MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER EXAMINATIONS

FOR A DIPLOMA

IN

MECHANICAL ENGINEERING

COURSE CODE:	DME 088
COURSE TITLE:	CAD/CAM

DATE: 12TH APRIL 2023   **TIME: 2.00 PM – 4.00PM**

INSTRUCTIONS TO CANDIDATES

Answer question **ONE** and any other **TWO** questions

TIME: 2 Hours

This Paper Consists of 3 Printed Pages. Please Turn Over

QUESTION ONE (30 MARKS)

a) State FOUR advantages of NC machines over conventional machines   (4 marks)

b) Explain the following terms as used in co-ordinate NC system.   (8 marks)

      i) Linear interpolation

      ii) Circular interpolation

      iii) Incremental

      iv) Absolute position system

c) State FIVE features of graphics software   (5 marks)

d) What is a robot? State Three industrial applications of robots.   (4 marks)

e) List THREE input devices used in general graphics applications   (3 marks)

f) Explain any THREE types of transformations implemented in 2D graphics.   (6 marks)
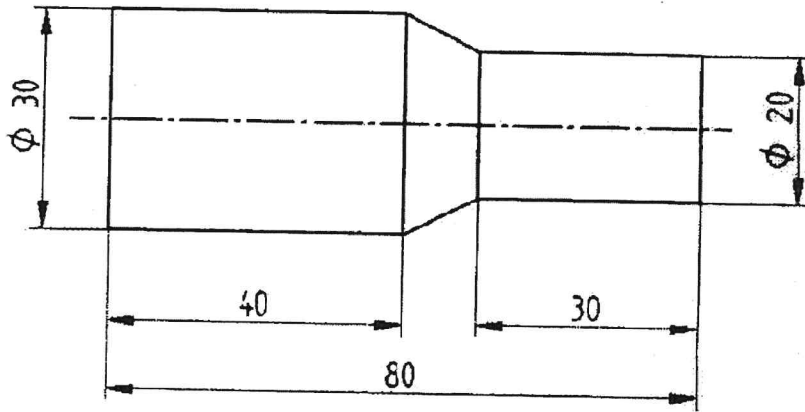

QUESTION TWO (20 MARKS)

a) Discuss steps involved in Shigley's model for design process.   (10 marks)

b) State FOUR functions of CAM   (4 marks)

c) List FOUR drawbacks of NC machines   (4 marks)

d) State **TWO** display devices used in CAD workstation   (2 marks)

QUESTION THREE (20 MARKS)

a) Distinguish between NC, CNC and DNC?   (3 marks)

b) What is CAD? Explain FIVE benefits for implementing CAD in an industry   (7 marks)

c) Write a part program for the component shown in the figure Q3 below. Given; the work material is mild steel, work size = 32mm diameter, length = 90mm, speed =800 rpm, feed = 200mm/min and depth of cut = 2 mm. Assume all other data. **(10 marks)**

QUESTION FOUR

a) Write the procedure involved in Computer-aided part programming. **(8 marks)**

b) Write the M-codes used to execute the following commands: **(3 marks)**

   i)   program stop

   ii) spindle start in a clockwise direction

   iii) spindle stop

c) What are the THREE advantages of wireframe modelling? **(3 marks)**

d) Discuss the basic configuration of industrial robots? **(6 marks)**