

TECHNOLOGY TEST

This question paper consists of 7 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of THREE SECTIONS: SECTIONS A, B AND C
2. Answer ALL the questions.
3. Read ALL the questions carefully before you write the answers.
4. Number your questions exactly as they appear in the question paper.
5. Write neatly and legibly.
6. Sketches must be clear, neat and done in pencil.

The question paper consist of the following:

SPECIFIC AIMS ASSESSED

- SA 1: TECHNOLOGICAL PROCESSES AND SKILLS (50%)
- SA 2: TECHNOLOGICAL KNOWLEDGE AND UNDERSTANDING (30%)
- SA 3: TECHNOLOGY, SOCIETY AND THE ENVIRONMENT (20%)

SECTION A	SPECIFIC AIM: 1	20 Marks
SECTION B	SPECIFIC AIM: 2	12 Marks
SECTION C	SPECIFIC AIM: 3	8 Marks

Mark distribution:

Grade	Marks	Cognitive Levels			Weighting		
		Low order	Middle order	High order	S	K	V & A
		30%	40%	30%	50%	30%	20%
8	40	12	16	12	20	12	8

QUESTION 1

[14]

1. Read the scenario below and answer the following questions:

“Keep the lights on”

Load shedding, the planned power outage imposed by the government to manage electricity supply, has become part of our daily lives. While the effects of load shedding are felt across different sectors of society, schools are one of the most affected institutions. Load shedding is crippling schools and their systems, but there are practical solutions schools can invest in to help them “keep the lights on”.

As this phenomenon increases from “stage 2 to stage 4” over the past months, more learners are affected negatively. Ryan and Bryan are sharing a room with their sister Boitumelo. Although they try to complete their homework before load shedding they still need to study for the examination.

Sharing a room and using one table lamp might affect those that want to sleep early at night while others need to study. The table lamp must provide sufficient light to the person doing homework or studying. To be considerate they will need to get an adjustable, rechargeable table lamp that will not affect those that want to sleep early.

Requirements for the table lamp:

- It must provide enough light to the person that study without disturbing others.
- It must be connected and operated by two switches.
- If it falls or be tripped by accident, it should not break easily.
- The table lamp should be attractive to blend in with the colour of the room.
- The light bulb must be modified to have two switches that can be operated from different points, at the wall socket and close to the lamp.
- The table lamp should also be powered by a battery

*Fig. 1**Fig. 2*

- | | | |
|-----|---|-----|
| 1.1 | Discuss your understanding of load shedding. | (1) |
| 1.2 | What do you understand about “stage 4” load shedding? | (1) |
| 1.3 | Identify the challenge faced by the children in the scenario. | (1) |
| 1.4 | Write the design brief for the scenario. (Indicate the size in millimetre you want the bed lamp to be, the shape as well as the material you would like to use for the shade of the lamp) | (3) |
| 1.5 | Give a breakdown of three specifications for the table lamp. | (2) |
| 1.6 | List two limitations for the table lamp. | (2) |

- 1.7 Draw freehand a sketch of your ideal table lamp. Add labelling and measurements to the sketch to make it user friendly. (4)

QUESTION 2

- 2.1 Use the oblique drawing of a staircase below, Fig 3, to draw in First Angle Orthographic Projection (FAOP) a **FRONT VIEW**, **LEFT VIEW** and a **TOP VIEW**. Complete the drawing on **ANNEXURE A**. (6)

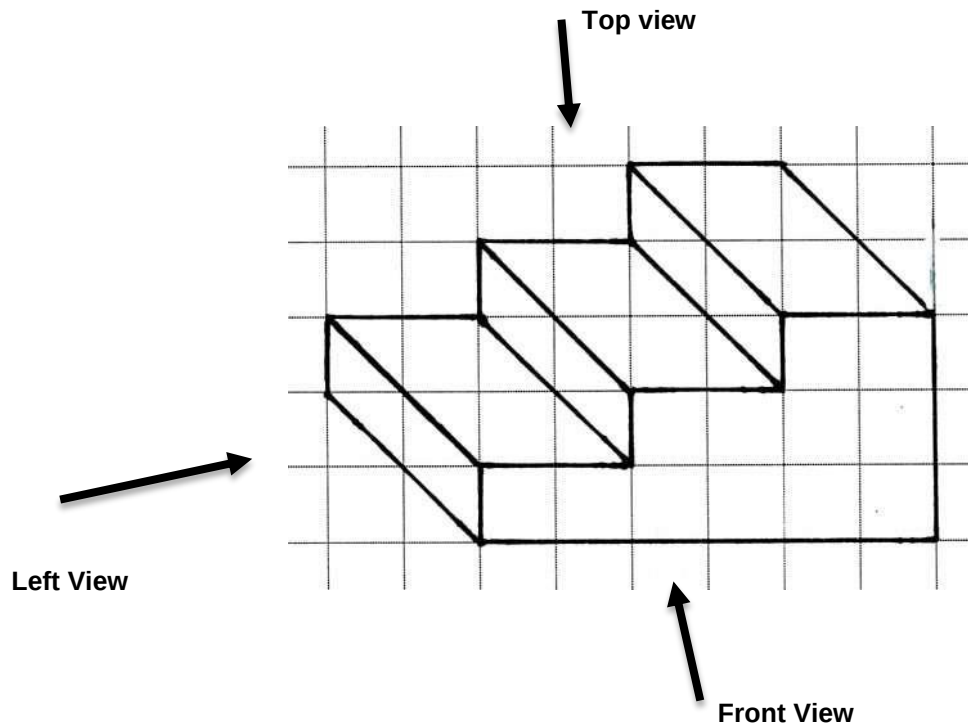


Figure 3: Staircase

Marks to be allocated as follows:

