



Education and Sport Development

Department of Education and Sport Development
Departement van Onderwys en Sportontwikkeling
Lefapha la Thuto le Tlhabololo ya Metshameko

NORTH WEST PROVINCE

NORTH WEST PROVINCIAL ASSESSMENT

GRADE 9

**TECHNOLOGY
NOVEMBER 2016**

**MARKS: 120
TIME: 2 hours**

This question paper consists of 12 pages.

INSTRUCTIONS TO LEARNERS:

1. Read all instructions carefully.
2. Answer all questions in the answer sheet provided.
3. Write neatly and legibly.
4. All the drawings must be done on the grid paper provided.

Resources needed for drawing

1. Pencil (HP)
2. Eraser/Rubber
3. Calculator
4. Ruler

QUESTION 1

1.1 Choose the correct answer from the ones given below. Write the letter of the correct answer next to the question number. Example: 1.11.1 B

1.1.1 One of the following devices stores electric charges

- A Light dependant resistor
- B Capacitor
- C Diode
- D Thermistor (1)

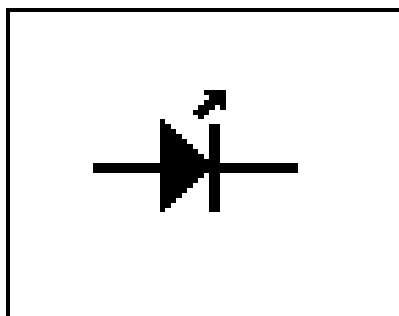
1.1.2 A member of a structure which has to resist bending is known as ...

- A Strut
- B Column
- C Beam
- D Guy (1)

1.1.3 Crank systems are used to ...

- A combine other systems
- B change up and down / reciprocating movement to rotary movement
- C increase or decrease the speed of rotation and the magnitude of force
- D increase the lifespan of a system (1)

1.1.4 The electronic symbol below represents ...



- A Light Dependant Resistor (LDR)
- B Bulb
- C Resistor
- D Light Emitting Diode (1)

- 1.1.5 When a load acting on a structure changes all the times it is said to be ...
- A static
 - B dynamic
 - C synthetic
 - D recyclable (1)
- 1.1.6 Under which category can corrosion of metals be grouped?
- A physical
 - B mechanical
 - C electrical
 - D chemical (1)
- 1.1.7 Factors that limit creativity when analysing a given problem are known as...
- A solutions
 - B design brief
 - C constraints
 - D specifications (1)
- 1.1.8 Which statement best describe a pneumatic system?
- A It is a sealed or closed system that uses water.
 - B It is a closed system that uses air.
 - C It is an open system that uses compressed air.
 - D It is an open system that uses oil. (1)
- 1.1.9 One of the following is not a term used to describe the motion of a mechanism.
- A Clockwise
 - B Reciprocating
 - C Linear
 - D Oscillating (1)
- 1.1.10 The property of a material that enables it to resist being scratches is...
- A Ductility
 - B Flexibility
 - C Stiffness
 - D Hardness (1)

[10]

1.2 State whether the following statements are true or false.

1.2.1 All electrical circuits contain resistance. (1)

1.2.2 Wood can be shaped into different forms and returned to its original form. (1)

1.2.3 Perspective drawings are based on the way the human eye sees the world. (1)

1.2.4 Compound gears are formed when two gears of different sizes are fixed together on the same axle. (1)

1.2.5 The process of reducing speed of a car is called gearing up. (1)
[5]

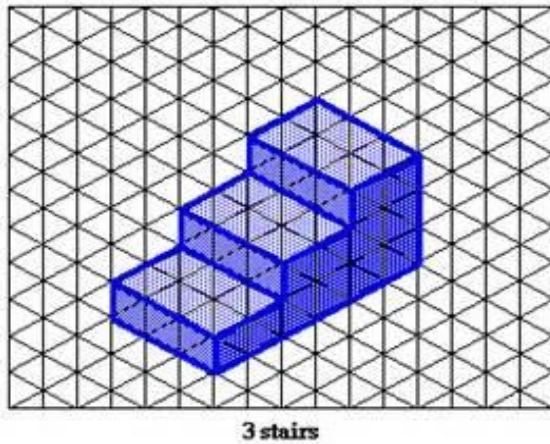
QUESTION 2

2.1 Match Column A to the correct statement in Column B. Write only the question number and the letter of the correct answer.

