



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

FIRST YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN
MECHANICAL ENGINEERING

EMM 100 ENGINEERING DRAWING AND DESIGN I

DATE: 11/12/2017

TIME: 2.00-4.00 PM

INSTRUCTIONS

1. This paper contains **FIVE** questions.
2. Answer Question **One** and any other **two** questions
3. Allow 1½ Hours for question 1 and 45 minutes for each of the other two questions.
4. All dimensions are in millimetres unless otherwise stated.
5. Construction lines should be faint and should not be erased.
6. Accuracy and good line work are essential.

QUESTION ONE (COMPULSORY)

The **Figure Q1 (a) and (b)** shows isometric views of a **Support Bracket**. Draw, full size, using first angle projection, the following views: **Front, Top and left side views. Front view is indicated by the arrow.** Include all hidden details and show dimensions. All dimensions are in mm.

(30 marks)

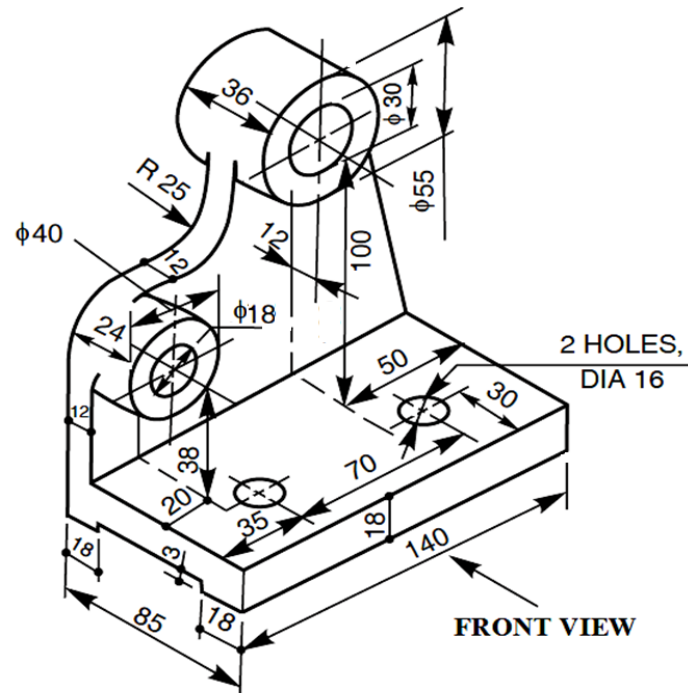


Figure Q1 (a)

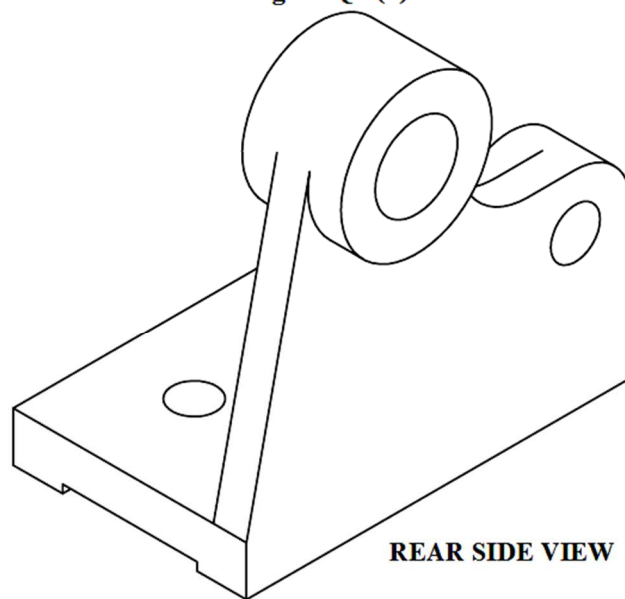


Figure Q1(b)

QUESTION TWO (20 MARKS)

Draw a longitudinal elevation, accurately projected, showing two turns of a helical spring. The spring is of 100mm outside diameter, the pitch of the coils is 62mm and the spring material is of 10mm diameter. (20 marks)

QUESTION THREE (20 MARKS)

Plot the cam profile which meets the following specification:

Shaft diameter	20 mm
Minimum diameter	50 mm
Lift	26 mm
Performance	90° uniform velocity to half maximum lift 90° simple harmonic motion to maximum lift 180° uniform retardation to maximum fall
Rotation	Clockwise

(20 marks)

QUESTION FOUR (20 MARKS)

A pentagonal pyramid of base side 40mm and axis length 80mm is resting on Horizontal plane on its base with one of its base side parallel to vertical plane. It is cut by a plane inclined at 30° to Horizontal plane and perpendicular to vertical plane and is bisecting the axis. Draw its **front view, sectional top view, and the true shape of section.** (20 marks)

QUESTION FIVE (20 MARKS)

Figure: Q5 shows the orthographic projection of measuring oil can. Draw the development of its parts: 1, 2 and 3. All dimensions are in mm. (20 marks)

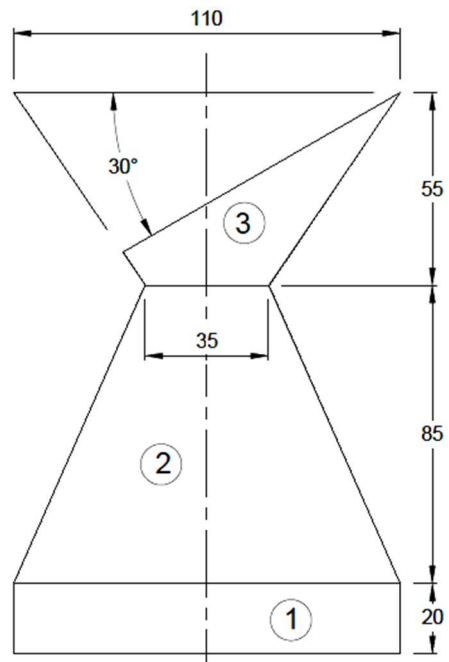


Figure: Q5