



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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## UNIVERSITY EXAMINATIONS 2023/2024

THIRD YEAR SECOND SEMESTER EXAMINATION FOR DEGREE OF BACHELOR OF EDUCATION IN TECHNOLOGY IN MECHANICAL ENGINEERING, BACHELOR OF EDUCATION TECHNOLOGY IN ELECTRICAL ENGINEERING, BACHELOR OF EDUCATION TECHNOLOGY IN BUILDING AND CIVIL ENGINEERING

**ECT 3380/ECT 3381/ECT 3382: MECHANICAL ENGINEERING SUBJECT METHODS/CIVIL AND BUILDING TECHNOLOGY SUBJECT METHODS/ELECTRICAL AND ELECTRONICS TECHNOLOGY SUBJECT METHODS**

**DATE: APRIL 2024**

**TIME: 2 HOURS**

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**INSTRUCTIONS: Answer Question ONE and any other TWO questions.**

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### QUESTION ONE (30 MARKS)

- a. Explain the meaning of the following terms as applied to technical education. (4 marks)
  - i. Competency-Based Education and Training (CBET)
  - ii. Instruction
  - iii. Training
  - iv. Education technology
- b. Discuss three challenges facing the implementation of Competency-Based Education and Training (CBET) in technical training institutions. (3 marks)
- c. Explain three critical roles of having clear and measurable learning outcomes in designing a successful lesson for an engineering class. (3 marks)
- d. Explain two benefits of using self-reflection in micro-teaching by the teacher trainee in preparation for teaching practice. (2 marks)



- e. Discuss two factors to consider when choosing a research center for a technical training visit (4 marks)
- f. Discuss two challenges of integrating ICT by the trainers in technical training institutions. (4 marks)
- g. Identify a specific task in your subjects of specialization and prepare the following:
  - i. A practical assessment tool with not more than two tasks for the candidate (5 marks)
  - ii. An observation/product checklist for the assessor (5 marks)

### **QUESTION TWO (20 MARKS)**

- a. Discuss five active learning strategies that can be used for training in an engineering class for ensuring an inclusive and engaging learning environment that caters to individual needs of the trainees. (10 marks)
- b. Describe three strategies for evaluating the quality and reliability of online learning resources for technical training. (6 marks)
- c. Discuss two techniques for ensuring effective communication in an engineering class (4 marks)

### **QUESTION THREE (20 MARKS)**

- a. Explain five reasons for using a variety of learning resources during a technical training lesson. (10 marks)
- b. Discuss the five challenges faced by KNEC in conducting effective evaluation in technical institutions, and propose strategies to overcome each of them. (10 marks)

### **QUESTION FOUR (20 MARKS)**

- a. Explain five factors a trainer should consider when preparing schemes of work for a technical class. (10 marks)
- b. Discuss three roles of the industry in technical training. (6 marks)
- c. Explain two challenges that can hinder effective collaboration between the industry and technical training institutions. (4 marks)

**QUESTION FIVE (20 MARKS)**

- a. Describe five characteristics of effective professional documents for technical training. (10 marks)
- b. Discuss five roles of technology in facilitating Competency-Based Education and Training. (10 marks)

