

**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

Tuesday, 10th November 2015 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 and Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

1. The views shown in Figure 1 are full size first angle orthographic projections of a block. View B is a 'PLAN VIEW' projected from view A. Draw the block in isometric projection.

(40 marks)

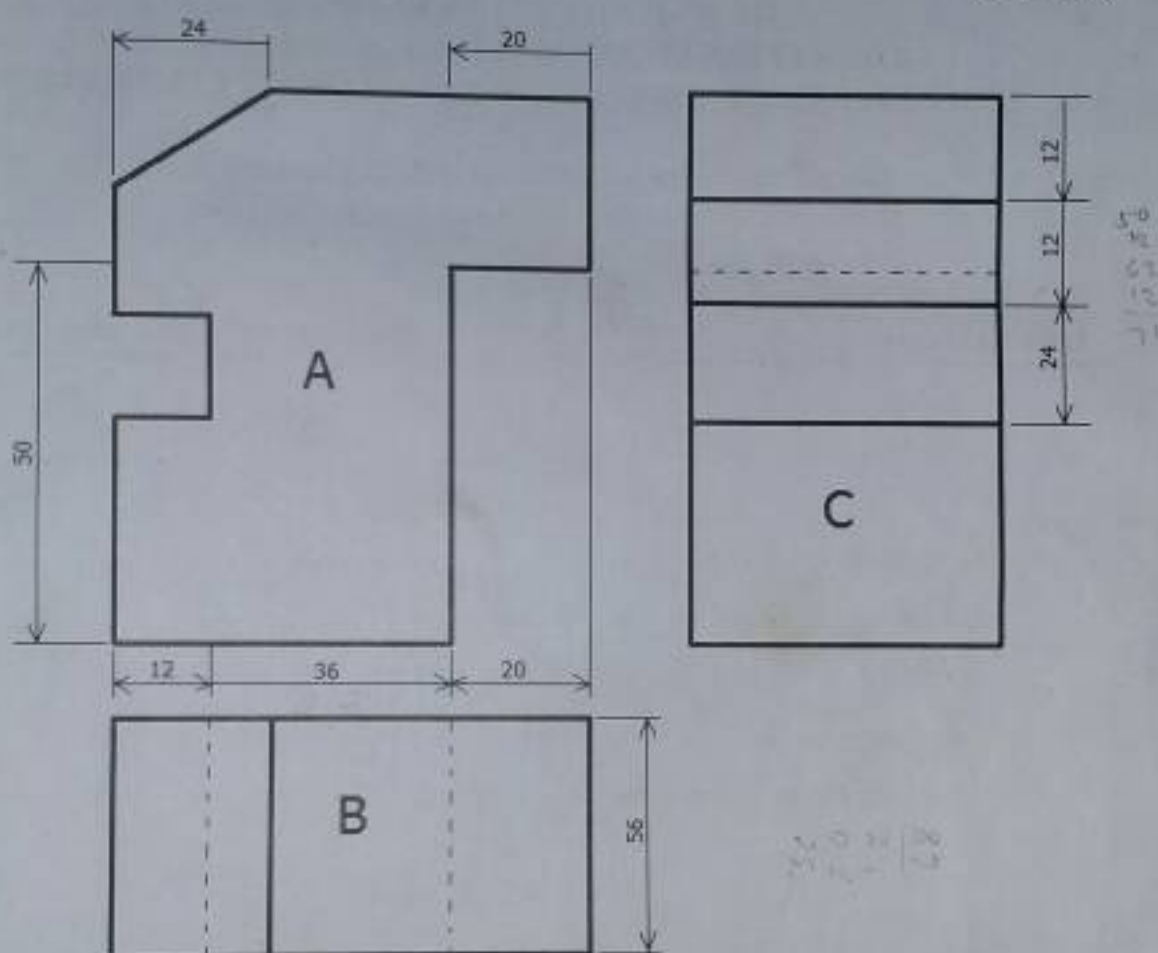


Figure 1

2. The requirements for a kitchen in the 2nd floor of a flat is as follows:

- (a) Electrical cooker - 1
- (b) Ceiling luminaires - 2
- (c) Synchronous clock - 1
- (d) Socket outlet with earth contact for refrigerator - 1
- (e) Socket outlet with earth contact for boiler - 1
- (f) Socket outlet with contact for kitchen use - 1

Read carefully the layout conditions and draw a one line electrical installation diagram for the kitchen. Show clearly the circuit numbering, the sizes of cables and symbols with fuse/breaker sizes in each circuit.

