



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC ENGINEERING

EEE 101: ENGINEERING DRAWING II

DATE: Tuesday 17th April 2012

TIME: 8.00a.m – 10.00a.m

INSTRUCTIONS

- (i) This paper contains **FIVE (5)** questions.
- (ii) You are required to answer **THREE (3)** questions only.
- (iii) Question **one** is compulsory.
- (iv) Attempt any other two questions.
- (v) Question one carries 30 marks and the others carry 20 marks each.
- (vi) Construction lines should be faint and should not be erased.
- (vii) All dimensions are in millimeters unless otherwise stated.
- (viii) Missing and mismatching dimensions, if any, may be suitably assumed.

QUESTION ONE (COMPULSORY) (30 MARKS)

The electricity adjusting unit shown in Fig. Q1 consists of a body (1), a handle (2), a pivot (3), a screw (4), a collar (5) and a pin (6). Draw in 3rd Angle Projection to a suitable scale the following views of the completely assembled adjusting unit:

- (a) a front view in the direction of arrow B, including all hidden detail.(9 marks)
- (b) a sectional end view on the cutting plane AA. (9 marks)

- (c) parts list (5 marks)
- (d) suitable title block (5 marks)
- (e) ISO symbol (2 marks)

Note:

1. No dimensions are required in your drawing.
2. Do not print your name in the title block.

QUESTION TWO (20 MARKS)

- (a) Draw symbols of the following electrical and electronic items according to BS 5070 and BS 3939:
 - (i) Conductors crossing with no electrical contact (1 mark)
 - (ii) Junction of two conductors (1 mark)
 - (iii) Plug (1 mark)
 - (iv) Socket for plug (1 mark)
 - (v) Fuse (1 mark)
 - (vi) Variable resistor (1 mark)
- (b) Draw a simple circuit diagram of battery, filament lamp and switch. The 3- volt battery will light the 3-volt filament lamp when the switch is made.(4 marks)
- (c) Draw a circuit diagram representing a four- cell battery connected to a bell via a switch. When the switch is made, the bell will ring. There should be a capacitor that causes sharper current impulses across the bell winding. (5 marks)
- (d) Draw a simple parallel circuit diagram representing 12- volt battery to light three 12 – volt bulbs when the switch is made. (5 marks)

QUESTION THREE (20 MARKS)

- (a) A piece of string equal to the circumference of a cylinder, diameter 42 mm, is attached to a point on the circumference of the cylinder.
 - (i) Draw the path of the free end of the string as it is wound round the cylinder in a plane perpendicular to the axis of the cylinder.
 - (ii) Draw a normal and a tangent at any point of the curve.

- (iii) Name and state one application of the curve produced. (13 marks)
- (b) Fig. Q3 (b) shows 2 views (i.e Front and Plan) of part of a regular prism. Side of base 20 mm is truncated at top and cut away from below as shown. Develop the lateral surface of the remaining prism. (7 marks)

QUESTION FOUR (20 MARKS)

- (a) Draw a diagram to illustrate each of the following:
- (i) Clearance fit. (2 marks)
 - (ii) Transition fit. (2 marks)
 - (iii) Interference fit. (2 marks)
- (b) Fig. Q4. Shows a sectional assembly of a boss, a bush and a shaft. Normal fit exists between the shaft and bush while press fit exists between the bush and the boss.
- (i) Using Data sheet 4500A (Selected ISO Fits – Hole Basis) extracted from BS 4500 provided, calculate the working limits of shaft diameter, bush hole diameter, bush outer diameter and boss hole diameter. (8 marks)
 - (ii) Draw the shaft, the bush and the boss illustrating how these limits are dimensioned. (6 marks).

Note:

Draw each part separately.

QUESTION FIVE (20 MARKS)

- (a) Draw conventional representation of the following components:
- (i) A sectional view of Nut and bolt assembly with a washer (9 marks)
 - (ii) A sectional view of Set bolt assembly.
 - (iii) A sectional view of Nut and stud assembly.

