



EKURHULENI NORTH DISTRICT

NOVEMBER MEMO

2018

TECHNOLOGY GRADE 8

MARKS : 100

TIME : 90 Minutes

SPECIFIC AIMS:

SECTION	POSSIBLE MARKS	MARKS OBTAINED	MODERATED MARK
A	30		
B	50		
C	20		
TOTAL	100		

This memo consists of **07 pages**

SECTION A: TECHNOLOGICAL KNOWLEDGE AND UNDERSTANDING [30 MARKS]

QUESTION 1



Answer

1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.1.7	1.1.8	1.1.9	1.1.10
D	B	B	D	B	B	B	D	B	C

$$(10 \div 2 = 5)$$

1.2 Match column A with column B. Write your answer in the space provided.

Answer

1.2.1	1.2.2	1.2.3	1.2.4
D	E	A	F

$$(4 \div 2 = 2)$$

1.3 The pictures below show different ways that bridges can fail (structural failure). Describe what went wrong in each case.

1.3.1 Bending: The structure bends ✓

1.3.2 Fracture: Structure breaks. ✓

1.3.3 Structure topples over ✓

1.4 Can arches be used instead of lintels when houses are designed and built? Explain.

Yes. ✓ Arches can be used to support structures under doorways. ✓

1.5 Complete the statements below by choosing the correct answer in the brackets:

1.5.1 If the distance between a fulcrum and the output is less than the distance between the fulcrum and the input, the output force will be greater than the input force and the lever gives (**mechanical advantage**/ distance advantage). $(\frac{1}{2})$

1.5.2 If the distance between a fulcrum and the output is greater than the distance between the fulcrum and the input, the output force will be less than the input force and the lever gives (mechanical advantage/ **distance advantage**). $(\frac{1}{2})$

1.6 A gear system has a driver gear with 20 teeth and the driven gear with 80 teeth.

1.6.1 Work out the gear ratio

Gear Ratio = $\frac{\text{Number of teeth of driven gear}}{\text{Number of teeth of driver gear}}$ ✓ = $80/20$ ✓ = 4:1 ✓

1.6.2 Will this system gear up or gear down?

Gear down ✓

1.7 List TWO machines that use gear systems in real life.

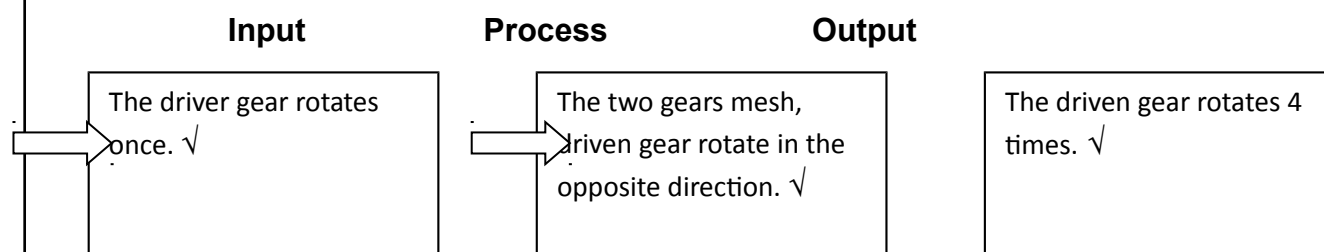
1.7.1 Clocks ✓

1.7.2 Egg beaters ✓

Cars/blenders/sewing machines/wind-up toys

Any two correct answers

1.8 Draw a system diagram of the gear train which a driver gear with 16 teeth and a driven gear with 4 teeth.



1.9 Give an advantages of using a chain drive rather than spur gears

Chain drives can easily and cheaply connect gears that are far away from each other. ✓

A chain can be adjusted easily if the distance between the axles of the two gears changes.

Any correct answer

QUESTION 2

2.1 Draw the electrical symbols of the components given in the table below:

Electrical component	Symbol
2.1.1 A single cell	
2.1.2. Open switch	
2.1.3 Motor	

2.2 Differentiate between a step up and step down transformer.

A step up transformer increases the voltage ✓ and a step down transformer decreases the voltage. ✓

2.3 What do you understand by each energy source below?

2.3.1 Hydro - Electrical

Potential energy of water stored in a dam is converted into electrical energy. ✓

2.3.2 Wind turbines

Wind is used to generate electricity ✓

SECTION B: TECHNOLOGICAL PROCESS AND GRAPHIC COMMUNICATION [30 MARKS]

QUESTION 3

3.1 Write the design brief for the given scenario.

I am going to design and make a mining head gear. ✓ ✓

3.2 List FOUR specifications.

3.2.1 It will transport miners and equipment 500m underground. ✓

3.2.2 It will lift 10 ton of platinum ore. ✓

3.2.3 It will have a winch or hoist to wind or unwind the steel cable. ✓

3.2.4 It will have a sheave wheel (pulley wheel) that sits above the mine shaft. ✓

Any relevant specifications

3.3 List TWO constraints.

3.3.1 Time frames ✓

3.3.2 Lack of skills ✓

Any relevant constraints

3.4 List THREE materials and THREE tools you will use to make the solution. (6)

Materials	Tools
Cardboard ✓	Glue gun ✓
Dowel sticks ✓	Junior hacksaw ✓
Wood ✓	Pliers ✓

