



MACHAKOS UNIVERSITY

University Examinations for 2020/2021

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (ELECTRICAL AND ELECTRONICS ENGINEERING)

BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECU 108: INTRODUCTION TO THE ENGINEERING PROFESSION

DATE: 12/8/2021

TIME: 11:00 – 1:00 PM

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 Mechanical Engineering and what it entails. (6 marks)
 - (ii) Give the scope of Telecommunication Engineering. (4 marks)
 - (b)
 - (i) Outline the steps followed during the Preliminary Design Stage of Building Works. (3 marks)
 - (ii) Explain the *Representation Role* of a Technical Engineer Manager. (3 marks)
 - (ii) Write a one paragraph essay on Standards of Achievement in the practice of Engineering. (4 marks)
 - (c)
 - (i) Pupilage is an importance stage in the development of a professional engineer. Explain why. (3 marks)
 - (ii) Outline the two-digit *ISIC* Classification. (3 marks)
 - (iii) Explain why Mechanical Engineering grew during the industrial revolution and how. (4 marks)

2. (a) (i) Explain the importance's of *Building Code*. (6 marks)
- (b) (i) Discuss various service offered by Mechanical Engineering discipline (8 marks)
- (ii) Outline the key areas of specialization for Electrical Engineers and state their application. (6 marks)
3. (a) In an Industrial Project, the determination of the demand for its products is vital. Explain why this is so hence describe how one would estimate the respective market size. (10 marks)
- (b) Demonstrate thorough understanding of:-
- (i) Capital Structure for an Industrial Project. (5 marks)
- (ii) Working Capital. (5 marks)
4. (a) Explain the terms '*Design Consulting Team*' in detail and state its role in building projects. (10 marks)
- (b) Considering a pre-feasibility study in project engineering explain its role and the question it answers (10 marks)
5. (a) During the establishment of an industrial project, the investor incurs preliminary and pre-operational expenses. List these costs and indicate why they are essential. (10 marks)
- (b) *Site Preparation* and *Building Construction* are necessary for Civil Works during the implementation of an Industrial Project. Describe what each entails. (10 marks)