

THE UNITED REPUBLIC OF TANZANIA  
NATIONAL EXAMINATIONS COUNCIL  
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

084

ELECTRICAL DRAUGHTING  
(For Both School and Private Candidates)

*Time: 3 Hours*

*Wednesday, 05<sup>th</sup> October 2011 p.m.*

**Instructions**

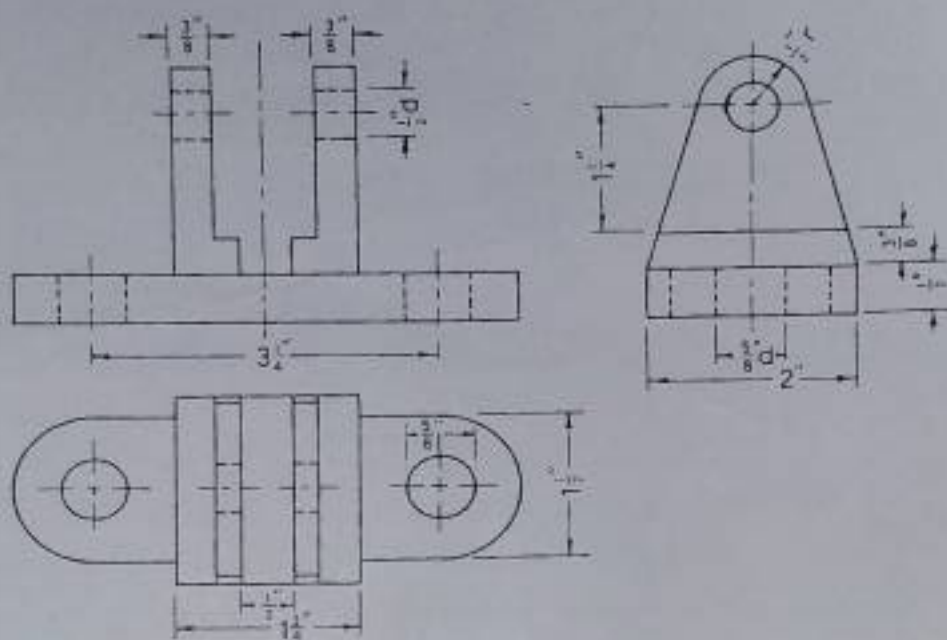
1. This paper consists of **six (6)** questions.
2. Answer question **1** and any other **three (3)** questions.
3. Question 1 carries 40 marks while the other questions carry 20 marks each.
4. Calculators are **not** allowed in the examination room.
5. Cellular phones are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).
7. Whenever necessary use the following constant:
  - 1 inch = 25.4 millimeters



This paper consists of 4 printed pages.



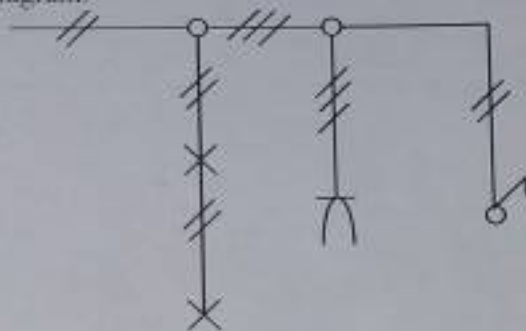
1. Draw isometric view of a hinge-bracket from the given views in first angle projection shown below. Drawing should be in a standard paper format. **(40 marks)**



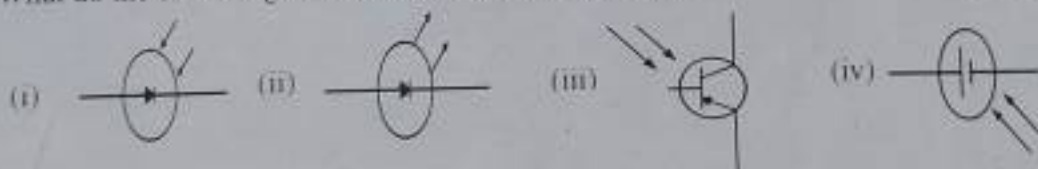
2. Draw the wiring diagram for a customer having the following requirements in his house:
- (a) 1 fluorescent fitting, 40 W in each of the 3 bedrooms
  - (b) One 13 A switch socket in each bedroom
  - (c) 2 fluorescent fittings, 40 W in the corridor
  - (d) 4 security filament lamps of 100 W
  - (e) 2 fluorescent fittings, 40 W in the lounge
  - (f) 1 fluorescent fitting, 40 W in the kitchen
  - (g) Four 13 A switch sockets in the sitting room
- Indicate the cable size used throughout and include appropriate fuse protection. Assume a single-phase public supply system. **(20 marks)**
3. (a) What is meant by a schedule of outlets? **(02 marks)**
- (b) Define the following terms. **(03 marks)**
- (i) Logic diagram
  - (ii) Component diagram
  - (iii) Drill plans or tapes.
- (c) By using simple diagrams, sketch the following as used in electrical drawing. **(12 marks)**
- (i) Detached circuit diagram
  - (ii) Installation circuit diagram
  - (iii) House plan
  - (iv) Assembled representation diagram
- Note:** For all cases above use two lighting points and two one way switches. **(03 marks)**
- (d) List six tools commonly used in electrical draughting. **(03 marks)**



4. (a) What do you understand by the following terms? (02 marks)
- Assembled drawing
  - Detached drawing
- (b) (i) Explain three types of diagrams used to show electrical circuits in technical drawings. (03 marks)
- Mention two roles played by a single-line circuit diagrams. (02 marks)
  - Give three applications of each role mentioned in 4 (b) (ii) above. (03 marks)
- (c) The sketch shown below represents an installation plan of two lamps controlled by one way switch. A socket outlet is also fed from power line supplying lamps. Draw an operational wiring diagram. (10 marks)

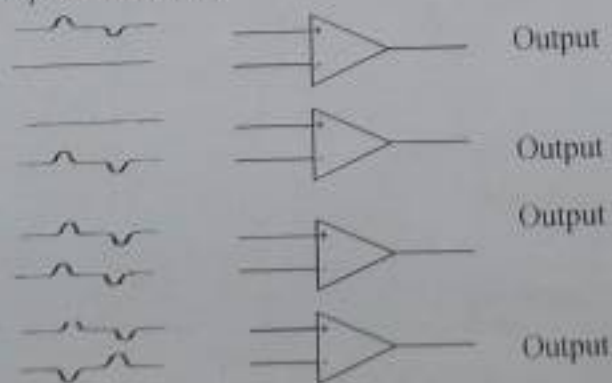


5. (a) With the aid of diagram, describe the working principle of a full wave bridge rectifier. (10 marks)
- (b) Draw a well labeled smoothed bridge rectifier circuit connected to a step down transformer. Show its output and input wave forms. (10 marks)
6. (a) What do the following electronic components represent? (04 marks)



- (b) Draw the output waveform of the operational amplifier (op-amp) for the various types of input given below. (08 marks)

Input Waveforms



- (08 marks)

