



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic YearF

SPECIAL/SUPPLEMENTARY EXAMINATION FOR THE DEGREE IN ELECTRICAL AND ELECTRONICS ENGINEERING

2020/2021

EEE101 ENGINEERING DRAWING II

TIME: 3 HOURS

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 1: Compulsory (30 marks)

The part drawings of a Machine Vice are shown in **Figure Q1(a) to (e)** . The components of the Machine Vice are assembled as shown in **Figure Q1(f)**. Draw:

- a) **Sectional view of the assembly**, through the plane X-X as shown in the Figure Q1(a) viewed from the front elevation as indicated by the arrow on the Figure Q1(f) Machine vice assembly.
- b) **Top elevation of the assembly and End elevation of the assembly** from the end elevation as indicated in Figure Q1(f) Machine vice assembly.

Use first angle projection and do not indicate the dimensions and hidden details.

Question 2: (20 marks)

Figure Q2 shows a casting. Draw the sectional view, section XX, and the left side view. Front view is as indicated by the arrow. Indicate the dimensions.

Question 3: (20 marks)

- (a) Differentiate between clearance fit and transition fit.

(2 marks)

- (b) A journal bearing consists of a bronze bush of diameter 130mm fitted into a housing and a steel shaft of 60mm diameter, running in the bush, with oil as a lubricant. Determine the working dimensions of (a) bore of the housing (b) bush and (c) shaft. Calculate the maximum and minimum interference or clearance. Assume interference fit, H7/p6 for the bush and housing and normal running fit, H7/f7 for the shaft and the bush. Refer to Tables 1, 2 and 3. (18 marks)

Question 4: (20 marks)

Illustrate by using example sketches how the following features are represented in Engineering drawing: Housing, bush, boss, curved slot, rib, fillet, key, keyway, slot and flat.

Question 5: (20 marks)

- (a) Draw a double line sketch of an orthographic pipe network of the single line network shown in **Figure Q5 (a)** (14 marks)

- (b) **Figure Q5 (b)** shows Light-sensitive Alarm Project circuit. The circuit detects a sudden shadow falling on the light-sensor and sounds the beeper when this happens. Name **the twelve** devices indicated **1** to **12** in the circuit. (6 marks)

