SMARTWIZ

GRADE 8 TECHNOLOGY EXAM

MARKS: 50

MARKS	

TIME: 2 hours

SCHOOL_____

CLASS (e.g. 4A) _____

SURNAME_____

NAME_____

Instructions for Students:

> Read all instructions carefully before beginning the exam.

> Write your name and student ID clearly on the answer sheet/booklet.

> Answer all questions unless otherwise stated.

> Show all your work/calculations where applicable.

> Write clearly and legibly.

> Use blue or black ink only. * Do not use correction fluid/tape.

> No electronic devices (calculators, phones, etc.) are allowed unless explicitly permitted.

> Raise your hand if you have any questions.

> Do not talk to other students during the exam.

> Any form of cheating will result in disqualification.

This test consists of 5 pages, excluding the cover page.

SECTION A: TYPES OF STRUCTURES

(12 Marks)

Question 1

1.1 Identify each of the following as a **frame**, **shell**, or **solid** structure:
a) A brick wall _____
b) A soccer ball _____
c) A steel bridge _____ (3)

1.2 Give **two advantages** of shell structures.

_____ (2)

1.3 What is the main function of a **foundation** in a building?
_____ (2)

1.4 Study the image of a truss bridge below and answer the question:

What role does the triangle play in the design of this bridge?

_____ (2)

1.5 Define the term **load** as used in structures.
_____ (1)

1.6 What is the difference between **static** and **dynamic loads**?

_____ (2)

SECTION B: ELECTRICAL SYSTEMS

(14 Marks)

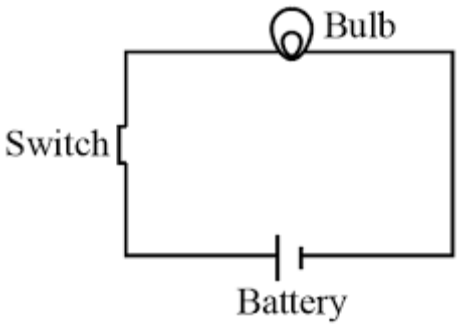
Question 2

2.1 What is a **closed circuit**?
_____ (2)

2.2 Name any **three components** of a basic electrical circuit.

1. _____
2. _____
3. _____ (3)

2.3 Study the circuit diagram and answer:



2.3.1 What happens when the switch is open?
_____ (1)

2.3.2 What does the bulb represent in the circuit?
_____ (1)

2.3.3 Draw the **symbol** for a resistor:

(1)

2.4 Why are wires covered in plastic?
_____ (2)

2.5 Match the terms in Column A with the correct answers in Column B:
(Write the correct letter next to the number.)

Column A	Column B
1. Insulator	A. Allows current
2. Conductor	B. Rubber
3. Power source	C. Battery

1 → ____
2 → ____
3 → ____ (3)

SECTION C: DESIGN PROCESS

(10 Marks)

Question 3

3.1 What is the purpose of the **evaluation** step in the design process?
_____ (2)

3.2 Name two reasons why sketching your design is important.

_____ (2)

3.3 Define the term **design brief**.
_____ (2)

3.4 Study the image of a product and answer:

3.4.1 Identify one material used in this product.
_____ (1)

3.4.2 Suggest one improvement you would make to the design.
_____ (1)

3.5 What does **ergonomics** mean in product design?
_____ (2)

SECTION D: IMPACTS OF TECHNOLOGY

(14 Marks)

Question 4

4.1 Give two ways that **technology has improved communication**.

_____ (2)

4.2 What does **green technology** mean?
_____ (2)

4.3 Explain one **negative effect of mining** on the environment.
_____ (2)

4.4 How can learners help **save energy** at school?
_____ (2)

4.5 State **two examples of smart or modern technology** used in homes today.

1. _____
2. _____ (2)

4.6 Name two careers that involve technology.

1. _____
2. _____ (2)

4.7 Why is it important to learn technology at school?
_____ (2)

TOTAL: 50 MARKS

MEMO

SECTION A: TYPES OF STRUCTURES (12 MARKS)

1.1
a) Solid structure
b) Shell structure
c) Frame structure (3)

1.2

- Lightweight
- Encloses space efficiently
- Strong in compression
  (Any 2 = 2)

1.3
To support the structure and distribute the load evenly to the ground. (2)

1.4
Triangles make the bridge stronger and more stable by spreading the forces evenly. (2)

1.5
A load is the weight or force a structure must support. (1)

1.6
Static load: does not move (e.g., a roof).
Dynamic load: moves or changes (e.g., people walking). (2)

SECTION B: ELECTRICAL SYSTEMS (14 MARKS)

2.1
A closed circuit is a complete path through which electricity flows. (2)

2.2
Any three: battery, switch, wires, bulb, resistor, motor. (3)

2.3.1
The bulb will not light up. (1)

2.3.2
It is the output device / converts electrical energy to light energy. (1)

2.3.3
(Diagram: a rectangle representing a resistor) ✔ (1)

2.4
To prevent electric shocks and protect the wire from damage. (2)

2.5
1 → B
2 → A
3 → C (3)

SECTION C: DESIGN PROCESS (10 MARKS)

3.1
To check if the product works and meets the needs of the user. (2)

3.2

- Helps visualize the idea
- Communicates the design to others
  (Any 2 = 2)

3.3
A short statement that explains the task, who it's for, and what it should do. (2)

3.4.1
Example: Plastic, metal (1)

3.4.2
Any valid improvement (e.g., better lid, easier grip, added insulation). (1)

3.5
Designing products that are comfortable and efficient for people to use. (2)

SECTION D: IMPACTS OF TECHNOLOGY (14 MARKS)

4.1

- Emails and instant messages
- Mobile phones and social media
  (Any 2 = 2)

4.2
Technology that is environmentally friendly and sustainable. (2)

4.3
Causes pollution, destroys natural habitats, and contaminates water. (2)

4.4

- Switch off lights when not in use
- Use energy-saving bulbs
  (Any 1 = 2)

4.5
Examples:

- Smart TVs
- Voice-activated assistants
- Smart fridges
  (Any 2 = 2)

4.6
Any two:

- Engineer
- Architect
- IT Technician
- Electrician
  (2)

4.7
To prepare for future careers, solve problems, and understand the world of technology. (2)

TOTAL: 50 MARKS