



## **Education and Sport Development**

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

**NORTH WEST PROVINCE**

**2016**

**NORTH WEST PROVINCIAL  
ASSESSMENT**

**GRADE 9**

**TECHNOLOGY**

**MID-YEAR EXAM 2016**

**Time: 2 hours**

**Marks: 80**

**Instructions to learners:**

1. Read all the instructions carefully
2. Answer all the questions in a separate answer sheet
3. Write neatly and legibly

**Resources needed for drawing**

1. Pencil, Colouring pencils
2. Mathematical instruments
3. Eraser/rubber
3. Calculator

**SECTION A****QUESTION 1**

Choose the correct answer from the answers given below each statement.

**Write** only the question number and the letter of the correct answer.

E.g 1.6 B

1.1 In Technology drawing, Scale 1:2 mean that the drawing is drawn at

- A the actual size of the model
- B two times the size of the model
- C half the size of the model
- D twelve times the size of the model. (1)

1.2 The design brief clearly indicates

- A what the designer is going to make to solve the problem.
- B what the designer is going to ask about to solve the problem.
- C what the designer does not want to do.
- D what steps will be followed in problem solving. (1)

1.3 According to Pascal's principle, the pressure exerted on one part of the hydraulic system is transferred...

- A equally to all parts of the system
- B without any losses
- C in all directions to other parts of the system.
- D all of the above. (1)

1.4 The type of force that is exerted on the bridge by the vehicles passing over the bridge

- A Stable force
- B Static force
- C Curving force
- D Dynamic force (1)

1.5 Hydraulic jack uses ..... to operate.

- A gears
- B fluids
- C compressed gas
- D fixed pulleys

(1)

**[5]****QUESTION 2**

**State whether the following statements are true or false.**

- 3.1 The isometric and oblique drawings show the 3D at different angles. (1)
- 3.2 A wedge is an example of a strut (1)
- 3.3 A cam and a cleat are used as controlling mechanism in pulley ropes (1)
- 2.4 Worm and gear changes the axis of rotation in gear systems. (1)
- 2.5 A structure which is pulled apart is under compression force. (1)

**[5]****QUESTION 3**

**Match the statements in column A with the correct answer in column B and write only the letter of the correct answer.**

Column A	Column B
3.1 Torsion in structures can also be called	A. Corrosion
3.2 In a hydraulic system the output cylinder is also known as	B. Pneumatic
3.3 Systems that uses compressed gases are known as	C. Master cylinder
3.4 The metals deteriorate when they are exposed to moisture.	D. Labour
3.5 When doing a budget for a construction company one of the costs to be considered is.	E. Twisting
	F. Slave cylinder
	G. Static force.
	H. Dynamic force

**[5]****TOTAL SECTION A: [15]**

**SECTION B****QUESTION 4 (STRUCTURES)****Scenario**

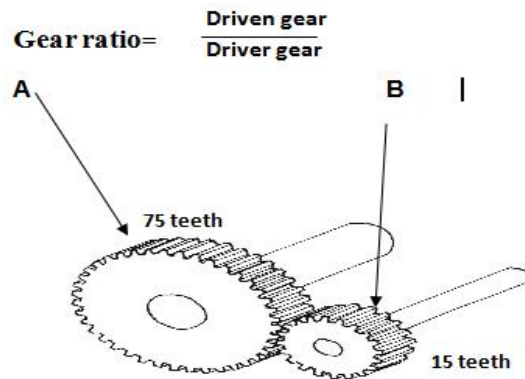
People from rural areas sometimes risk drowning each time they cross the river to the city. In some areas the rivers have dangerous crocodiles which also attack the people crossing. There are times when the villagers cross in groups and help each other.

