



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

**THIRD YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF
TECHNOLOGY IN MECHANICAL ENGINEERING**

EMT 308 – SAFETY ENGINEERING

DURATION: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Answer question one and any other two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a. Define the term plant layout. (3marks)
- b. Name three causes of accidents (3marks)
- c. State the guiding principles applied in ergonomic design (3marks)
- d. Differentiate between slip and fall when describing accidents. (4marks)
- e. Name two common cause of slips (4marks)
- f. Name the characteristics and fire extinguishers in the following types of fires. (4marks)
- g. State four basic roles of a first and personnel in a manufacturing plant. (4marks)
- h. Sketch and define combination type of layout of a shop floor. (5marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a. Define the term risk (2marks)
- b. Differentiate between the following terms citing an example of each of the terms.
 - i. Long-term physical danger (3marks)
 - ii. Long-term psychological danger (3marks)
- c. Describe the steps to be followed in case of occurrence of workplace injury. (12marks)

QUESTION THREE (20 MARKS)

- a. Describe the levels of hazard control that you would take to control gas explosion from a gas refill plant. (8marks)
- b. Clearer production is a tool set up to identify and improve sustainable production in all processing industries. Discuss five pillars that must be observed under this mode. (12marks)

QUESTION FOUR (20 MARKS)

- a. Differentiate between product and process layout. (4marks)
- b. You have been given an assignment by a client to come up with a good plant layout for a vehicle assembly plant. Discuss eight basic requirements that you must consider. (16marks)

