



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (ELECTRICAL AND ELECTRONICS ENGINEERING)

ECU 108: INTRODUCTION TO THE ENGINEERING PROFESSION

DATE: 22/6/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

- (i) There are **Five** questions.
- (ii) Question No.1 is **Compulsory** and carries **30 Marks**.
- (iii) Select any **other Two** questions, each of which carries 20 Marks.
- (iv) Define all symbols used.
- (v) Marks will be awarded for procedure, methodologies used and not necessarily on the final answer.

1. a) (i) State the focus of Civil Engineering and what it entails. (6 marks)
 (ii) Give a concise description of who a Professional Engineer is. (4 marks)
- b) (i) Explain the following technical terms: -
 1. Building works (2 marks)
 2. Erection of a building. (2 marks)
 (ii) What is the focus of Petroleum Engineering. (2 marks)
 (ii) Indicate which engineering disciplines emerged during the Renaissance Era, and the period of their growth. (5 marks)
- c) (i) Outline the steps followed during the Preliminary Design Stage of Building Works. (3 marks)
 (ii) Explain the *Representation Role* of a Manager. (3 marks)
 (ii) Write a one paragraph essay on Standards of Achievement in the practice of Engineering. (3 marks)
2. a) (i) Outline the activities a Consulting Engineer is required to undertake during the Design Details Stage of a Building and Civil Works. (6 marks)
 (ii) Incoming electrical supplies are some of the Electrical Engineering services in building projects. Name two other related such services clearly indicating the relationship. (4 marks)

- b) Consider a pre-feasibility study in project engineering.
 - (i) Explain its role. (5 marks)
 - (ii) Outline the questions it answers. (5 marks)
- 3.
 - a) Agricultural and Biosystems Engineering is one of the interdisciplinary fields.
 - (i) Name three other such fields. (3 marks)
 - (ii) Show why they fall under this category. (4 marks)
 - b) A Quantity Surveyor is one of the key members of the Consulting Team of professionals on a building project.
 - (i) State his/her role and show why it is necessary. (5 marks)
 - (ii) Give the other members of the Team and their roles. (8 marks)
- 4.
 - a)
 - (i) Aerospace Engineering branch falls under the category of vehicle engineering. Name two other similar branches and justify your selection. (2 marks)
 - (ii) Using suitable examples, distinguish between auxiliary equipment and production equipment. (8 marks)
 - b) What factors should be taken into consideration for an industrial project when:-
 - (i) Determining plant layout. (3 marks)
 - (ii) Providing for future extension and expansion. (3 marks)
 - c) Show the need for *Standards of Achievement* in the practice of engineering. (4 marks)
- 5.
 - (a) Explain the need for *Standards of Achievement* in the practice of engineering. (4 marks)
 - (b)
 - (i) Mechanical Engineering has four key areas of specialization. Name them. (4 marks)
 - (ii) Describe the essential components for each of the areas of specialization cited in (i). (12 marks)