LIMERICK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA LUIMNIGH

SAMPLE EXAMINATION

Time and Date

Course: Bachelor of Engineering in Manufacturing Technology

Year:

Subject: Computer Aided Design (CAD)

Time Allowed: **2.5** Hours

Instructions:
1. Attempt both questions 1 and 2.
2. Attempt either question 3 or 4.
3. Save your work regularly during the examination
4. Write your Name as a note on each AutoCAD Drawing

Additional Attachments – Tables, Formulas etc.
Exam Materials to accompany this paper – Log Books, etc.

A. None.

Internal Examiners: **External Examiners:**

Q1.

Figure 1 below shows the isometric view of a Tool Holder. Draw in first angle projection the following views:

- A plan view, showing all hidden detail, looking in the direction of arrow P.

(15 Marks)

- An front view, showing all hidden detail, looking in the direction of arrow F.

(15 Marks)

- A sectional plan view on cutting plane A-A

(10 Marks)

Include 10 main dimensions on your drawing, 5 on each view.

(10 Marks)

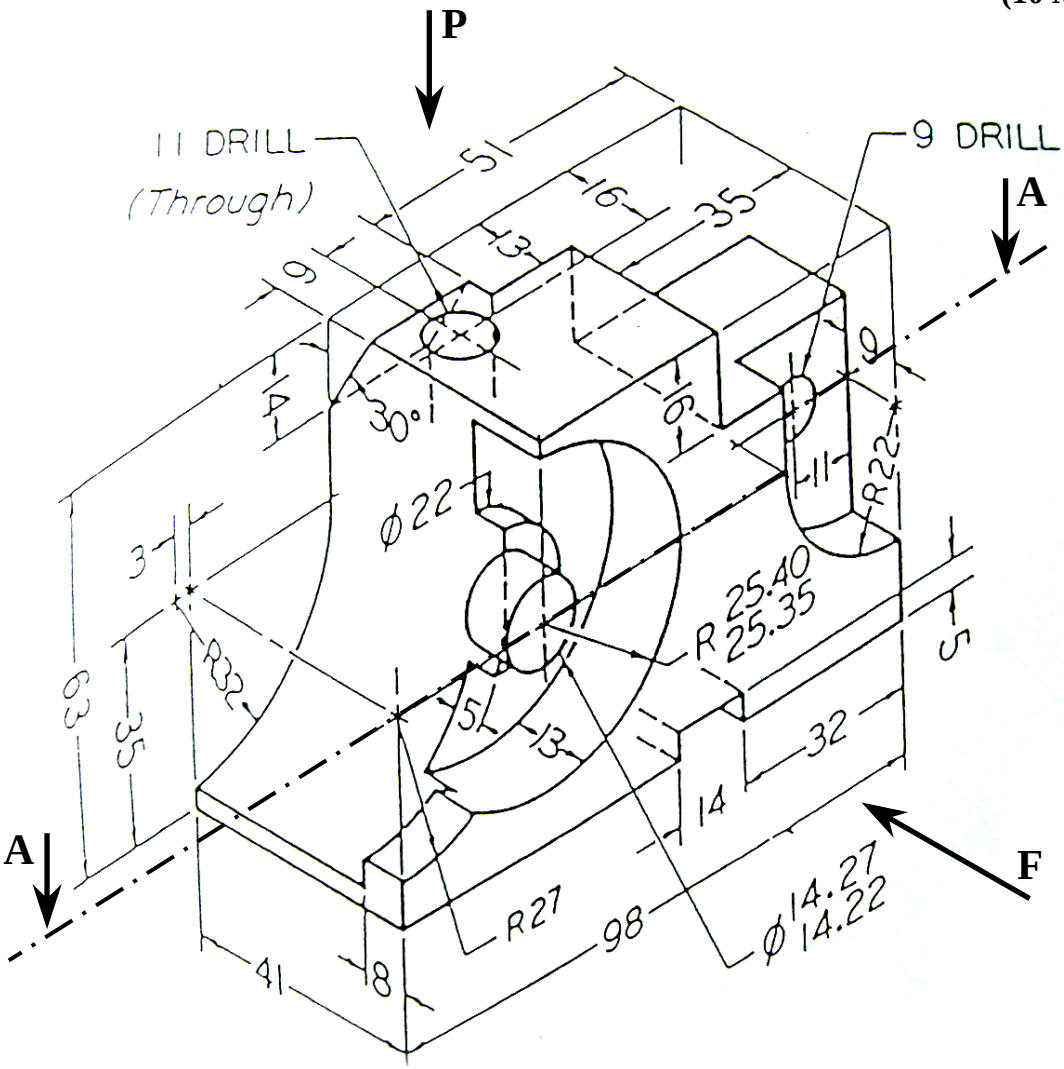

Figure 1: Tool Holder

(Total 50 Marks)

Q2.

Figure 2 below shows the dimensions of a "Microphone" including all hidden detail.

- Create an accurate solid model of the "Microphone" using AutoCAD solid modelling commands. Display the completed solid model in an Isometric orientation with an appropriate shading.

(30 Marks)

- Calculate the weight of the "Microphone" using AutoCAD commands to within two decimal places. Insert your answer as a note beside the model. Assume the Microphone is completely from made from PTFE (Polytetrafluoroethylene) plastic which has a density of: 2300kg/m^3

(10 Marks)

