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

084

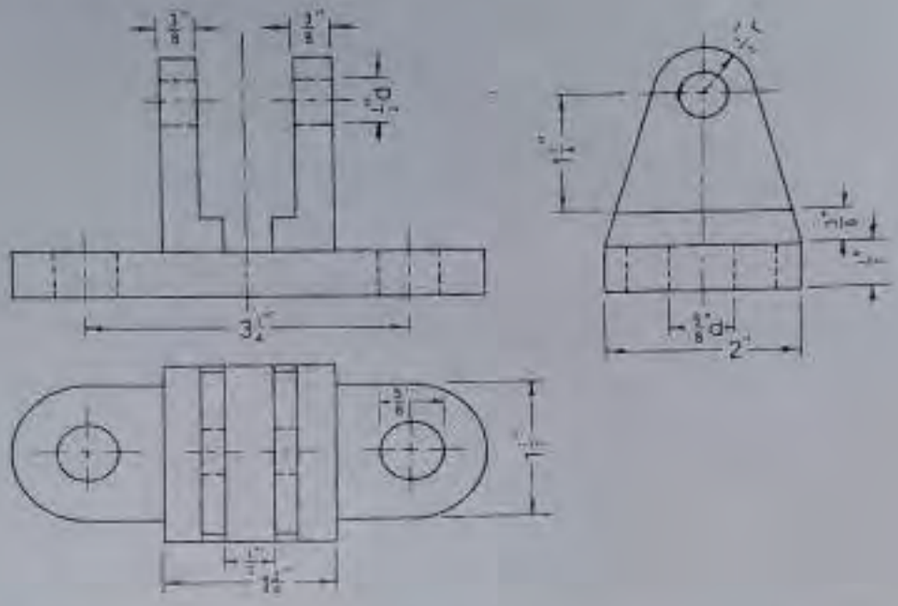
ELECTRICAL DRAUGHTING
(For Both School and Private Candidates)

Time: 3 Hours *Wednesday, 05th 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

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.
   (i) Detached circuit diagram
   (ii) Installation circuit diagram
   (iii) House plan
   (iv) Assembled representation diagram

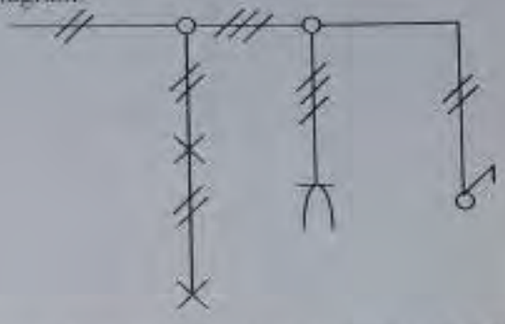
   Note: For all cases above use two lighting points and two one way switches. **(12 marks)**

   (d) List six tools commonly used in electrical draughting. **(03 marks)**

4 (a) What do you understand by the following terms? **(02 marks)**
(i) Assembled drawing
(ii) Detached drawing

(b) (i) Explain three types of diagrams used to show electrical circuits in technical drawings **(03 marks)**
(ii) Mention two roles played by a single-line circuit diagrams **(02 marks)**
(iii) 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)**

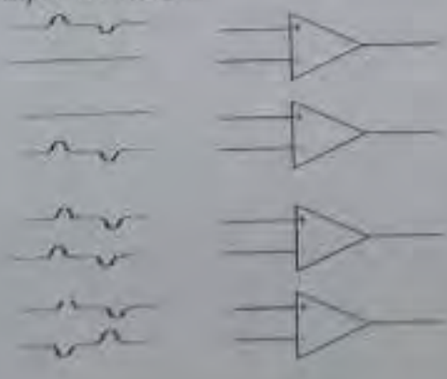
(b) Draw a well labeled smoothed bridge rectifier circuit connected to a step down transformer. Show its output and input wave forms **(10 marks)**

6 (a) What do the following electronic components represent? **(04 marks)**

(i)  (ii)  (iii)  (iv) 

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

Input Waveforms



(c) Redraw the following sketch as a formal schematic diagram. Number all components using left to right, top to bottom numbering scheme. **(08 marks)**

