SMARTWIZ

GRADE 9 TECHNOLOGY EXAM

MARKS: 80	MARKS	
TIME: 2 hours		
SCHOOL		_
CLASS (e.g. 4A)		
SURNAME		
NAME		_
MYST PATHW	ORK	S

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 8 pages, excluding the cover page.

E SECTION A: STRUCTURES (20 MARKS)

JESTION 1: TYPES OF STRUCTURES (10 MARKS)	
Define the term structure .	
	(2)
Name and describe two types of structures used in buildings.	
	(4)
MYST PATHWO	DRKS
Identify one natural structure and one man-made structure. tural:	
Why is a truss structure stronger than a flat beam?	
	(2)
UESTION 2: STRENGTHENING TECHNIQUES (10 M	ARKS)
Define the term reinforcement .	

	(2)
	gram below of a weak bridge frame. two changes you would make to strengthen it. (6)
SECTION SECTION	ON B: MECHANICAL SYSTEMS & CONTROL (20
MARKS)	ON B. MECHANICAL SISTEMS & CONTROL (20
QUESTION 3:	: MECHANISMS (10 MARKS) r system?
	(2)
	
	ee main types of gears.
))	

4 What is the	function of a pulley system in lifting a load?
	(2)
	(2)
QUESTION	4: SYSTEMS & CONTROL (10 MARKS)
_	
	nput, process, and output using a light switch as an example.
-	
Output:	(6)
1	
4 2 Wiles in sec.	mtomorpo important in mochanical quetamo?
4.2 Wily is mai	ntenance important in mechanical systems?
	MIYST PATHIWWOIRIKS
	(2)
4.3 Give two ex	camples of control systems used in homes.
a)	
a) b)	(2)

QUESTION 5: BASIC ELECTRICITY (10 MARKS)

- 5.1 Draw a simple electrical circuit with:
 - A battery
 - A switch
 - A light bulb Label each part clearly in the space below. (4)

2 What is the function of a s	witch in a circuit?	
2 What is the function of a s	witch in a chedit.	•
		(2)
3 Name the unit used to mea		
Current – Voltage –	(2)	
voltage =	(2)	
4 State one safety rule when	n working with electricity.	
MIY	ST PATHW	
		(2)
_		
UESTION 6: ENERGY	AND POWER (10 MARKS)	
1 Define renewable energy	and give one example.	
	1	
xample:	(3)	
2 Name two advantages of		
	(2)	

6.3 What is meant by the term **fossil fuels**?

	(2)
6.4 Why is energy efficiency important in technology?	
	(3)

TOTAL: 80



MEMO

Marks

SECTION A: STRUCTURES (20 MARKS)

QUESTION 1: TYPES OF STRUCTURES (10 MARKS)

1.1

A structure is something that has been built or constructed and is made to support a load. ✓✓

1.2

- a) Frame structure Made up of parts joined together to form a skeleton, e.g., a bridge frame. 🗸 🗸
- b) Solid structure Made from solid materials and heavy, e.g., a dam wall or brick wall. ✓✓

1.3

Natural: Tree / Honeycomb ✓

Man-made: Skyscraper / Car / Bridge ✓

1.4

 A truss structure is made using triangular units, which distribute force more efficiently and prevent bending. ✓√

QUESTION 2: STRENGTHENING TECHNIQUES (10 MARKS)

2.1

Reinforcement means strengthening a structure to make it more stable and able to carry more load.
 ✓

2.2

- Bracing
- Using triangular shapes
- Gussets (Any two ✓✓)

2.3

Learners should draw:

- Diagonal supports or cross-braces ✓✓
- Add vertical supports ✓✓
- Correct labels ✓✓
 (6 marks for two improvements clearly shown and labeled)

SECTION B: MECHANICAL SYSTEMS & CONTROL (20 MARKS)

QUESTION 3: MECHANISMS (10 MARKS)

3.1

 A gear system is a set of gears working together to transfer motion and force from one part of a machine to another. ✓✓

3.2

- Spur gear ✓
- Bevel gear ✓
- Worm gear ✓

3.3

- a) Decrease ✓
- b) The driven gear has more teeth, so it turns slower than the driver gear. $\checkmark\checkmark$

3.4

A pulley system helps lift a heavy load by changing the direction of the force and reducing effort.

QUESTION 4: SYSTEMS & CONTROL (10 MARKS)

4.1

Input: Pressing the light switch ✓

Process: Electrical current flows through wires ✓

Output: The light bulb turns on \checkmark

(2 marks each = 6)

4.2

• Maintenance prevents wear and tear, keeps systems working safely and efficiently. 🗸 🗸

4.3

- Thermostat ✓
- Motion sensor lights / Alarm systems / Geyser timer ✓

SECTION C: ELECTRICAL SYSTEMS (20 MARKS)

QUESTION 5: BASIC ELECTRICITY (10 MARKS)

5.1

- Correct drawing showing a complete circuit with:
 - **✓** Battery (labeled)
 - ✓ Switch (labeled)
 - ✓ Light bulb (labeled)
 - ✓ Correct circuit layout (series)
 - (1 mark each = 4)

5.2

A switch opens or closes a circuit, controlling the flow of electricity. ✓✓

5.3

- a) Current Ampere ✓
- b) Voltage Volt ✓

5.4

• Don't touch electrical appliances with wet hands / Don't overload plugs / Turn off power before repairs ✓✓

QUESTION 6: ENERGY AND POWER (10 MARKS)

6.1

- Renewable energy is energy that comes from natural sources that are continuously replenished. ✓✓
- Example: Solar / Wind / Hydropower √

6.2

• Reduces electricity bills ✓

• Environmentally friendly / No pollution ✓

6.3

• Fossil fuels are non-renewable energy sources formed from the remains of ancient plants and animals (e.g., coal, oil, natural gas). ✓✓

6.4

- Energy efficiency means using less energy to perform the same task.
- It reduces cost, saves resources, and protects the environment. ✓✓✓

TOTAL: 80

