



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR

BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

EMM 200: COMPUTER AIDED DRAWING AND DESIGN

DATE: 16/5/2019

TIME: 8:30-10:30

INSTRUCTIONS

- I. This paper contains **FIVE (5)** questions. Question (1) in **section 1** is compulsory and carries 30 marks. All the other questions carry 20 marks each.
- II. Attempt **Question one** and any other two: one from **Section B** and another one from **Section C**
- III. You need a computer installed with AutoCAD 2016.
- IV. Create a folder on the desktop and rename it your Registration Number. Save your work progressively in the renamed folder.
- V. All dimensions are in millimetres unless otherwise stated.
- VI. Unspecified dimensions are to be taken as per choice

SECTION A: COMPULSORY

QUESTION ONE (30 MARKS)

Fig. Q1 shows an isometric view of a sliding shaft, the arrow indicates the direction to obtain the front view. Using AutoCAD 2016;

- a) Redraw the solid and generate **full sectional front view, a plan, end elevation** (in 3rd Angle Orthographic projection) and **the isometric view** in paper space. (16 marks)
- b) Indicate 8 main dimensions. (4 marks)
- c) Use layers to group the lines according to their functions. (4 marks)
- d) Include center-lines and hidden details on the plan and end elevation. (4 marks)
- e) Suitable Border line and Title block (2 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTIONS TWO (20 MARKS)

- a) Describe in details the following components of a CAD system.
 - i) Hardware (3 marks)
 - ii) Application software (3 marks)
 - iii) Operating system (3 marks)
- b) State three advantages and three disadvantages of CAD over the conventional methods of drawing and design. (6 marks)
- c) Describe the functions of the following tools.
 - i) Array tool (2 marks)
 - ii) Offset tool (2 marks)
- d) State at least two ways of inputting commands on AutoCAD (1 mark)

QUESTIONS THREE (20 MARKS)

- a) Define what is a drawing template in CAD (2 marks)
- b) Explain the procedure of adding text to drawings on AutoCAD (2 marks)
- c) Using diagrams, describe the functions of the following 3-D modelling tools
 - i) Revolve tool (2 marks)
 - ii) Lofting tool (2 marks)
 - iii) Sweep tool (2 marks)

- d) Describe the following types of 3-D modelling techniques. Cite an example of its application, advantages and disadvantages for each.
- i) Wire frame modelling (5 marks)
 - ii) Surface modelling (5 marks)

SECTION C: ANSWER ANY OTHER TWO QUESTIONS

QUESTION FOUR (20 MARKS)

Fig. Q4 shows an isometric view of a solid object, the **arrow** indicates the direction to obtain the front view. Using AutoCAD 2016 and in **Third Angle Orthographic Projection** draw the following views and present them in paper space;

- i) The front view (6 marks)
- ii) Plan (5 marks)
- iii) Use layers to group lines according to function, (4 marks)
- iv) Include **6** major dimensions in paper space. (3 marks)
- v) Suitable title block. (2 marks)

QUESTION FIVE (20 MARKS)

Fig. Q5 shows an isometric view of a solid object, the **arrow** indicates the direction to obtain the front view. Using AutoCAD 2016 and in **First Angle Orthographic Projection** draw the following views and present them in paper space;

- i) The front view (6 marks)
- ii) End/Side view (5 marks)
- iii) Use layers to group lines according to function, (4 marks)
- iv) Include 6 major dimensions in paper space. (3 marks)
- v) Suitable title block. (2 marks)

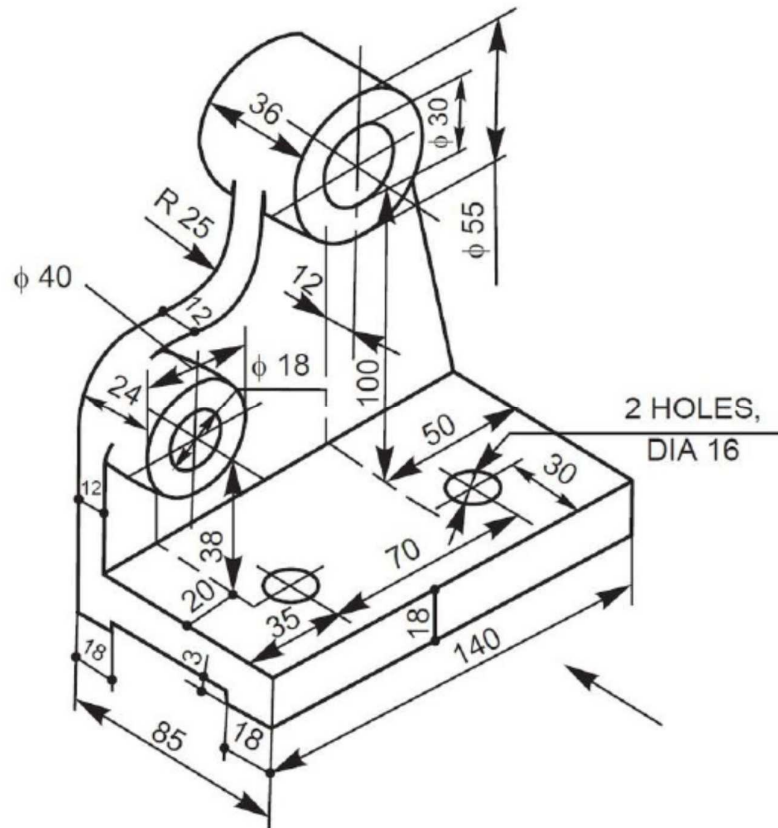


Fig Q4

