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, 10th October 2012 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 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).

1. Figure 1 show views of a casting in third angle projection. Draw the isometric view of a casting. All dimensions are in mm. Construction lines must not be erased and the drawing should be clearly shown in a standard paper format. **(40 marks)**

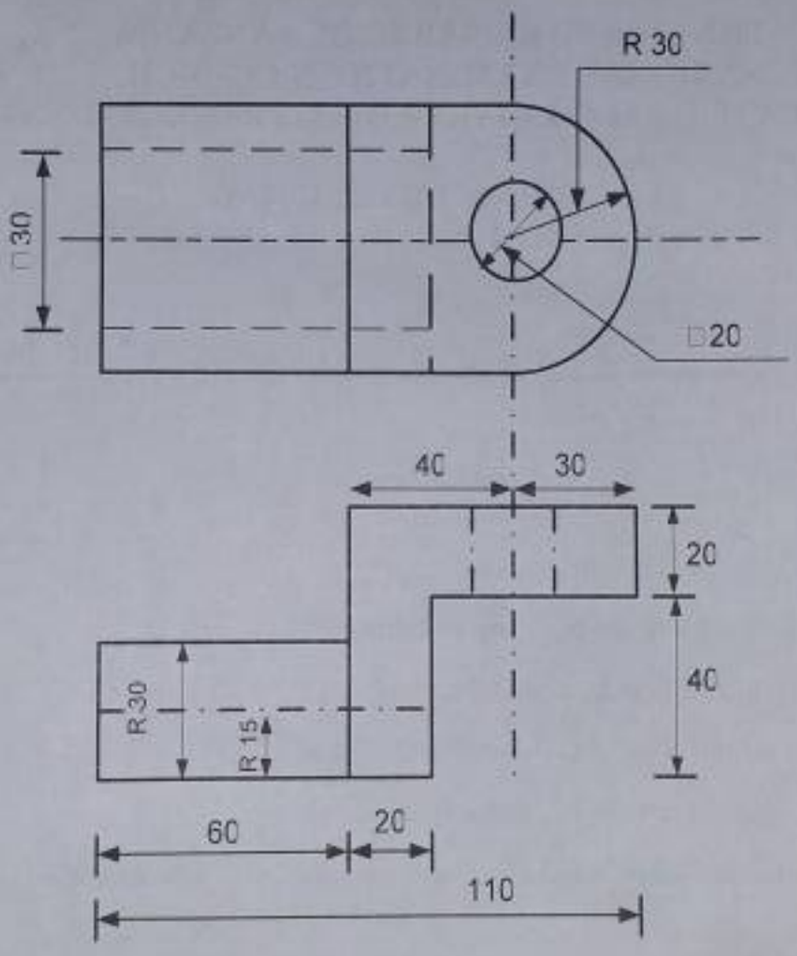

Figure 1

2. (a) (i) Draw a plan of installation, wiring diagram and schematic diagram of a single pole switch controlling one filament lamp.

(ii) Differentiate between plan of installation and wiring diagram. Give three differences.

(iii) State three similarities between wiring and schematic diagram. **(15 marks)**

(b) Draw symbols of the following accessories which are used in installation plan diagram (line diagram).

(i) Luminous push button
(ii) Electric buzzer (general symbol)
(iii) Three pole, one way switch
(iv) Lighting point (general symbol)
(v) Two pole, one way switch **(05 marks)**

3. (a) Use drawing techniques and instruments, draw symbols of the following electronic components.
   (i) XOR gate
   (ii) Three-input AND gate
   (iii) Operational amplifier
   (iv) NOT gate
   (v) Three-input NOR gate **(05 marks)**

   (b) Design a logic circuit whose output is
   (i) $A + \overline{BC}$
   (ii) $(A + B).\overline{AB}$ **(08 marks)**

   (c) Develop truth table for the following logic expressions.
   (i) $\overline{A + B} = C$
   (ii) $\overline{AB} = C$ **(07 marks)**

4. (a) (i) What is meant by block diagram?
   (ii) Draw a block diagram of an AM radio receiver. Explain the function of each block. **(14 marks)**

   (b) Draw electronic symbol of the following components.
   (i) Tunnel diode
   (ii) Temperature sensitive diode
   (iii) Photo diode
   (iv) Electrolytic capacitor
   (v) Hall generator
   (vi) Breakdown diode **(06 marks)**

5. (a) List ten basic rules of laying out schematic diagrams. **(05 marks)**
   (b) Reproduce the sketch shown in Figure 2 as a finished schematic drawing. **(08 marks)**

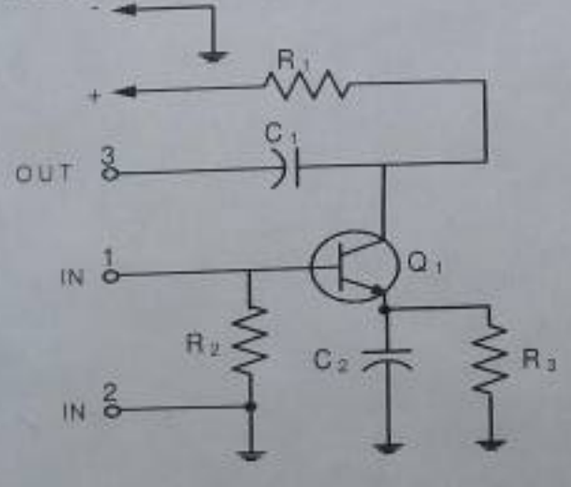

Figure 2

(c) (i) Draw a circuit diagram of full-wave bridge rectifier.
(ii) Explain two main advantages of using full wave bridge rectifier over full wave rectifying circuit (with centre-tapped transformer). **(07 marks)**

6. Three attendants are located on first, second and third floor of a hotel. Each attendant has a push button and a bell located on the respective floor. The hotel also has a security office where security guards stay. The security office is equipped with three bells to show which attendant has requested for assistance and one push button to be used by security guards to give general call to all attendants. Draw a single line and wiring diagrams for the system. **(20 marks)**