Column A	Column B
2.1.1 An example of a renewable resource	A Ratchet and pawl
2.1.2 A mechanism that allows the rotation in one direction only.	B Pulley
2.1.3 Materials that allow the current to flow.	C Transistor
2.1.4 A semi-conductor device that consist of three layes.	D Conduits
2.1.5 A wheel with a groove around the edge rotating freely around an axle.	E Conductors
	F Wind
	G Gears
	H Craft shaft

[5]

- 2.2 The figure below shows stairs in isometric. Draw in first angle orthographic projection the front view, top view and left view of the model on the grid provided.



[10]

Criteria	Mark allocation
Views correctly placed according to first angle orthographic projection	3
Views are correctly drawn as represented in the isometric model	3
Correct usage of line work	2
Neatness of the drawing	2

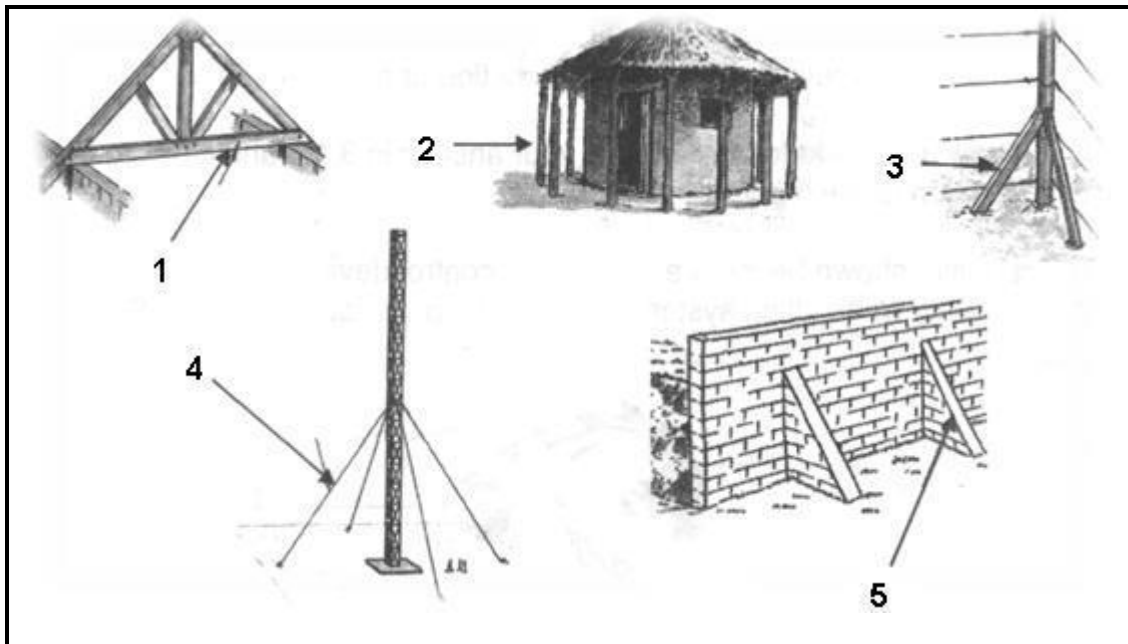
QUESTION 3

- 3.1 Look at the structure below and answer questions that follow.

- 3.1.1 What can be done to make the structure below not to bend? (2)



3.1.2 Identify the structural parts used to strengthen each of the following structures. Write down the numbers 1 – 5 and the correct name of the structural part next to each number.



(5)

[7]

QUESTION 4

- 4.1 State Ohms law. (2)
- 4.2 What does SPDT stand for? (2)
- 4.3 Describe the function of a resistor as a component in an electrical circuit. (2)
- 4.4 Identify the following truth tables (**A and B**) below and draw the circuit diagram to represent each.

