LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

VHEMBE WEST DISTRICT

GRADE 09

TECHNOLOGY

2023 NOVEMBER

QUESTION PAPER

MARKS: 100

TIME: 2 HOURS

This **QUESTION PAPER** consists of **SEVEN (7)** pages including the cover.

INSTRUCTIONS TO LEARNERS:

1. **Read all instructions carefully.**
2. **Answer all questions in the answer sheet provided.**
3. **Write neatly and legibly.**
4. **All the drawings must be done on the grid paper provided.**

Resources needed for drawing.

1. **Pencil (HP)**
2. **Eraser/Rubber**
3. **Calculator**
4. **Ruler**

QUESTION 1

1.1. Choose the correct answer from the ones given below. Write the letter of the correct answer next to the question number. Example: 1.11.1= B

1.1.1. We have three cells of 2,5 volts each and are connected in series their total voltmeter reading across the battery is.

A. 5 volts
B. 7,5 volts
C. 3,5 volts

1.1.2. Polystyrene is used in the following food packaging.

A. Polystyrene cup
B. Bottle caps
C. Pvp pipe

1.1.3. Which instrument is used to measure the current in the circuit.

A. Voltmeter
B. Ammeter
C. Barometer

1.1.4. A metal preserving process is called.

A. Drying
B. Galvanizing
C. Corrosion

1.1.5. A circuit with 3volts and 1.8 ampere of current has a resistance of……. ohms

A. 1.9 ohms
B. 10 ohms
C. 1.66 ohms

1.1.6. A transistor has three connections.

A The collector, base and emitter
B The emitter, switch and base
C The emitter, base and anode

1.1.7. Process of removing/destroying microorganisms by removing moisture from food is called.

A. Irradiation
B. Drying
C. Freezing

1.1.8. An electronic device that can sense the temperature of its environment.
A Thermistor
B Capacitor
C LDR

1.1.9. Burning of plastic does the following to the environment.
A. compost the environment.
B. cleans the land.
C. pollute the air.

1.1.10. The process of corrosion on metals needs the following to take place.
A. Water
B. Water and carbon dioxide
C. Water and oxygen

1×10(10)

1.2. State whether the following statements are True or False.
1.2.1. Every plastic product is recyclable.
1.2.2. Fresh milk lasts longer compared to UHT milk.
1.2.3. A switch is a controlling device.
1.2.4. LED and Bulb both convert electrical current to light energy.
1.2.5. Plastic can be flexible; it can bend easily without breaking.
1.2.6. A resistor only has 2 bands.
1.2.7. Oxidation is used to protect metal by applying a layer of zinc.
1.2.8. A speaker is an output device that converts electrical current to sound.
1.2.9. Plastic is made from petrochemicals.
1.2.10. Current flows from positive to negative.

1×10(10)

QUESTION 2

2.1. Match column A with column B

Column A – Word	Column B – Define
2.1.1. Electrolyte	A. An electronic device that senses the amount of light falling on its surface
2.1.2. Light-dependent resistor	B. To decay or decompose into natural elements that are absorbed by the environment.
2.1.3. Pollutants	C. A solution that can conduct an electric current.

2.1.4. Biodegrade	D. A circuit where the current passes through the components one after another.
2.1.5. series	E. The ability of a substance to reduce the flow of electric current.
2.1.6. Resistance	F. Any substances that pollute

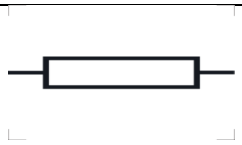
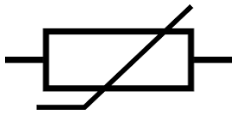
1×6(6)

2.2. Complete the truth table below.

Input A	Input B	Output
0	0	
0	1	
1	0	
1	1	

1×4(4)

2.3. Complete the following table

Symbol	Component name	Function
A. 		
B. 		
C. 		
D. 		
E. 		

2×5(10)

QUESTION 3

3.1. Use ohms law to calculate for the current in the following table.

V=I×R and plot the graph of voltage and current.

NB. Show all calculations.

