KENYA CERTIFICATE OF BASIC EDUCATION (K.C.B.E)

GRADE 10 ELECTRICAL TECHNOLOGY (Theory) ENDTERM 1

PATHWAY: S.T.E.M

Time: 1 Hour 50 Minutes

COMPETENCE ASSESSMENT EXAMINATION

LEARNER'S DETAILS

Name: _____

School: _____

Assessment Number: _____. **Date:** _____

School Code: _____. **Signature**: _____

INSTRUCTIONS TO LEARNERS

1. Write your name, School, assessment number, signature and date on all the answer sheets provided.
2. Answer all the questions in the spaces provided.
3. **Read each question carefully** before writing your answer.
4. Ensure your answers are **clear, neat, and well-organized**.
5. The **marks for each question** are indicated at the end of the question.
6. Use a blue or black pen for writing. Pencils should be used only for drawings and diagrams.

SCORE GRID

Item	1a	1b	2a	2b	2c	3a	3d	3e	3f	4a	4b	4c	5a	5b	5c	5d	5e	5f	6a	6b	6c	6d	6e	7a	7b	7c	7d	7e	7f(i)	7f(ii)	8i	8ii	8iii	9a	9b	TOTAL
Question Marks	2	2	1	1	1	3	2	2	2	2	3	3	3	3	3	3	3	3	2	2	4	2	2	2	3	2	2	2	3.5	2.5	2	2	2	3	13	90
Learner's Score																																				

Level	Level	% Range	Points	Learner's score
Exceeding (EE)	EE1	90–100%	8	
	EE2	75–89%	7	
Meeting (ME)	ME1	58–74%	6	
	ME2	41–57%	5	
Approaching (AE)	AE1	31–40%	4	
	AE2	21–30%	3	
Below (BE)	BE1	11–20%	2	
	BE2	1–10%	1	

Performance Levels Grid

-ELECTRICAL TECHNOLOGY-
-003-
-Senio

SECTION A: (90 Marks)

Answer all questions in this section.

1. A community is planning to expand access to electricity to improve living standards, education, and economic activities.



a) Explain **TWO ways** electricity is important in society. (2 marks)

i. _____.

ii._____.

b) State **TWO reasons** why electricity is considered essential for modern development. (2 marks)

i. _____.

ii._____.

2. Electricity is widely used in homes, schools, hospitals, industries, and public spaces in Kenya. Safe generation, distribution, and use of electricity requires the involvement of different stakeholders.

a) Name **ONE government regulatory body** responsible for electrical safety in Kenya. *(1 mark)*

_____

_____

b) Identify **ONE electricity distribution company** involved in supplying electricity to consumers in Kenya. *(1 mark)*

_____

_____

c) State **ONE role** played by licensed electricians in promoting electrical safety. *(1 mark)*

3. (a) The diagram below shows electricity being used in a residential house, a hospital, and a cyber cafe.



X



Y



Z

State the uses of electricity in picture X, Y and Z. *(3 marks)*

X: _____.

Y: _____.

Z: _____.

d) Identify **TWO** stakeholders responsible for ensuring electrical safety in the places shown above. *(2 marks)*

i. _____.

ii._____.

e) Explain **TWO ways** in which stakeholders help to prevent electrical accidents in Kenya. *(2 marks)*

i. _____.

ii._____.

4. During a career guidance session, learners discuss job opportunities and safety practices in the electrical field.

a) Identify **TWO career opportunities** in the field of electrical technology. *(2 marks)*

i. _____.

ii. _____.

b) State **THREE safety regulations** observed while carrying out electrical tasks. *(3 marks)*

i. _____.

ii. _____.

iii. _____.