Truth Table A

Input A	Input B	Output
0	0	0
0	1	0
1	0	0
1	1	1

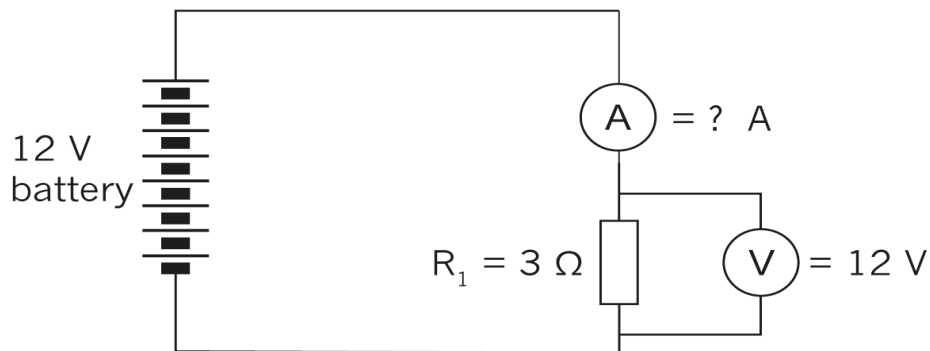
(5)

Truth Table B

Input A	Input B	Output
0	0	0
0	1	1
1	0	1
1	1	1

(5)

- 4.5 Calculate the value of the current in the circuit below if the resistor has a value of $3\ \Omega$ and the voltage across the resistor is $12\ \text{V}$.



(4)

[20]**QUESTION 5**

- 5.1 Metals are classified into two groups. Name each and give one example of each. (4)
- 5.2 Explain the process of electroplating as a method of preserving a metal. (2)
- 5.3 Which metal can be used to coat an object when electroplating? (1)

5.4 Read the following extract and answer the questions that follow.

Thukela Municipality

REQUEST FOR TENDER – Access Bridge for KwaNogawu Village

You are hereby invited to submit a tender for the requirements of the Thukela Municipality.

Tender Number: GH038

The successful tender must provide a safe, cost-effective solution for the villagers to cross the local river. The river is 100 meters wide at the crossing point. It rises during the winter rains and there are crocodiles in the river all year round.

Closing date:

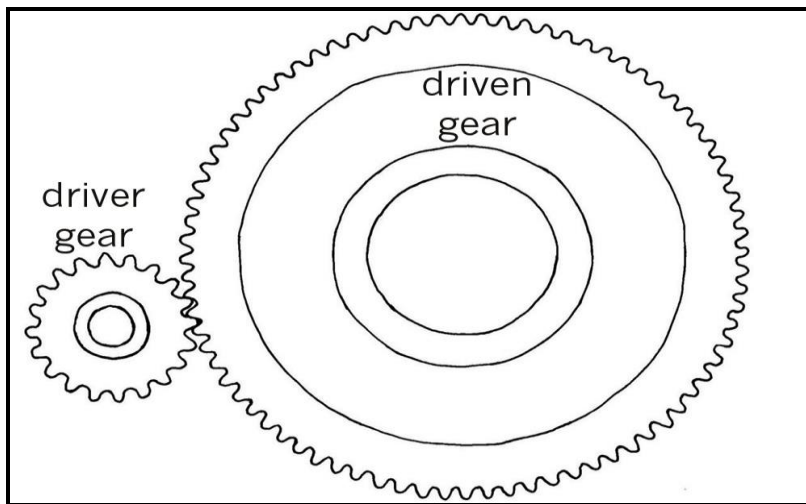
Enquiries: Mrs Leslie Oats

Extracted from *Sasol Inzalo workbook* (Book 1 page 47)

- 5.4.1 Identify the problem encountered from the extract above. (2)
- 5.4.2 Mention any two specifications mentioned in this tender request. (2)
- 5.4.3 State two reasons why it is important to place a tender request. (2)
- 5.4.4 What is a tender? (2)
- 5.4.5 Draw a rough sketch to solve the problem identified in the extract. (4)
- [19]**

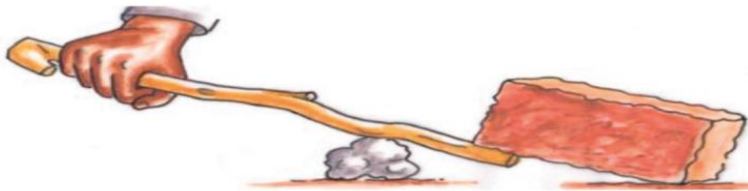
QUESTION 6

The diagram below depicts the set of gears. The driver gear has 20 teeth and the driven gear has 80 teeth.

