

TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

OPTION/TRADE: SOLAR ENERGY

SUBJECT: Electrical schematic analysis

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES: PART II (Question Paper)

The paper is composed of two (2) Sections as follows:

Section I: Attempt all the Twelve (12) questions (60 marks)

Section II: Attempt any Four (4) questions out of Six (6) (40 marks)

Allowed materials:

- Ruler or square
- Calculator

Note:

Every candidate is required to carefully comply with the provided assessment instructions.

Section I: Attempt all the Twelve (12) questions

(60 marks)

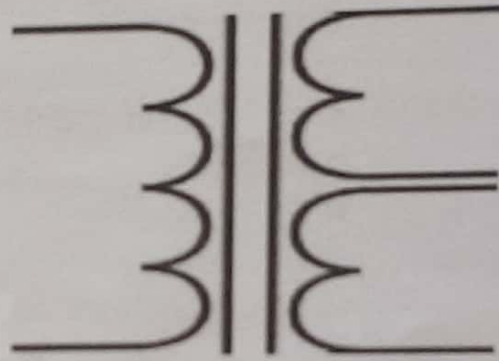
- 01.** State any five (5) important information provided by the Title block of drawing sheet. **(5 marks)**
- 02.** Identify any five (5) CAD (Software). **(5 marks)**
- 03. a)** What is the actual length when the drawing length is 200 mm and scale is 1:5? **(5 marks)**
- b)** What are three (3) sizes of drawing scale? **(5 marks)**
- 04.** State the types of electrical diagrams. **(5 marks)**
- 05.** Draw an electrical diagram of three (3) lamps connected in series controlled by One Way Switch. **(5 marks)**
- 06.** Draw a circuit diagram of two-way switching. **(5 marks)**
- 07.** Draw a circuit diagram of intermediate switching. **(5 marks)**
- 08.** Differentiate schematic from drawing. **(5 marks)**
- 09.** What are the main classifications of circuit breaker based on rated voltages? **(5 marks)**
- 10.** What are the methods of projection commonly used in engineering drawing? **(5 marks)**

11. Draw the electrical symbols of the following components:

- a) Resistor
- b) Rheostat
- c) Ac Voltage Source
- d) Capacitor
- e) Fuse.

(5 marks)

12. The figure below shows the equipment which is used in transmission and distribution of electrical energy.



- a) Mention the name of above equipment
- b) What is its purpose in an electrical circuit?

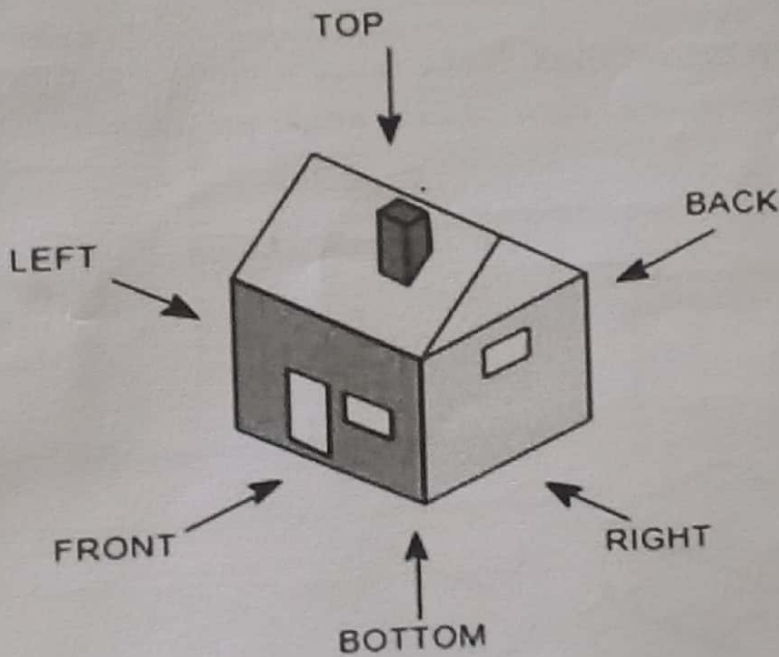
(5 marks)

Section II: Attempt any Four (4) questions out of Six (6) (40 marks)

- 13. a)** What is Circuit Breaker?
b) State the principle operation of a Circuit Breaker. **(10 marks)**

- 14. a)** What is the meaning of Fuse?
b) Identify the main functions of Fuse. **(10 marks)**

15. Draw all views of the figure below:



(10 marks)

16. On the ceiling a hexagonal area is reserved for a big lamp containing a support with a hexagonal base. Before the lamp is fixed you should draw a hexagonal regular polygon. Follow the given steps to draw that hexagon.