(20 marks)

3. (a) Draw the symbols for the following electronic components:

- (i) Thermistor
- (ii) Integrated circuits
- (iii) Relay
- (iv) Light dependent resistor
- (v) The PNP transistor

(10 marks)

- (b) (i) What is meant by cross over distortion in class B push-pull amplifiers?
- (ii) Briefly explain how crossover distortion can be eliminated.

(04 marks)

(c) Study the diagram in Figure 2 and answer the questions that follows:

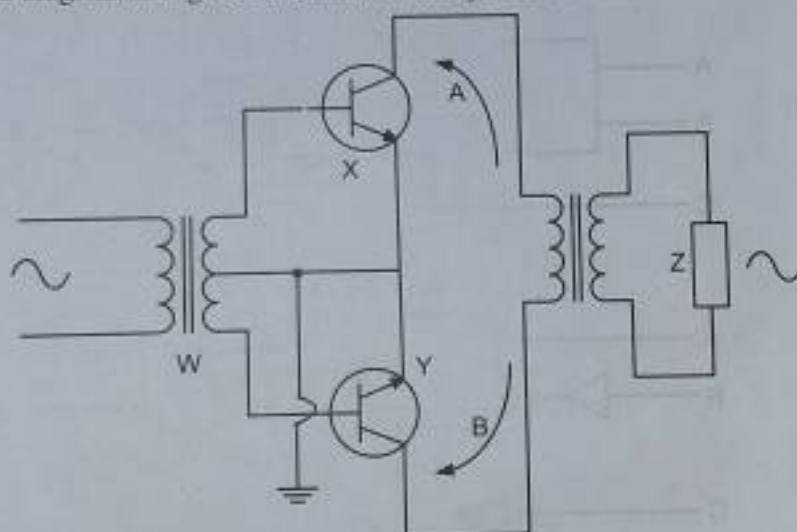


Figure 2

- (i) Identify the electronic circuit in Figure 2 and give its application.
- (ii) Name the components W, X, Y and Z.

(06 marks)

4. Draw the motor control diagram for direct on line starter in a three phase system. Show clearly the following parts:

- (a) Mains circuit.
- (b) Control circuit which utilizes single phase supply.

(20 marks)

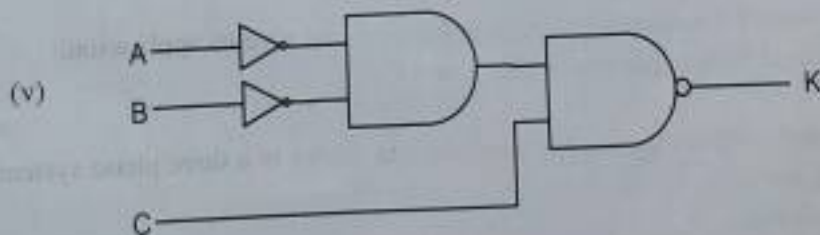
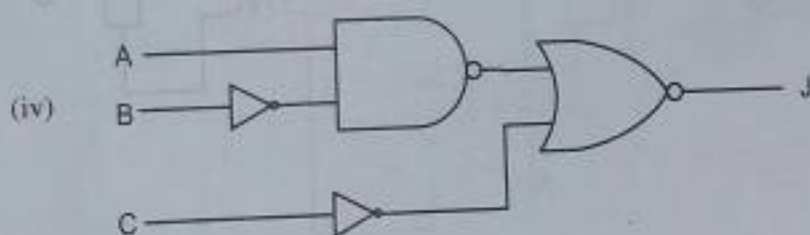
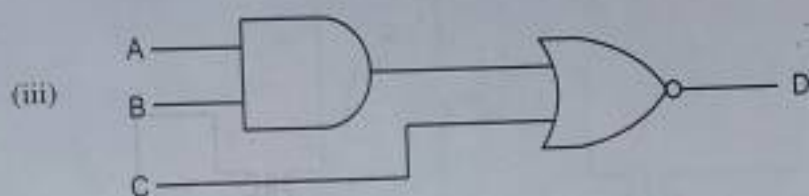
5. (a) Draw the logic gate for each of the following given Boolean equations:

(10 marks)

- (i) $A + B + C = D$
- (ii) $\overline{A + B} = C$
- (iii) $\overline{A \oplus B} = C$
- (iv) $A \bullet B \bullet C = D$
- (v) $A = \overline{\overline{A}}$

(b) Give the output Boolean expressions for each of the following logic circuit:

(10 marks)



(04 marks)

6. (a) Explain two methods used in dimensioning.

(08 marks)

(b) Briefly describe four types of dimension lines.

(08 marks)

(c) Identify eight general rules for dimensioning.