



EKURHULENI NORTH DISTRICT NOVEMBER EXAMINATION

TECHNOLOGY GRADE 8

MARKS : 100

TIME : 90 Minutes

SPECIFIC AIMS

TECHNOLOGICAL PROCESSES AND SKILLS	50%
TECHNOLOGICAL KNOWLEDGE AND UNDERSTANDING	30%
TECHNOLOGY, SOCIETY AND THE ENVIRONMENT	20%

LEARNER NAME: _____ DATE: _____

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

SIGNATURE OF TEACHER: _____ DATE: _____

SIGNATURE OF HOD: _____ DATE: _____

This question paper consists of 16 pages



INSTRUCTIONS TO LEARNERS:

- This paper consists of THREE sections: Sections A, B and C.
- Read all instructions carefully.
- Answer all Sections from section A to C.
- Write neatly and answer all the questions in the spaces provided in this question paper.
- Use a pencil for all drawings.
- Where required to calculate show all working out.
- Write your name in the space provided above.
- Use scale 1:1 if the scale is not stated.
- For drawings all construction lines and projections must be shown.

SECTION A: TECHNOLOGICAL KNOWLEDGE AND UNDERSTANDING [30 MARKS]**QUESTION 1**

1.1 Choose the correct answer. Write your answer in the table at the end of question 1.1.

1.1.1 The type of a gear on the illustration above is the _____



- A. Spur gear
- B. Idler gear
- C. Bevel gear
- D. Rack and pinion gear.

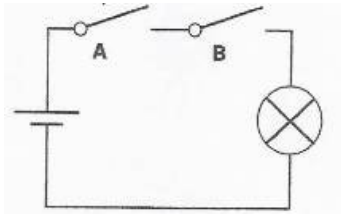
1.1.2 The type of a force that is applied to a door knob when opening the door.

- A. Tension force
- B. Torsion force
- C. Compression force
- D. Shearing force

1.1.3 Which of the following line types is used for constructions in a drawing?

- A. 
- B. 
- C. 
- D. 

1.1.4 The correct Truth Table for the circuit below is



A. "And" gate

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

B. And" gate

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

C. Or" gate

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

D. And" gate

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

1.1.5. The "OR" Gate is illustrated in an electrical circuit by placing two input devices

A. in a systems diagram

- B. in parallel in a circuit
- C. in series in a circuit
- D. in a circuit

1.1.6 A turning force in gear systems is called a

- A. rpm
- B. torque.
- C. Compression force
- D. Shearing force

1.1.7 Scale 1:5 means that a drawing is 5 times _____ than the real object.

- A. bigger
- B. smaller
- C. equal
- D. None of the above

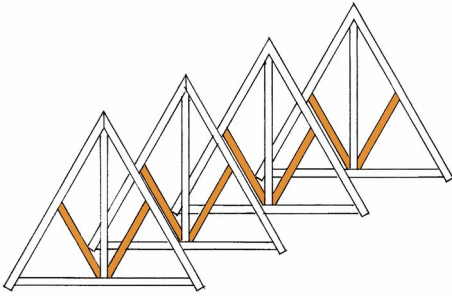
1.1.8 When a small force can lift a large load we say the machine has a _____

- A. Fulcrum
- B. Load
- C. Pivot
- D. Mechanical advantage

1.1.9 An arrangement in a second class lever is _____

- A. fulcrum is between load and effort
- B. load is between fulcrum and effort
- C. effort is between fulcrum and load
- D. None of the above

1.1.10 The trusses in the picture below have _____ to support the rafters.



- A. arches
- B. cables
- C. struts
- D. none of the above

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

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

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

Column A	Column B
1.2.1 Concrete beam	A. Spider's web
1.2.2 Bio- gradable	B. Solar energy
1.2.3 Frame structure	C. Air pollution
1.2.4 Dumping of dirty chemicals or rubbish into rivers	D. Strong in compression
	E. Material that breaks up easily
	F. Water pollution

Answer

1.2.1	1.2.2	1.2.3	1.2.4

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

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

1.3



(1)

1.3.2



(1)

1.3.3



(1)

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

(2)

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

(3)



1.6.2 Will this system gear up or gear down?

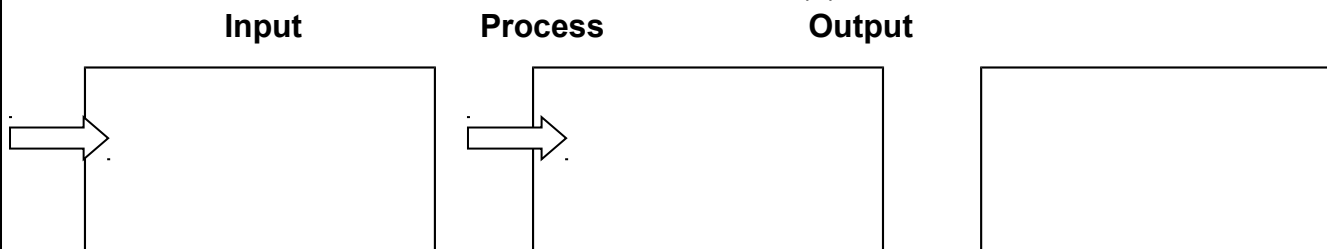
_____ (1)

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

1.7.1 _____ (1)

1.7.2 _____ (1)

1.8 Draw a system diagram of the gear train which a driver gear with 16 teeth and a driven gear with 4 teeth (3)



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

_____ (1)

QUESTION 2

2.1 Draw the electrical symbols of the components given in the table below: (3)

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.