(b) In a neat diagram show how the following machining symbols are shown:

- (i) Roughness value- a
- (ii) Method of treatment – b
- (iii) Sampling length – c
- (iv) Direction of lay – d

(2 marks)

(c) In single line piping diagrams how are the following represented:

- (i) Gate valve
- (ii) Tee
- (iii) Lateral
- (iv) Flanged joint
- (v) Screwed joint
- (vi) Soldered joint

(9 marks)

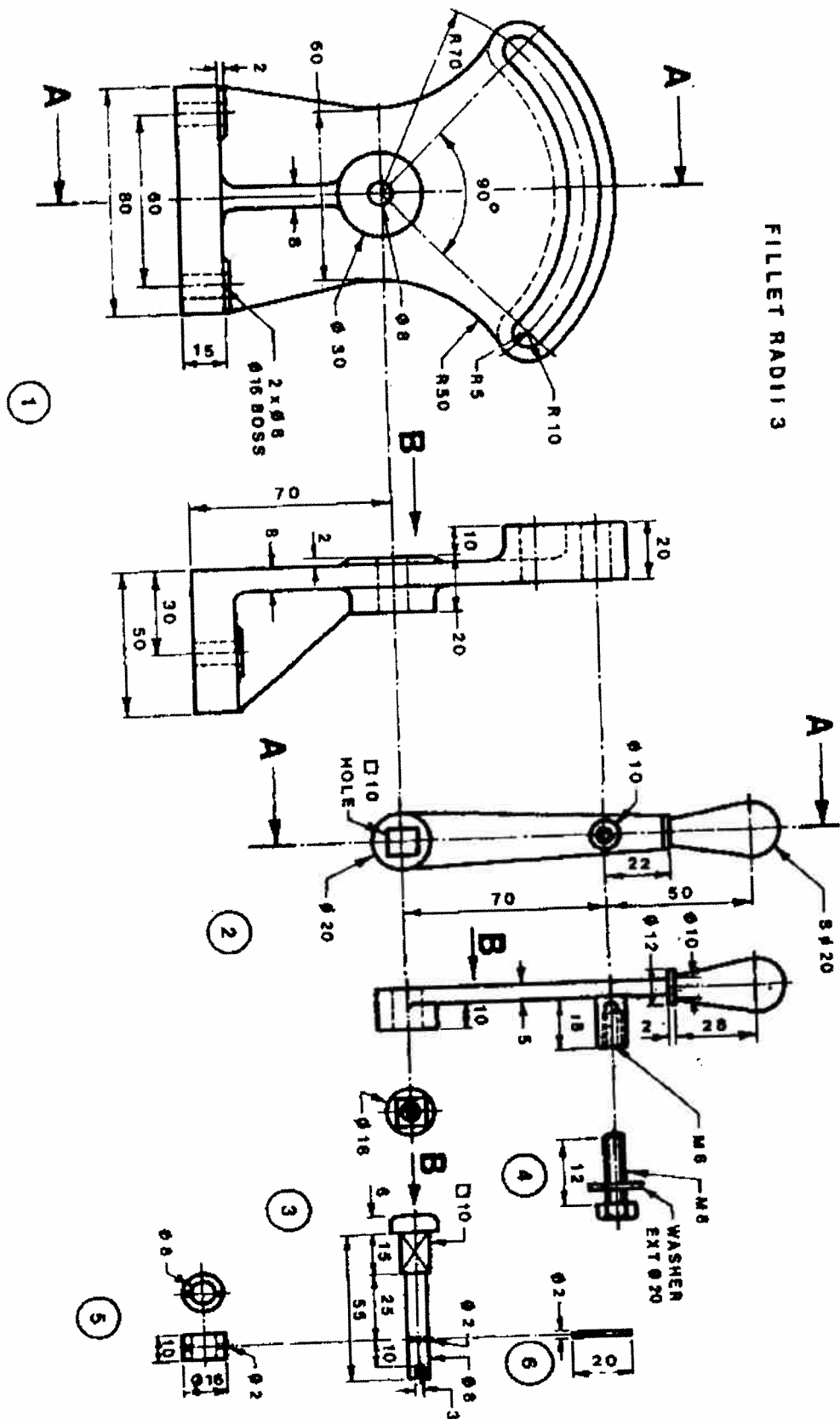


Fig. Q1

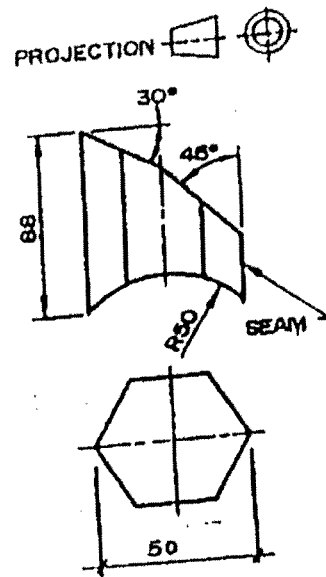


Fig. Q3(b)