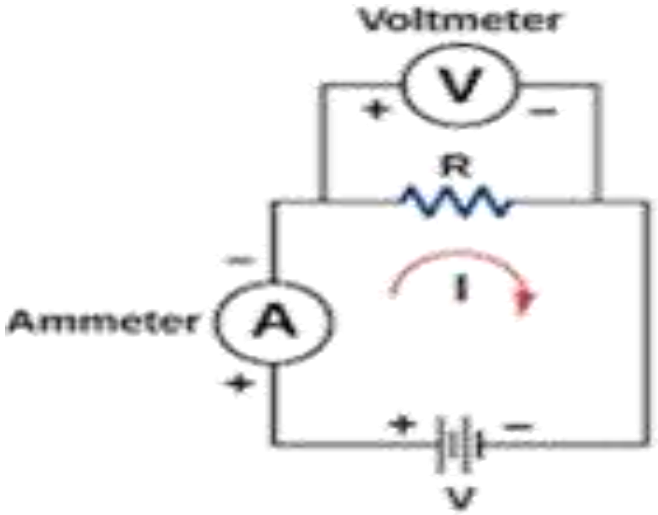
c) Explain **THREE roles of stakeholders** (government, employers, workers) in promoting electrical safety. *(3 marks)*

i. _____.

ii. _____.

iii. _____.

5. A learner constructs a simple DC circuit in a workshop using a battery, switch, resistor, ammeter and voltmeter.



a) Describe **THREE properties** of an electric circuit. *(3 marks)*

i. _____.

ii. _____.

iii. _____.

b) Define the following types of materials: *(3 marks)*

i. Conductor

_____

_____

ii. Insulator

_____

_____

iii. Semiconductor

_____

_____

c) Give an example of each material. *(3 marks)*

Material	*Example*
i. Conductor	
ii. Insulator	
iii. Semiconductor	

d) Explain the **mechanism of electrical conduction in metals**. (3 marks)

_____

e) Using Ohm's Law, explain the relationship between **voltage, current and resistance** in a DC circuit. (3 marks)

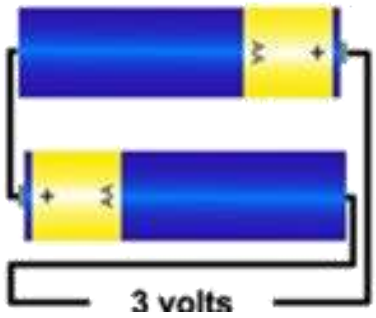
e) State **THREE practical applications** of DC circuits in day-to-day life. (3 marks)

i. _____.

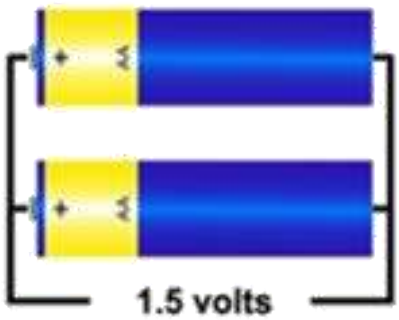
ii. _____.

iii. _____.

6. (a) A technician is assembling battery banks for a solar power backup system.



M



N

Identify the type of connection in M and N. *(2 marks)*

M: _____.

N: _____.

b) Describe the principle of operation of a primary cell. *(2 marks)*

c) Explain the charging and discharging process in a secondary cell. *(4 marks)*

d) Differentiate between series and parallel connection of batteries**.** *(2 marks)*

e) State **TWO reasons** why safe disposal of cells and batteries is important. *(2 marks)*

i. _____.

ii. _____.

