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: MATERIALS AND JOINING TECHNIQUES

(13 Marks)

Question 1

1.1 Name **two materials** commonly used to build furniture and explain why they are suitable.
Material 1: _____ – Reason: _____
Material 2: _____ – Reason: _____ (4)

1.2 What is the purpose of using **adhesives** in joining materials?
_____ (2)

1.3 List two examples of **mechanical joining techniques**.

1. _____
2. _____ (2)

1.4 Study the image of a broken chair joint below.

What went wrong in the joining method? Suggest how it can be improved.
Problem: _____
Solution: _____ (2)

1.5 Why is it important to test a structure after it is joined?
_____ (2)

1.6 What is **tack welding** used for?
_____ (1)

SECTION B: ENERGY SYSTEMS

(12 Marks)

Question 2

2.1 Define the term **energy system** and give one example from everyday life.
Definition: _____
Example: _____ (2)

2.2 Identify **two sources of energy** and state whether they are renewable or non-renewable.

1. _____ – _____
2. _____ – _____ (4)

2.3 Study the image of a wind turbine below.

2.3.1 What type of energy is generated by this device?
_____ (1)

2.3.2 List one **advantage** and one **disadvantage** of using this energy.
Advantage: _____
Disadvantage: _____ (2)

2.4 Why should we reduce our use of fossil fuels?
_____ (2)

2.5 Name one **modern device** that uses solar energy.
_____ (1)

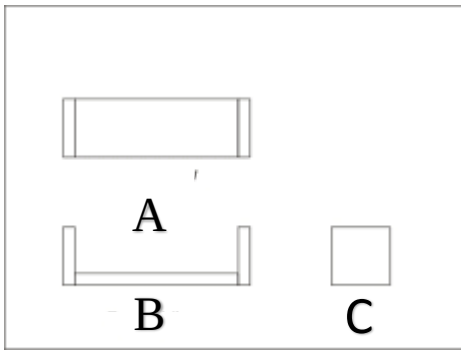
SECTION C: COMMUNICATION THROUGH GRAPHICS

(13 Marks)

Question 3

3.1 What is the **purpose of orthographic drawings** in design?
_____ (2)

3.2 Label the following drawing views:



View A: _____
View B: _____
View C: _____ (3)

3.3 What is the difference between **scale drawing** and **freehand sketching**?
_____ (2)

3.4 Why is it important to include **labels and measurements** in a drawing?
_____ (2)

3.5 Identify the following symbols used in electrical diagrams:
a) —◯—
b) —///\—
c) —⏚—
a: _____
b: _____
c: _____ (3)

1 bonus mark for neatness and clear layout (1)

SECTION D: TECHNOLOGY AND INNOVATION

(12 Marks)

Question 4

4.1 Define **innovation** in your own words.
_____ (2)

4.2 Give an example of a product that has been improved through innovation.
Product: _____
Improvement: _____ (2)

4.3 List two **ways technology improves daily life**.

1. _____

2. _____ (2)

4.4 What is a **prototype**, and why is it important in the design process?
_____ (2)

4.5 Think of a simple invention that would help students at school. Briefly describe it and what problem it solves.
Name of invention: _____
Description: _____
Problem it solves: _____ (4)

TOTAL: 50 MARKS

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SECTION A: MATERIALS AND JOINING TECHNIQUES (13 MARKS)

1.1
Example answers:

- Wood – Strong, easy to shape
- Steel – Durable, can support heavy loads
  (2 marks per pair = 4)

1.2
To bond materials together securely without using mechanical fasteners. (2)

1.3

- Screws
- Bolts and nuts
- Rivets
  (Any 2 = 2)

1.4
Problem: Weak or loose joint due to poor adhesive or design.
Solution: Use stronger glue or add mechanical fasteners. (1 + 1 = 2)

1.5
To ensure the structure is stable, safe, and fits its purpose. (2)

1.6
Used to temporarily join pieces of metal before a full weld is applied. (1)

SECTION B: ENERGY SYSTEMS (12 MARKS)

2.1
A system that converts energy from one form to another for a purpose.
Example: A torch converts chemical energy to light. (1 + 1 = 2)

2.2
Examples:

- Solar energy – Renewable
- Coal – Non-renewable
  (2 marks per pair = 4)

2.3.1
Wind energy / Renewable energy (1)

2.3.2
Advantage: Clean, renewable
Disadvantage: Depends on wind / expensive setup (1 + 1 = 2)

2.4
Because they pollute the environment and are not sustainable. (2)

2.5
Solar-powered calculator, light, or water heater (1)

SECTION C: COMMUNICATION THROUGH GRAPHICS (13 MARKS)

3.1
To represent all sides of a product accurately for manufacturing. (2)

3.2
A: Front view
B: Top view
C: Side view (3)

3.3
Scale drawings are accurate and proportional; sketches are freehand and quick. (2)

3.4
They help others understand the design clearly and build it correctly. (2)

3.5
a) Bulb
b) Resistor
c) Earth / Ground (3)

Bonus mark for neatness (1)

SECTION D: TECHNOLOGY AND INNOVATION (12 MARKS)

4.1
Innovation is the improvement of existing products or the creation of new ideas. (2)

4.2
Example:
Cellphone – improved with camera and internet
(1 + 1 = 2)

4.3

- Easier communication
- Faster transportation
  (Any 2 = 2)

4.4
A prototype is a working model to test an idea before mass production. (2)

4.5
Any reasonable answer such as:
Invention: Homework scanner
Description: Scans and uploads assignments to the teacher
Problem solved: Lost or forgotten homework
(4 marks for originality, relevance, and completeness = 4)

TOTAL: 50 MARKS