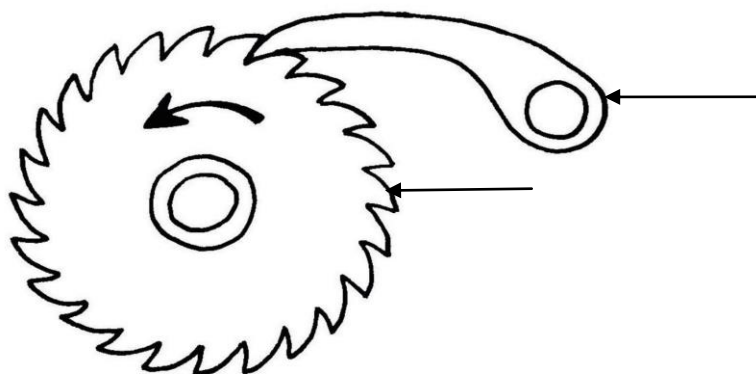


6.1 Is this gear system increasing the rotational force or decreasing it? Explain your answer. (3)

6.2 Identify the class of lever that is shown below. (1)



6.3 Study the following diagram carefully and answer the questions that follow.



6.3.1 Label the diagram below. (2)

6.3.2 What is the function of this mechanism? (2)

QUESTION 7

Force is measured in Newton.

Pressure is measured in Pascal. (1 Pascal = 1 Newton per square meter)

Area is measured in square meters.

Force = pressure \times area

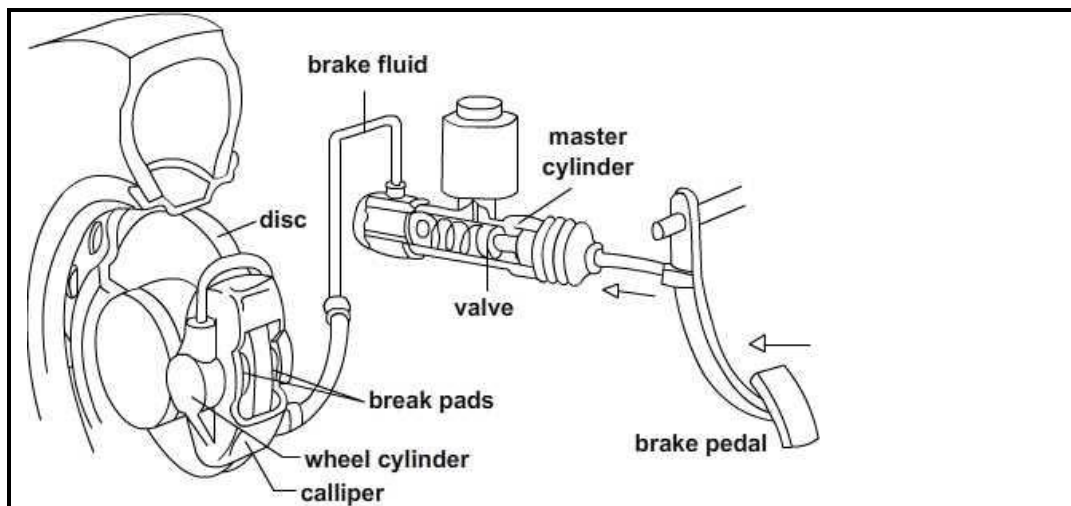
Pressure = force \div area

The pressure in a hydraulic system is 10.0 Pascal.

7.1 Calculate the output force if the output piston has a surface area of 0.5m^2 . (4)

7.2 With the aid of the diagram below, critically describe what happens in the system which controls the brakes when a driver pushes the brake pedal of a car. (9)

Use a systems diagram to explain your answer



[13]

QUESTION 8

Read the following information and answer the questions that follow.

Corrosion and corrosion resistance

The correct name for rust is corrosion. Corrosion can cause a metal to weaken or even break if the metal is not protected against rust.

We need to process materials to be corrosion resistant, especially in areas where moisture and salt are prevalent.

8.1 Where would you expect to find more corrosion – inland or on the coast? Explain your answer. (2)

8.2 Why do ships corrode very badly unless corrosion is prevented? (1)

8.3 Which of these products would you expect to corrode? Indicate with a \checkmark or an x

	\checkmark	X
Corrugated iron		
Galvanised iron		
Stainless steel cutlery		
Coke can		
Mild steel		

(5)
[8]

QUESTION 9

9.1 Different types of plastics have different properties that make them suitable for different functions.

9.1.1 Justify this statement by giving five properties of plastics. (5)

9.1.2 Plastics are classified into two groups. Name them and give one example of each group. (6)

9.1.3 Write down two reasons why we should recycle plastics. (4)

[15]

GRAND TOTAL: 120