7. An electronics technician is repairing a radio that uses capacitors for energy storage and signal smoothing.

a) Describe the **principle of operation of a capacitor** in an electric circuit. *(2 marks)*

b) State **THREE characteristics** of capacitive circuits. *(3 marks)*

i. _____.

ii. _____.

iii. _____.

c) Explain **TWO factors** considered when selecting a capacitor for an application. *(2 marks)*

i. _____.

ii._____.

d) State two factors that determine the resistance of a conductor. *(2 marks)*

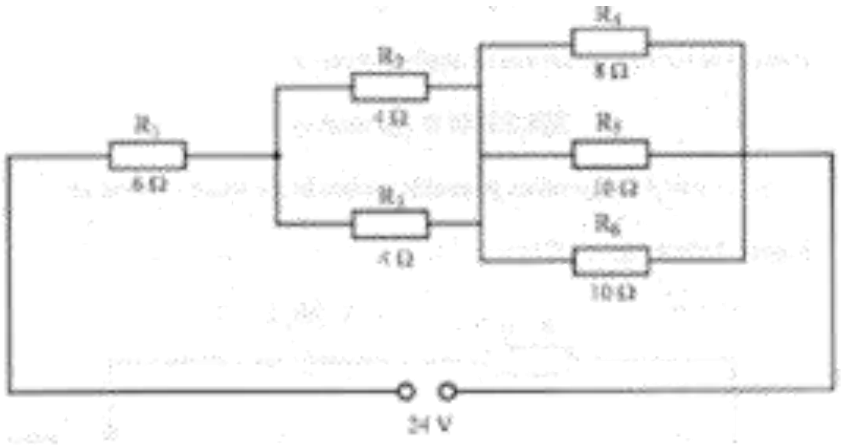
i. _____.

ii._____.

e) Determine the color code of a 1500Ω 5±% carbon resistor. *(2 marks)*

_____

f) The figure below shows a resistive circuit.

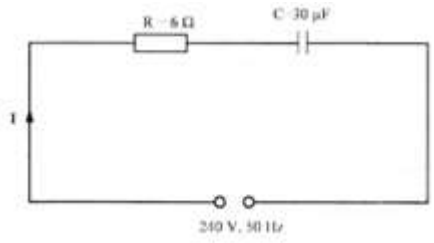


Calculate:

i. Total resistance of the circuit. *(3 ½ marks)*

ii. Current through R_6 *(2 ½ marks)*

8. The Figure below shows an R-C circuit.



Calculate the;

i. Impedance; *(2 marks)*

ii. Current I; *(2 marks)*

iii. Phase angle. *(2 marks)*

9. An electrical technician uses drawings to explain wiring layouts and component placement.

a) State **THREE types** of pictorial drawings used in engineering. *(3 marks)*

i. _____.

ii. _____.

iii. _____.

b) The Figure below shows a block drawn in isometric projection.

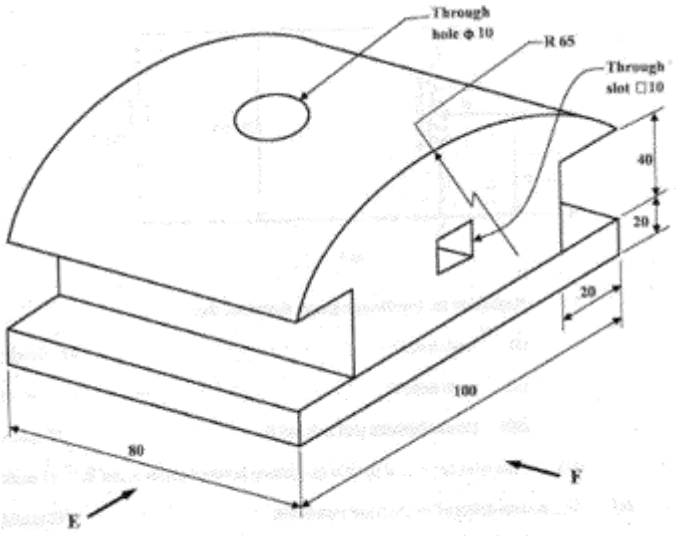


Figure 4

Using first angle projection, draw the following views full size:

i. Front elevation in the direction of arrow F;
ii. End elevation in the direction of arrow E;
iii. Plan.

(Use A3, paper provided) *(13 marks)*

For more resources, visit cbckenyahub.com for marking schemes | 0712468452