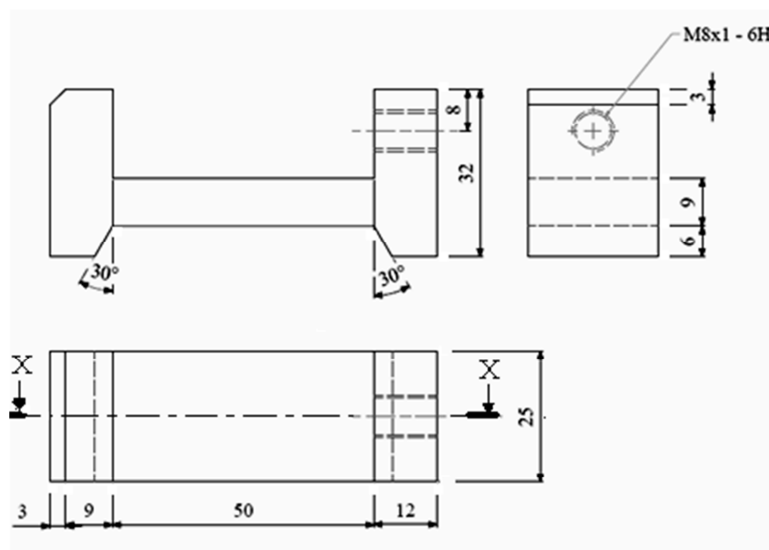


Figure Q1(a) Part 1

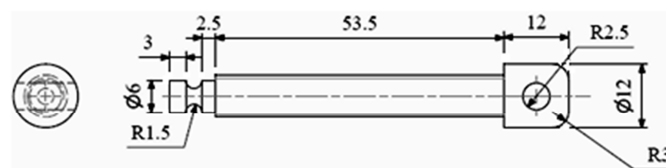


Figure Q1(b) Part 2

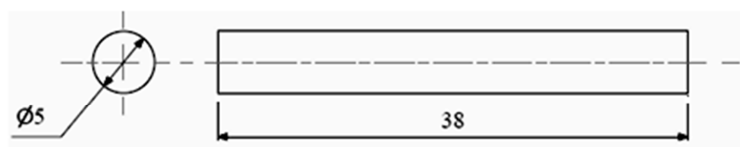


Figure Q1(c) Part 3

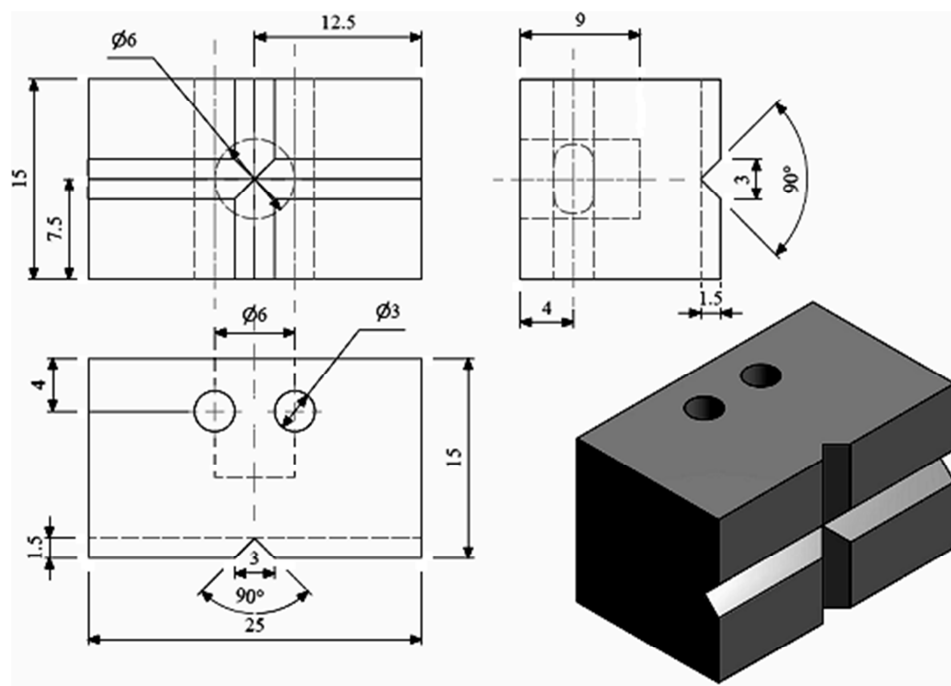


Figure Q1(d) Part 4



Figure Q1(e) Part 5

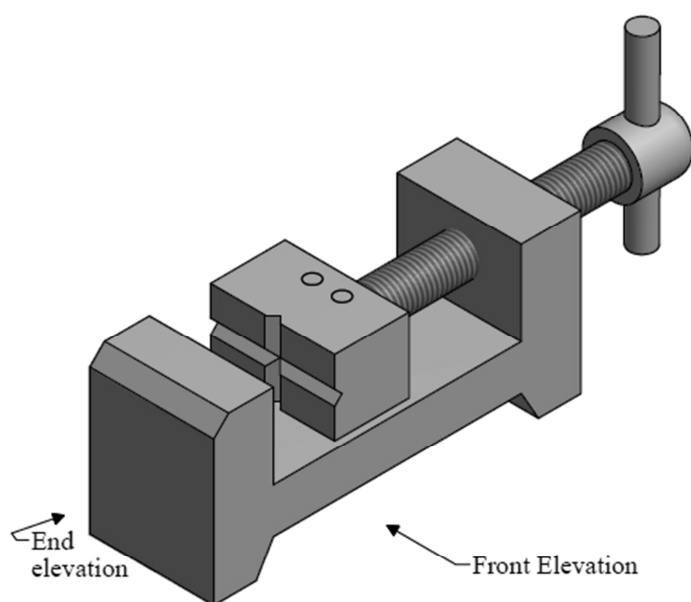


Figure Q1(f) Machine vice assembly