 _____ (2)

2.3 What do you understand by each energy source below:

2.3.1 Hydro - Electrical

 _____ (1)

2.3.2 Wind turbines

 _____ (1)

SECTION B: TECHNOLOGICAL PROCESS AND GRAPHIC COMMUNICATION [50 MARKS]

QUESTION 3

Read the scenario below and answer the following questions.

Scenario

Platinum, a very valuable metal, has been found on land belonging to a tribe in a rural area. Samples show that the platinum is only 500m below the surface. An international and South African company joint venture company, called Platinum Stars, has decided to invest money in this project. They want to sink a shaft to the 500m point to take a few samples. They will decide on the best mining method.

Your engineering company wants to submit a tender for the construction of the shaft headgear. The headgear must:

- Be able to transport miners and equipment 500m underground.
- It must also be able to lift platinum ore that weighs 10ton back up to the surface
- Have a winch or hoist to wind or unwind the steel cable.
- Have a sheave wheel (pulley wheel) that sits above the mine shaft.
- Have a head frame which is the structure that supports the sheave wheel. It must be strong enough to keep the sheave wheel in place when it lifts the heavy mine cage.



3

3

3

3.2.2 _____ (1)

3.2.3 _____ (1)

3.2.4 _____ (1)

3.3 List TWO constraints.

3.3.1 _____ (1)

3.3.2 _____ (1)

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

Materials	Tools

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

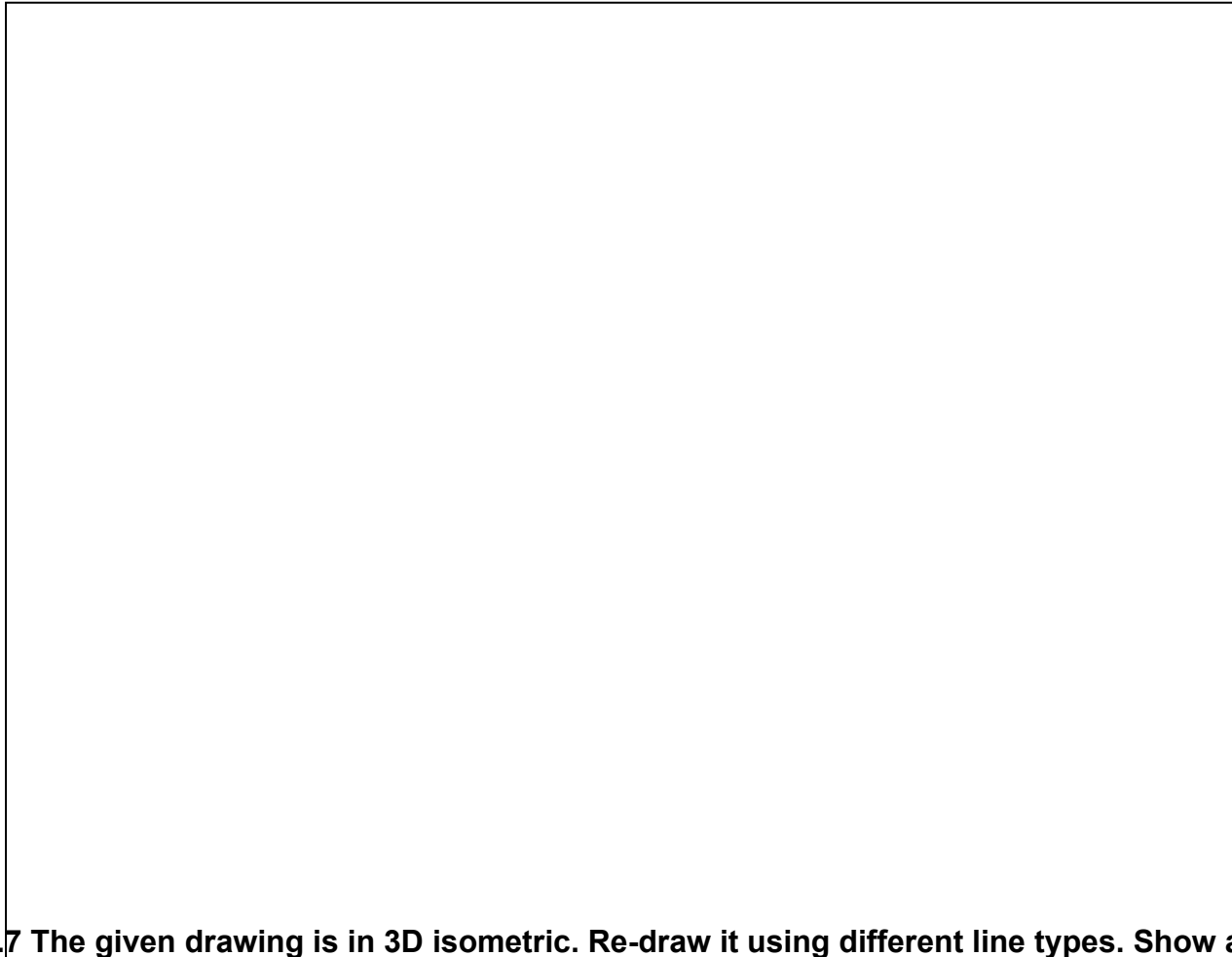
3.5.1 _____ (2)