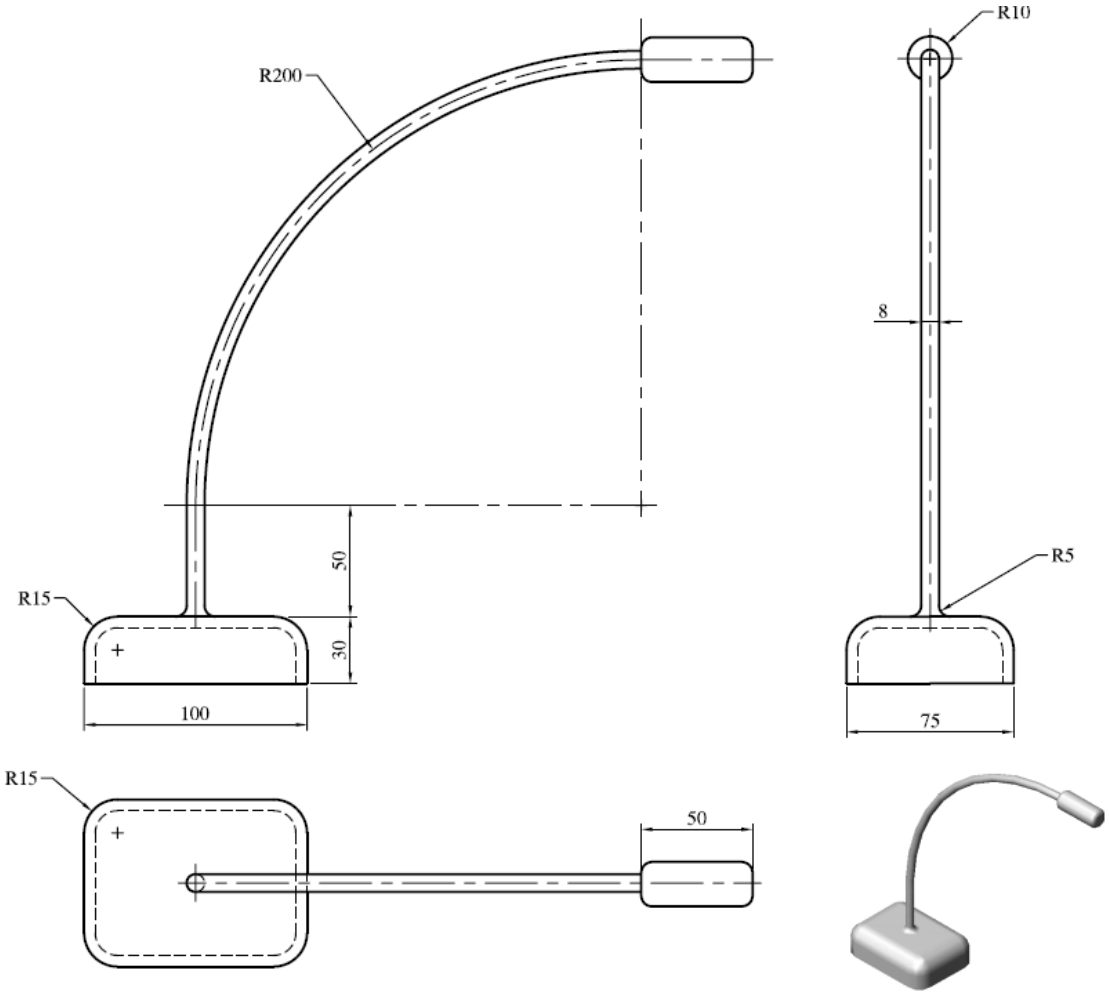

Figure 2: Microphone

(Total 40 Marks)

Q3.

Figure 3 below shows a "Cast Iron Vee-Block". The AutoCAD drawing of this "Vee_Block" is located on the Desktop of your computer.

- Open the Vee_Block.dwg AutoCAD file, and fully dimension the drawing, including all additional notes, tolerances and possible surface finishes.

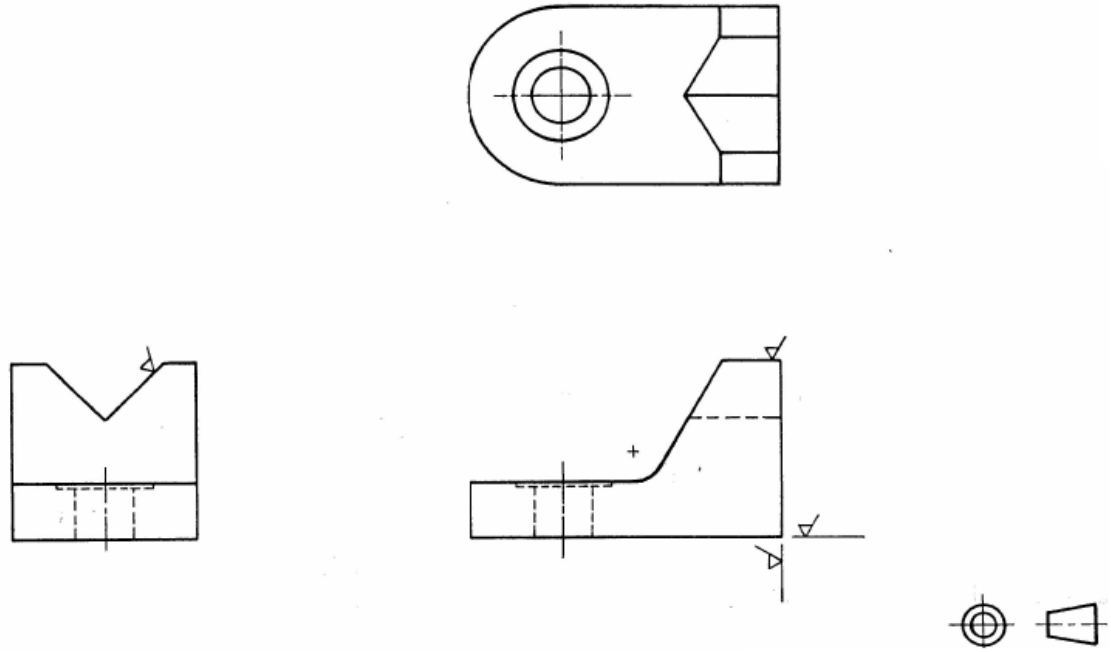

Figure 3: Vee Block

(20 Marks)

Given a nominal shaft and hole size of 25mm and a selected ISO fit of H7/g6:

- Determine the maximum and minimum limits for the size of Hole and Shaft and indicate these limits in a Note in a Blank new AutoCAD Drawing called limits.dwg.
- Draw a piece of the above Shaft, and insert the correct "Limit" dimension using AutoCAD. Save the completed question as "limits.dwg".