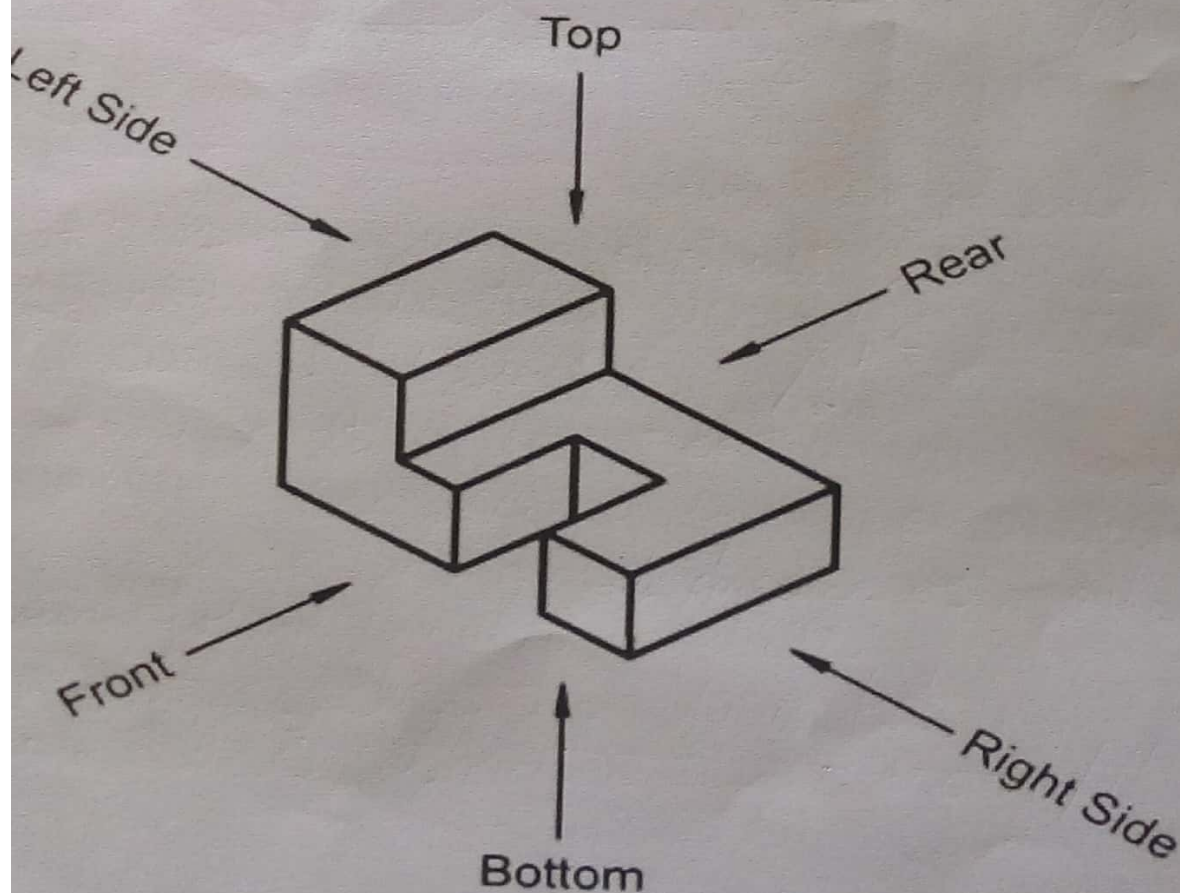
- a) Draw a circle with AD equals to 60mm as diameter.
- b) Divide the diameter AD into equal six (6) parts.
- c) With AD as radius and A&B as centres, draw arcs intersecting each other at G
- d) Join G-2 and extend to intersect the circle at B
- e) A-B is one side of the hexagon.

(10 marks)

17. Draw wiring diagram for lighting one (1) Lamp which is controlled in three (3) positions.

(10 marks)

18. From the sketch given below. Sketch the bottom view, right view, top view, front view, left view, rear view in first angle projection.



(10 marks)