LEVEL & %	DESCRIPTION	MARK
4 70 - 100	The drawings is correct, neat, accurate and according to the SA drawing conventions. The three view are correctly place on the grid. Exceptional drawing skills were displayed.	5, 6
3 50 - 69	Good drawing skills. Drawing is neat. Still room to improve on the sketch. Good positioning of the three views on the grid.	3, 4
2 20 - 49	Good attempt by the learner but need more support with regards to positioning and correct completion of different views. The views projected are not clear. Need more practise. Drawings is not neat.	2, 3
1 0 - 19	The drawings are incorrect, untidy, and inaccurate. Very poor attempt. Still need a lot of assistance to complete a FAOP.	1

QUESTION 3

3 Choose the correct answer. Write only the correct LETTER to the correct NUMBER in the answering sheet. [2]

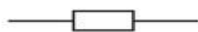
3.1 Two or more spur gears that meshed together, Figure 4, are called a... (1)

- A Pinion
- B Gear train
- C Gear Ratio
- D Idler gear



Figure 4

3.2 The correct diagram that represent a cell is, is illustrated by ... (1)

- A 
- B 
- C 
- D 

QUESTION 4

[2]

4 State whether the following statements are **TRUE** or **FALSE**

4.1 Mining may lead to deforestation, erosion and water pollution. (1)

4.2 The main function of the intermediate gear is to change the direction of rotation of the output gear. (1)

QUESTION 5

[4]

5

Match the description of column A with column B. Write only the correct **LETTER** next to the correct **NUMBER**.

(4)

5.1

COLUMN A	COLUMN B
5.1.1 A surface mining technique used to extract rocks and minerals	A Switch
5.1.2 Use the downward flow of water to generate electricity	B Mechanical advantage
5.1.3 Solar cells	C Opencast mining
5.1.4 When the teeth of two or more gears engage	D merging
	E Hydraulic power station
	F photovoltaic cell

QUESTION 6

[4]

6

Study the circuit diagram, Figure 5, below and answer the questions that follows.

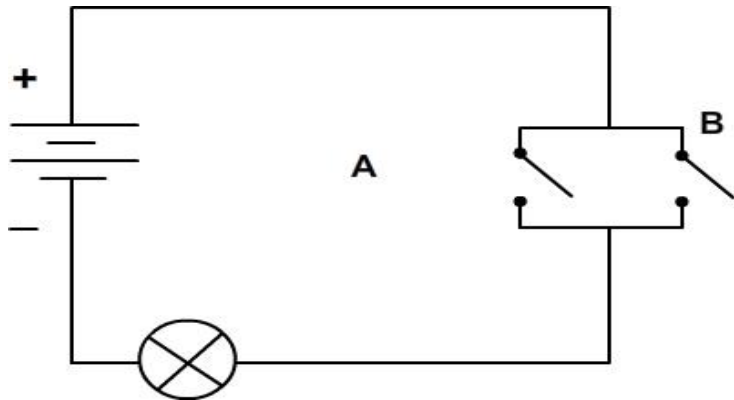


Figure 5

6.1

Redraw the table below in your answering sheet. Complete the truth table to show all the different combinations possible that **SWITCH A** and **SWITCH B** will have on the bulb. Indicate a “0” for an “OFF” position and “1” for an “ON” or closed position. The first possible position of the switch is completed for you. Complete the other **THREE POSSIBLE POSITIONS** of the truth table.

(4)

Switch A	Switch B	Bulb
0	0	0
1		

(8 ÷ 2 = 4)

QUESTION 7

7 Study the illustration in Figure 6 below and answer the questions that follow.

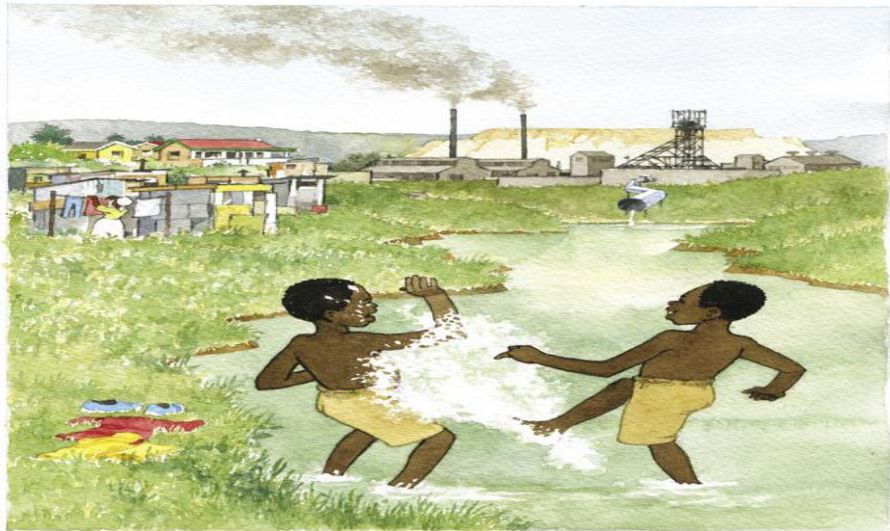


Figure 6

- 7.1 Using the illustration in figure 6 above to describe **THREE** negative impacts that mining have on the environment. (3)
- 7.2 Compile **TWO** positive impacts that mining have on human beings. (2)
- 7.3 Study the picture below, Figure 7 and answer the questions that follow:



Figure 7

- 7.3.1 Identify the type of energy illustrated in figure 7. (1)
- 7.3.2 Generate **TWO** reasons why the government should invest in renewable energy. (2)

THE END

NAME: _____ GRADE _____

ANNEXURE A: First Angle Orthographic Projection Grid

