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: STRUCTURES AND MATERIALS

(12 Marks)

Question 1

1.1 What is the **difference between natural and man-made structures**?

_____ (2)

1.2 Name one **natural structure** and one **man-made structure**:
Natural: _____
Man-made: _____ (2)

1.3 Give two **properties of materials** that make them suitable for construction.

1. _____
2. _____ (2)

1.4 Study the image below of a collapsed building:

1.4.1 Give one possible **reason** for the collapse.
_____ (1)

1.4.2 What design principle could have prevented this?
_____ (1)

1.5 Define the term **bracing** in structures.
_____ (2)

1.6 Give one example where **bracing is used** in everyday life.
_____ (2)

SECTION B: MECHANICAL SYSTEMS AND CONTROL

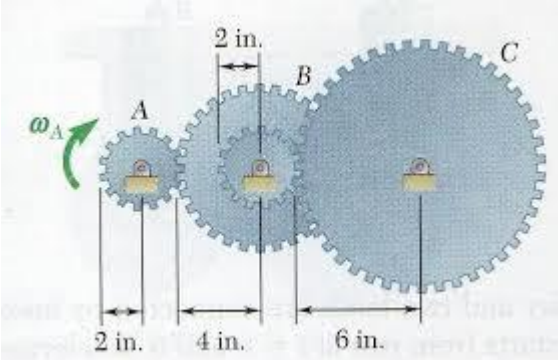
(14 Marks)

Question 2

2.1 What is a **pulley** used for in mechanical systems?
_____ (2)

2.2 Identify the **mechanical advantage** of using a pulley system.
_____ (2)

2.3 Study the diagram of a gear system and answer the question:



2.3.1 What direction will Gear C turn?
_____ (1)

2.3.2 What is the purpose of an **idler gear**?
_____ (2)

2.4 Name and describe one example of a **mechanism** used in bicycles.

_____

_____ (2)

2.5 What is the **function of lubrication** in mechanical systems?
_____ (2)

2.6 Match each machine to its function:
(Write the correct number and letter)

1. Lever
2. Inclined plane
3. Pulley

A. Lifts or lowers loads
B. Reduces effort by pivoting
C. Helps move heavy objects upward
1 → ___

2 → ___
3 → ___ (3)

SECTION C: TECHNOLOGY IN SOCIETY

(12 Marks)

Question 3

3.1 What is **renewable energy**? Give an example.
_____ (2)

3.2 How does **solar power** benefit rural communities?
_____ (2)

3.3 Name two **ways learners can reduce energy use** at home or school.

1. _____
2. _____ (2)

3.4 What are two **dangers of overusing digital devices**?

1. _____
2. _____ (2)

3.5 Explain how **technology can support learning** in the classroom.

_____ (2)

3.6 Name one **negative impact of technology on the environment**.
_____ (2)

SECTION D: DESIGN SKILLS AND PROCESSES

(12 Marks)

Question 4

4.1 What is the purpose of **a design portfolio**?
_____ (2)

4.2 List the **steps of the technological process** in order.

1. _____
2. _____
3. _____
4. _____ (4)

4.3 Why is it important to evaluate a design after building it?
_____ (2)

4.4 Describe what a **working drawing** includes.

_____

_____ (2)

4.5 What are **constraints** in a design task? Give an example.
Definition: _____
Example: _____ (2)

_____

TOTAL: 50 MARKS

MEMO

SECTION A: STRUCTURES AND MATERIALS (12 MARKS)

1.1
Natural structures are formed in nature (e.g., trees, mountains), while man-made structures are built by people (e.g., buildings, bridges). (2)

1.2
Natural: Tree, honeycomb
Man-made: House, tower, bridge
(1 mark each = 2)

1.3

- Strength
- Flexibility
- Durability
- Lightweight (Any 2 = 2)

1.4.1
Poor foundation, weak materials, or structural overload. (1)

1.4.2
Use of stronger foundations or reinforced beams. (1)

1.5
Bracing involves placing supports (often diagonally) to strengthen a structure and prevent movement or collapse. (2)

1.6
Examples: In scaffolding, bookshelves, tables, or roof trusses. (Any relevant = 2)

SECTION B: MECHANICAL SYSTEMS AND CONTROL (14 MARKS)

2.1
To lift or move heavy loads with less effort. (2)

2.2
Reduces the amount of force needed to move a load. (2)

2.3.1
Clockwise (1)

2.3.2
It changes the direction of rotation without affecting speed or force. (2)

2.4
Example: Chain and sprocket – used to transfer force from pedals to wheels. (2)

2.5
Reduces friction and wear between moving parts. (2)

2.6
1 → B
2 → C
3 → A (3)

SECTION C: TECHNOLOGY IN SOCIETY (12 MARKS)

3.1
Energy from sources that are naturally replenished, e.g., solar, wind, water. (2)

3.2
Provides electricity for lights, charging, and appliances in areas without access to the power grid. (2)

3.3

- Turn off lights when not in use
- Use energy-saving appliances
  (Any 2 = 2)

3.4

- Eye strain
- Poor posture
- Lack of sleep or physical activity
  (Any 2 = 2)

3.5
Interactive learning, access to online resources, and better visual/auditory tools for understanding. (2)

3.6
Pollution from e-waste, mining for raw materials, or energy consumption. (2)

SECTION D: DESIGN SKILLS AND PROCESSES (12 MARKS)

4.1
To document each stage of the design process and show progress. (2)

4.2

1. Investigate
2. Design
3. Make
4. Evaluate (4)

4.3
To see what works well and identify areas for improvement. (2)

4.4
Measurements, labels, materials, and side views. (2)

4.5
Constraints are limitations or rules in the task.
Example: Budget, time, available tools/materials. (2)

TOTAL: 50 MARKS