Circuit	Circuit description	Voltage	Current
1	One cell of 20Ω	5V	
2	A battery of 20 Ω	10V	
3	A battery 20 Ω	15V	

(11)

3. 2 Resistors are process components that control the amount of current flowing in a circuit.
Below is the colour bands (stripes) found on a resistor (1-3 bands). The fourth band of colour which is separated from others is usually silver or gold. It shows how much accurately the resistance has been measured and is called Tolerance. Gold represent 10% Tolerance and silver 5% Tolerance.
Use the table below to work out the value of a resistor:

Colour	First band	Second band	Third band
Black	0	0	Ω
Brown	1	1	0 Ω
Red	2	2	00 Ω
Orange	3	3	000 Ω
Yellow	4	4	0000 Ω
Green	5	5	00000 Ω
Blue	6	6	000000 Ω
Violet	7	7	0000000 Ω
grey	8	8	00000000 Ω
white	9	9	000000000 Ω

Example: work out the value of a resistor with orange, blue, red stripes:

- Orange(first stripe) =3
- Blue (second stripe) = 6
- Red (third stripe) = 00 Ω

The value of the resistor is 3 600 Ω

3,2.1 What colour bands will a resistor have if it has 180 000 Ω with a 5% tolerance? (2)

3.2.2 What colour bands will a resistor have if it is 9 800 Ω with 10% tolerance? (2)

3.2.3 What value is a resistor with grey, green, white and silver stripes? (2)

3.2.4 What value is a resistor brown, red, orange and gold stripe? (2)

3.2.5 What is a FUSE? (2)

2X5(10)

3.3. Define ohms law in words. (2)

3.4. Mr. Johnson works a 12-hour shift and returns home late in the evening, often after nightfall. During instances of load shedding, he experiences a feeling of being unsafe when entering his property due to the darkness. Safety concerns are not the sole issue; he also faces the challenge of being unable to prepare or heat food during these hours of power outage.

3.4.1. What is the problem? (3)

3.4.2. Suggest two alternative energy sources that can assist Mr. Johnson with his problems 2×2(4).

3.4.3. From question 3.4.2 select one alternative energy source system and show its input, process and output. 2×3(6).

QUESTION 4

4.1. List the materials you need to use when painting metals. (2)

4.2. Name the catalyst that speeds up the process of corrosion. (1)

4.3. List steps taken during the galvanizing process of metals (2)

4.4. Describe two (2) methods of preserving food. (4)

QUESTION 5

5.1. Given plastic identification symbols, name the type of plastic and state its uses.

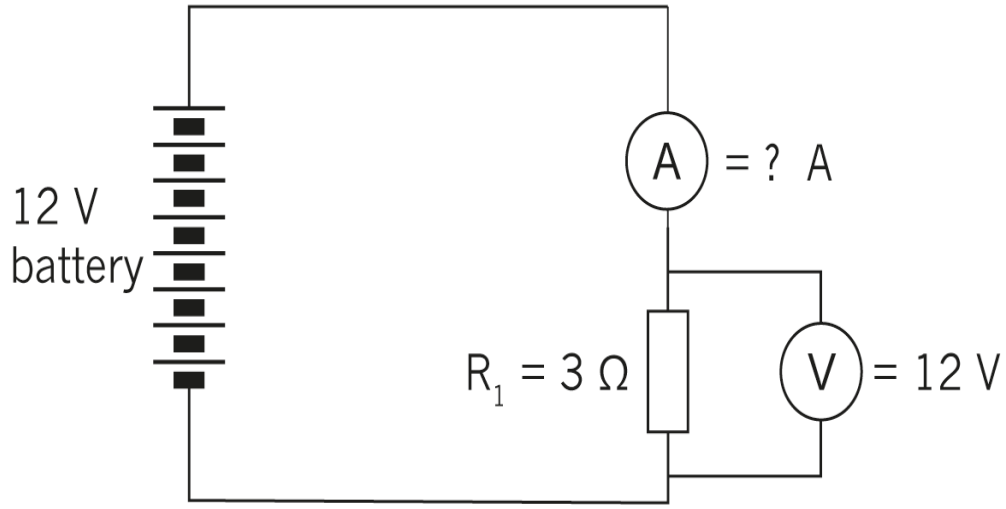
Symbol	Name of plastic	Uses
		
		
		

3×3(9)

QUESTION 6

6.1. Name 2 advantages of having a daylight sensor (LDR). (2)

6.2. Calculate the value of the current in the circuit below.



(4)

Total:100 MARKS