3.5.2 _____ (2)

3.5.3 _____ (2)

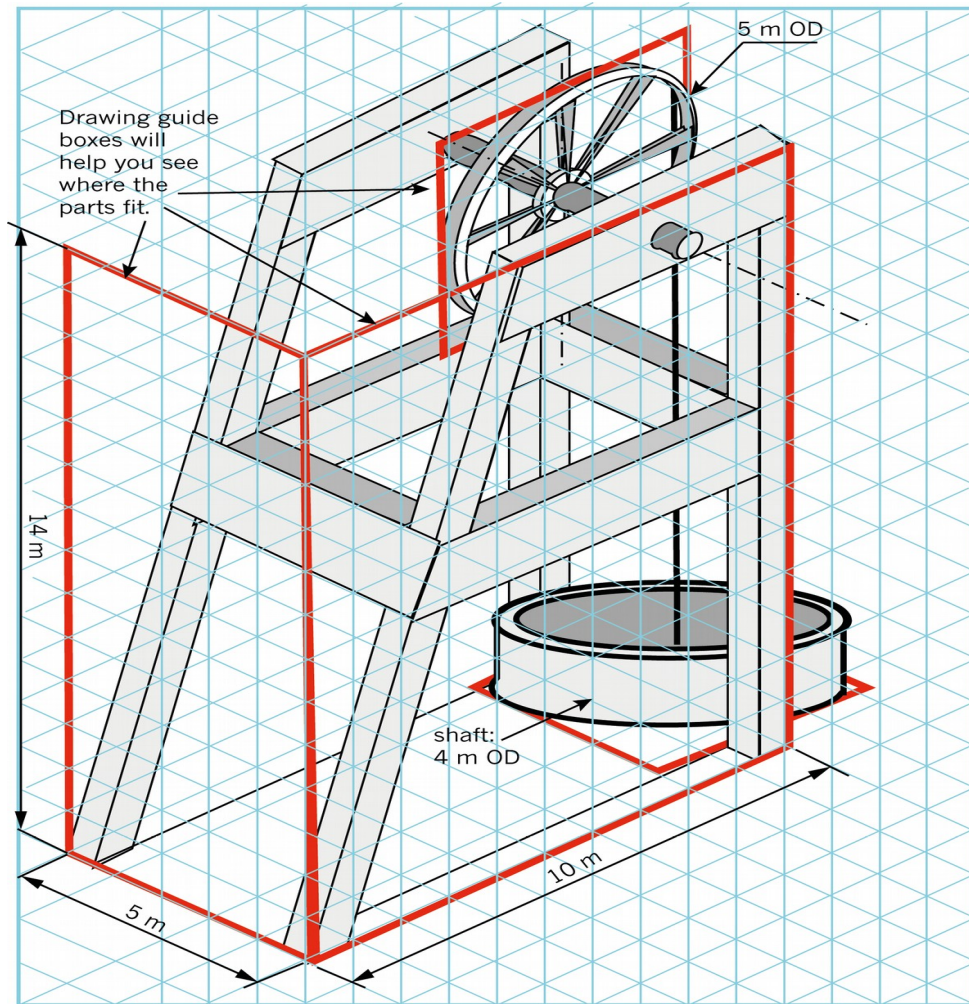
3.5.4 _____ (2)

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.

VP1 VP2	 
 GROUND PLANE	
NAME AND SURNAME: _____ DATE: _____ TITLE _____	

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

QUESTION 4

The picture below is a coal-fired power station. Answer the questions that follow :



4.1 Wh

OUR.

4.1.1

(2)

4.1.2

(2)

4.1.3

(2)

4.1.4

(2)

4.2.1 W

TWO.

4.2.1

(2)

4.2.2

(2)

4.3 Yo

indicate

ways

Your p

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-

