



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF _____

DEPARTMENT OF

UNIVERSITY ORDINARY EXAMINATION

2023/2024 ACADEMIC YEAR

**FOURTH YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR
OF**

EES432: TRANSMISSION LINES AND ELECTROMAGNETIC WAVES

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)

- i. List four requirements of a typical CAD/CAM computer (4marks)
- ii. With the help of a schematic diagram, describe the basic structure of a computer system. (6marks)
- iii. Explain any three advantages of CAD/CAM (6marks)
- iv. List any four types of semi-conductor memory units in use (4marks)
- v. Describe any three display media that are used in CAD/CAM (6marks)
- vi. Describe any two principal technologies that are used in graphical printers (4marks)

SECTION TWO: ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a) Differentiate between G codes and M codes (3marks)
- b) Give six examples of letters used in G codes and their functions.
- c) State the functions of the following M codes in CNC machines (6marks)
 - a) M00
 - b) M02
 - c) M03
 - d) M06
 - e) M08
 - f) M09
- d) List five machining operations in which CNC machines can be used (5marks)

QUESTION THREE (20 MARKS)

- i) Describe any two types of transformations encountered in CAD/CAM (4marks)
- ii) Explain the importance of clipping in displaying graphical images (3marks)
- iii) A square with an edge length of 20 units is located in the origin with one edge lying at 0° as shown in Fig2, determine the new coordinates of the square if:-

- a) It is reflected about $y=x$
- b) If is rotated by $+$ _____ (7marks)
- iv) Figure 1 shows an object P rotated at an angle $\theta = 30^0$ Determine the transformation matrix that will give the new position P* after rotation (6marks)

QUESTION FOUR (20 MARKS)

- i) Briefly explain the historical development of numerical control technology (6marks)
- ii) List any five functions that may be automated in NC machines (5marks)
- iii) List five industries in which NC machines find application (5marks)
- iv) State four limitations of NC machines (4marks)