(10 Marks)

(Total: 30 Marks)

Q4.

- Replicate the following symbols as shown in Figure 4, in AutoCAD and insert a Note explaining what each symbol means.

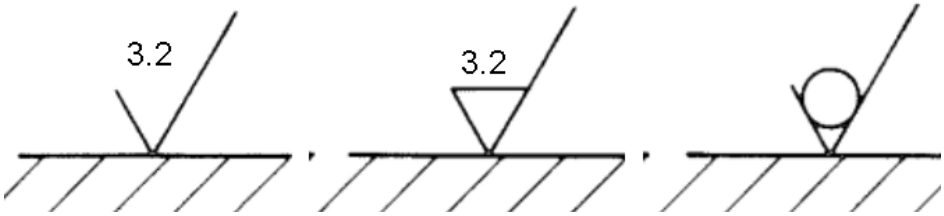

Figure 4: Symbols

(8 Marks)

- Identify the following common Engineering Features listed A to E in Figure 5 below.

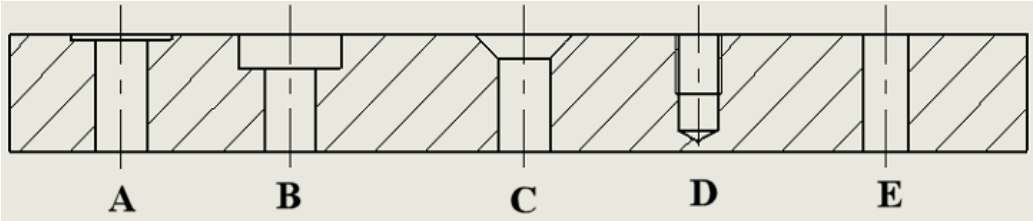

Figure 5: Engineering Features

(8 Marks)

- Figure 6 below contains Gear Terminology from A to G. Correctly identify the correct terms for each of the letters from A to G. **(8 Marks)**

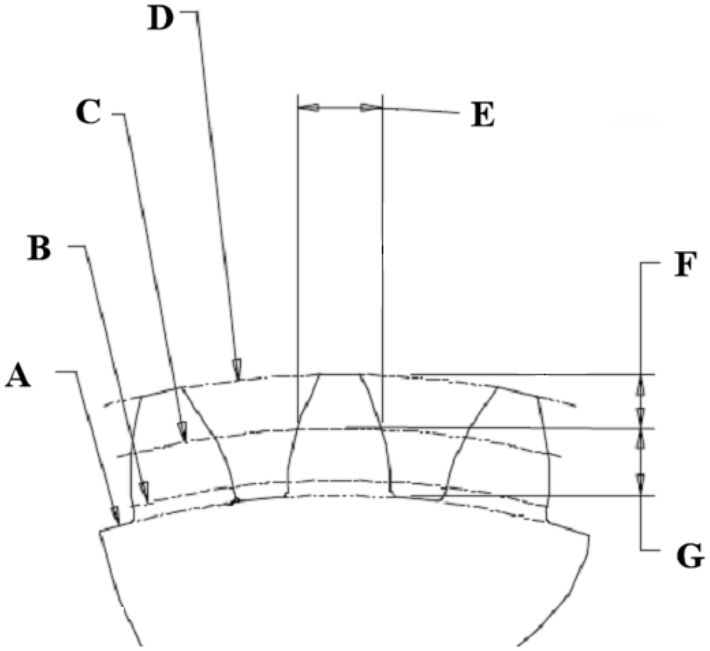

Figure 6: Gear Terminology

- State the formulae for calculating the Pitch Circle Diameter (PCD), the Clearance, and the Circular Pitch.

(6 Marks)

(Total: 30 Marks)