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

(15 Marks)

Question 1

1.1 Define the term **structure**.

_____

_____ (2)

1.2 List **three functions** of a structure.

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

1.3 Identify the **type of structure** shown in the image below:

_____ (1)

1.4 Name two **types of forces** that act on structures.

1. _____
2. _____ (2)

1.5 Explain how **triangulation** helps make structures stronger.

_____

_____ (2)

1.6 Match the columns below:
(Write the correct letter next to the number.)

1. Beam	A. Long horizontal support
2. Column	B. Resists bending
3. Tie	C. Prevents parts from spreading
4. Strut	D. Resists compression

5.
(4)

SECTION B: SYSTEMS AND CONTROL

(15 Marks)

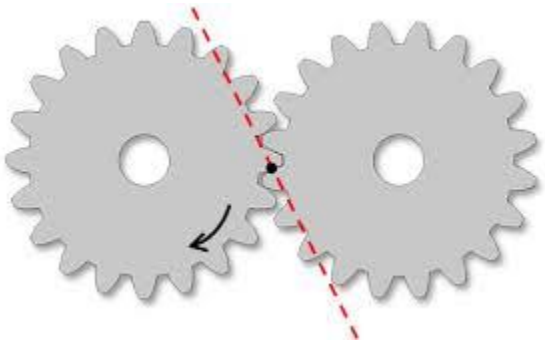
Question 2

2.1 What is a **mechanical system**?
_____ (2)

2.2 Name any **two simple machines**.

1. _____
2. _____ (2)

2.3 Study the diagram of the gear system below and answer the questions:



2.3.1 If Gear A turns clockwise, in what direction will Gear B turn?
_____ (1)

2.3.2 What is the function of gears in a mechanical system?

_____ (2)

2.4 What is a **lever**, and give one example from everyday life.
Definition: _____
Example: _____ (2)

2.5 Identify the **class of lever** in this image:

_____ (1)

2.6 Why is it important to maintain mechanical systems regularly?

_____

_____ (2)

_____

SECTION C: PROCESSING & DESIGN

(10 Marks)

Question 3

3.1 What are the **steps of the design process** in correct order?

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

3.2 What is a **mock-up** or **prototype**?
_____ (2)

3.3 Why is research an important part of the design process?

_____

_____ (2)

3.4 Which step in the design process would include drawing a labelled sketch?
_____ (2)

SECTION D: IMPACT OF TECHNOLOGY

(10 Marks)

Question 4

4.1 Name one **positive** and one **negative** impact of technology on the environment.
Positive: _____
Negative: _____ (2)

4.2 Explain how technology helps people with disabilities.

_____ (2)

4.3 Give two examples of **renewable energy sources**.

1. _____
2. _____ (2)

4.4 How can learners reduce **electronic waste** at school?
_____ (2)

4.5 Should old technology always be thrown away? Why or why not?

_____ (2)

TOTAL: 50 MARKS

MEMO

SECTION A: STRUCTURES (15 MARKS)

Question 1

1.1 A structure is something that is built or constructed to support a load. (2)

1.2 Any 3 of the following:

- To support
- To span a space
- To contain
- To protect
- To lift
  (3)

1.3 Example answer: Frame structure (if an image of a tower is shown) or Shell structure (if dome is shown) – depends on the image. (1)

1.4 Compression and tension (2)

1.5 Triangulation helps to spread out forces and makes the structure stable by preventing it from changing shape. (2)

1.6
1 → A
2 → D
3 → C
4 → B
(4)

SECTION B: SYSTEMS AND CONTROL (15 MARKS)

Question 2

2.1 A mechanical system is a system that uses machines and moving parts to complete a task. (2)

2.2 Any 2 of the following:

- Lever
- Pulley
- Wheel and axle
- Inclined plane
- Wedge

- Screw
  (2)

2.3.1 Gear B will turn anti-clockwise. (1)

2.3.2 Gears transfer motion and force between machine parts and can change speed or direction. (2)

2.4
Definition: A lever is a simple machine made of a bar that pivots on a fulcrum.
Example: See-saw, scissors, crowbar, bottle opener, etc.
(2)

2.5 Class 1 lever (1)

2.6 Regular maintenance prevents breakdowns, increases safety, and extends the life of the system. (2)

SECTION C: PROCESSING & DESIGN (10 MARKS)

Question 3

3.1

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

3.2 A mock-up or prototype is a working model of a design used for testing or demonstration. (2)

3.3 Research helps you understand the problem and find possible solutions. (2)

3.4 The “Design” step. (2)

SECTION D: IMPACT OF TECHNOLOGY (10 MARKS)

Question 4

4.1
Positive: Easier communication, renewable energy, improved transport, etc.
Negative: Pollution, deforestation, e-waste, etc.
(2)

4.2 Technology such as wheelchairs, hearing aids, and speech-to-text apps improve access and independence for people with disabilities. (2)

4.3 Any two:

- Solar energy
- Wind energy
- Hydroelectricity
- Biomass
  (2)

4.4 By recycling old devices, donating working items, or organising e-waste collection drives. (2)

4.5 No – it can be reused, recycled, or donated to those in need. It reduces waste. (2)

TOTAL: 50 MARKS