Any relevant materials and tools

3.5 Provide FOUR point which you will use to evaluate your project.

3.5.1 Will the headgear be able to transport miners and equipment 500m underground? $\checkmark \checkmark$

3.5.2 Will the head gear be able to lift platinum ore that weighs 10ton back up to the surface? $\checkmark \checkmark$

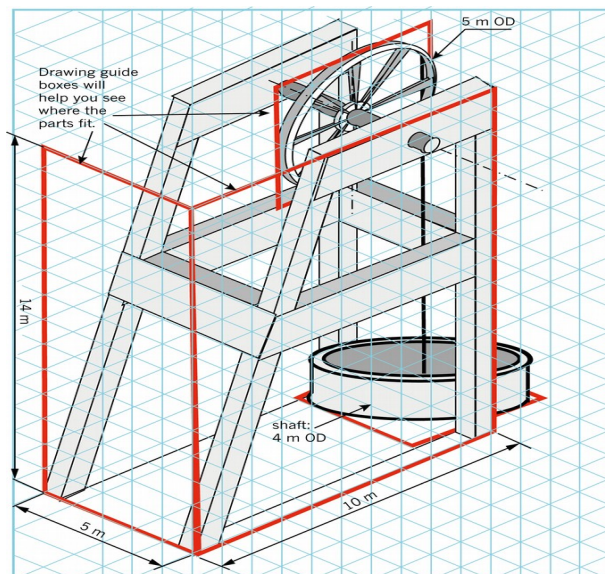
3.5.3 Does the headgear have a winch or hoist to wind or unwind the steel cable and a sheave wheel (pulley wheel) that sits above the mine shaft? $\checkmark \checkmark$

3.5.4 Does it have a head frame which is the structure that supports the sheave wheel which is strong enough to keep the sheave wheel in place when it lifts the heavy mine cage? $\checkmark \checkmark$

3.6 In the space provided below generate an idea of a winding house which is part of the solution to the problem in the scenario. This idea must be a free hand sketch. (6)

Criteria	0	1	2
Solution to the problem (Design brief , specifications and constraint)	The drawing is not a solution to the problem.	The drawing is partly a solution to the problem	The drawing is a solution to the problem.
Free hand	The drawing is not a free hand. (Ruler or other drawing instruments used.	Drawing is partly free hand.	Drawing is completely free hand.
Innovation and creativity	The solution is not innovative nor creative	The solution is innovative but will not work in real life	An innovative and creative solution which will work in real life.

3.7 The given drawing is in 3D isometric. Re-draw it using different line types. Show all dimensions as indicated on the drawing. (8)



Criteria	0	1	2
Correctness	Drawing is not 3 D isometric.	The drawing is partly correct	The drawing is a 3D Isometric, drawn at 30° axis
Line work	Different line types not used	Only one line type used. (Construction, outlines or dimension line)	Construction, outlines or dimension lines used correctly.
Dimensions	Drawing does not have dimensions	Drawing has some dimensions.	Drawing has all dimensions as in the given drawing.
Neatness	Drawing is untidy	Some parts of the drawing are neat	Drawing is very neat.

3.8 Draw a double point perspective of a rectangular block with the height of 60mm, with of 40mm and depth of 20mm. Use the space provided. (14)

Criteria	0	1	2
Correctness	Drawing is incorrect, not a rectangular block	Drawing is partly correct	Drawing is a rectangular block, shows 3 sides.
Double point perspective.	Technique is not applied. Construction lines are not projected to vanishing points	Technique is partly applied.	Technique is correctly applied. Construction lines are projected to vanishing points.
Line work	Different line types not used	Only one line type used. Construction or outlines)	Construction and outlines are used correctly.
Dimensions	Drawing does not have dimensions	Drawing has some dimensions.	Drawing has all dimensions as in the given drawing.
Shading	Drawing is not shaded.	Some parts of the drawing are shaded	All sides of the drawing are shaded
Name, surname, date and title	Name, surname, date and title not completed.	Name, surname, date and title partially completed.	Name, surname, date and title are completed.
Neatness	Drawing is untidy	Some parts of the drawing are neat	Drawing is very neat.

SECTION C: TECHNOLOGY, SOCIETY AND THE ENVIRONMENT [20 MARKS]

QUESTION 4

4.1. What is the negative impact of using fossil fuels to generate electricity. Mention FOUR

4.1.1 It emits greenhouse gases, mostly carbon dioxide, which contributes to climate change. ✓✓

4.1.2 Pieces of natural land have to be dug up to mine the coal. ✓✓

4.1.3 It takes very long to switch a coal power station on or off. ✓✓

4.1.4 There is a limited amount of coal that can be mined. It won't last forever ✓✓

Any relevant answer

4.2.1 What is the positive impact of using fossil fuels to generate electricity? Mention TWO.

4.2.1 Easily available in large quantities ✓✓

4.2.2 It is cheap ✓✓

Any relevant answer

4.3 Your school has embarked on a energy saving campaign. Design a poster which indicate ways of saving electricity.
(8)

- **Your poster must have a title: 2 Mark**
- **Indicate 5 ways to save electricity: 5 Marks (Allocate 1 mark for each method of saving electricity)**
 - Turn off unnecessary lights**
 - Use natural light.**
 - Take shorter showers**
 - Unplug unused electronics**
- **Must be neat: 1 Marks**