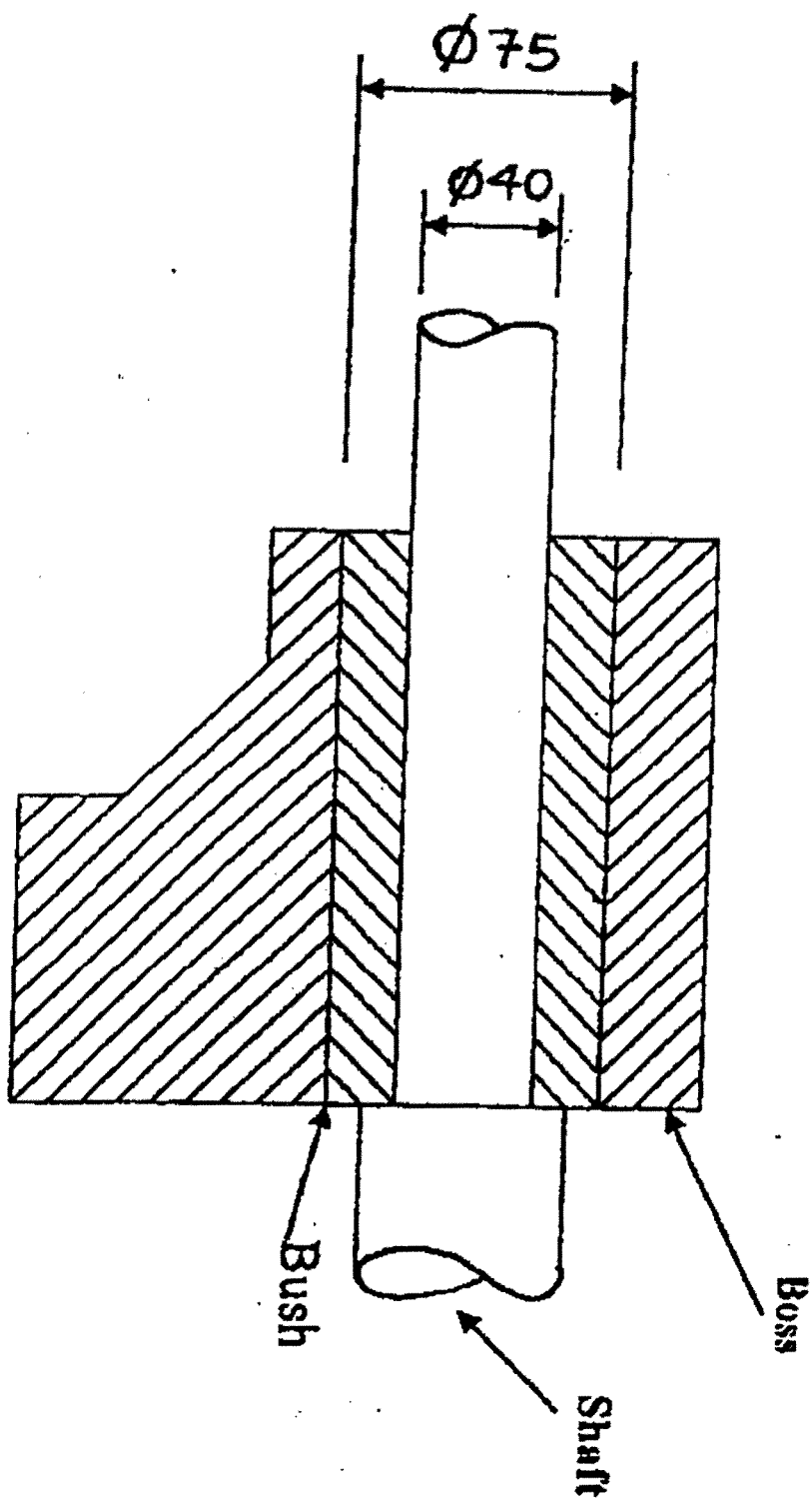


Fig. Q4

Page 8 of 8