materials
 - i) A Conductor
 - ii) An Insulator . (4 marks)
 - e) Explain the following materials
 - i) Nickel
 - ii) PVC (6 marks)

- f) 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)
4. 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 license registration fee paid by electrical contractors for approved applications in the following classes ;
- (i) Class 'C1'
 - ii) Class "A2" (2 marks)
- d) Explain two requirements to comply with in undertaking Electrical installation work and as provided in Rule 8 of the Act. (4 marks)
- e) Describe the blow lamp method of making a wiped joint between two pipe- like sections of an electrical work. (6 marks)
5. a) Engineers are expected to uphold and advance the integrity, honor and dignity of the engineering profession. State any four fundamental principles that should be observed by the members of the Engineering board of Kenya. (4 marks)
- b) State four characteristic properties of a soldering flux. (4 marks)
- c) State any four materials used in the following class of insulators
- i) Class 'A'
 - ii) Class 'B' (2 marks)
- d) Explain two maintenance procedures for a portable electrical tool. (4 marks)
- e) Describe the following parts of the centre lathe.
- i) The Headstock
 - ii) The tail stock (6 marks)