- 4.1 Identify the problem in the scenario above. (2)
- 4.2 Write a design brief to solve the identified problem. (2)
- 4.3 Which TWO external forces are expected to act in your proposed solution? (2)
- 4.4 Choose TWO materials that could be used in solving the problem. Give a property of each material that you chose (4)
- 4.5 In improving the safety of your solution, what additional features would you consider adding? Name any TWO. (2)
- 4.6 Use sketches to show how the following forces act:
- i. Compression
  - ii. Shearing
  - iii. Tension
  - iv. Torsion (8)

**[20]**

**QUESTION 5 (SYSTEMS AND CONTROL)**

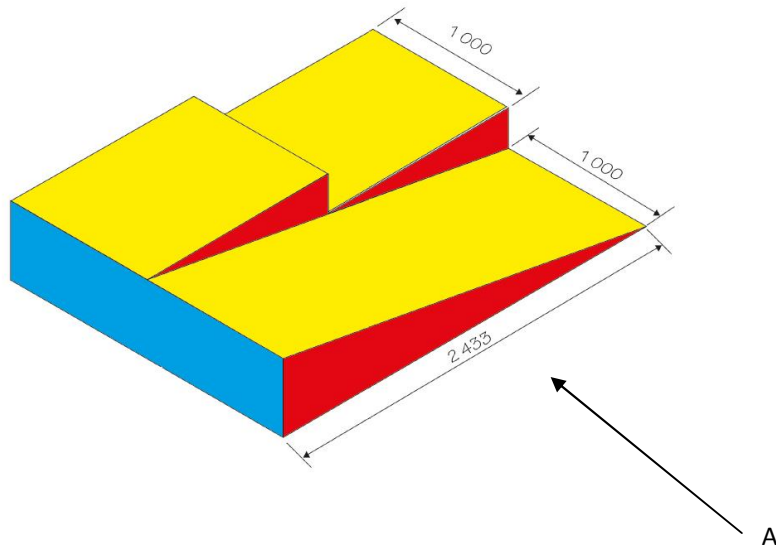
Gear A and B are shown in the figure below. Gear A is driven.



- 5.1 Use the formula given above to calculate the gear ratio in the above gear train (4)
- 5.2 Is the system increasing or decreasing the speed? Give a reason for your answer (2)
- 5.3 Draw the system diagram of the gear train above. (6)
- 5.4 If gear A rotates one revolution, how many revolutions will gear B rotate? (2)
- 5.5 If the driver gear rotates clockwise how would the driven gear rotate? (1)
- 5.6 Explain how you would make gear A and gear B to rotate in the same direction. (2)
- 5.7 Give THREE examples of common machines that use gears (3)

[20]

**TOTAL SECTION B: [40]**

**SECTION C****QUESTION 6**

A ramp and stair is shown above in Isometric projection. Use the Answer sheet provided to draw a First Angle Orthographic Projection.

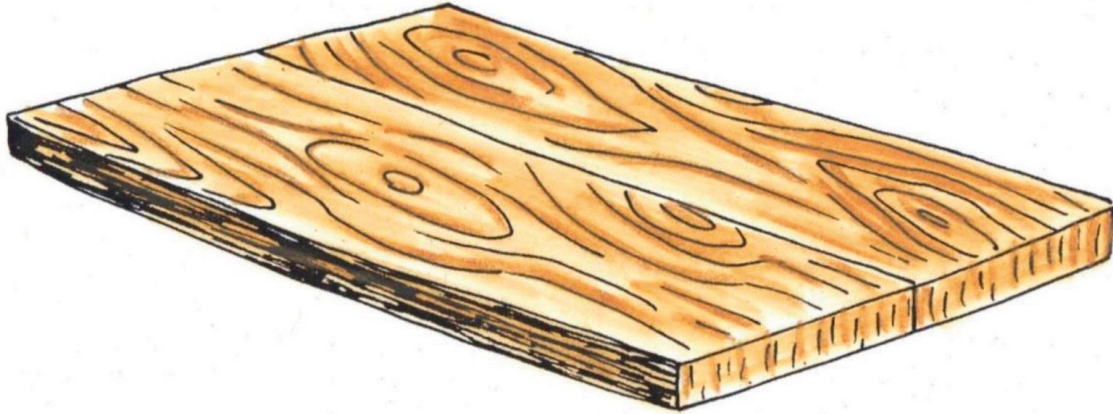
1. Draw the Front View as indicated by Arrow A
2. The LEFT SIDE VIEW showing hidden detail
3. Top view

(15)

NB. Dimensions on the drawing may not be USED. i.e. You MAY use your OWN measurements

**QUESTION 7**

A wooden block is given in isometric. Use the Answer Sheet to draw an artistic Single point perspective presentation of the wooden block.



Enhance the drawing by showing TEXTURE OF WOOD GRAIN, COLOUR and SHADOWS (10)

**TOTAL SECTION B: [25]**

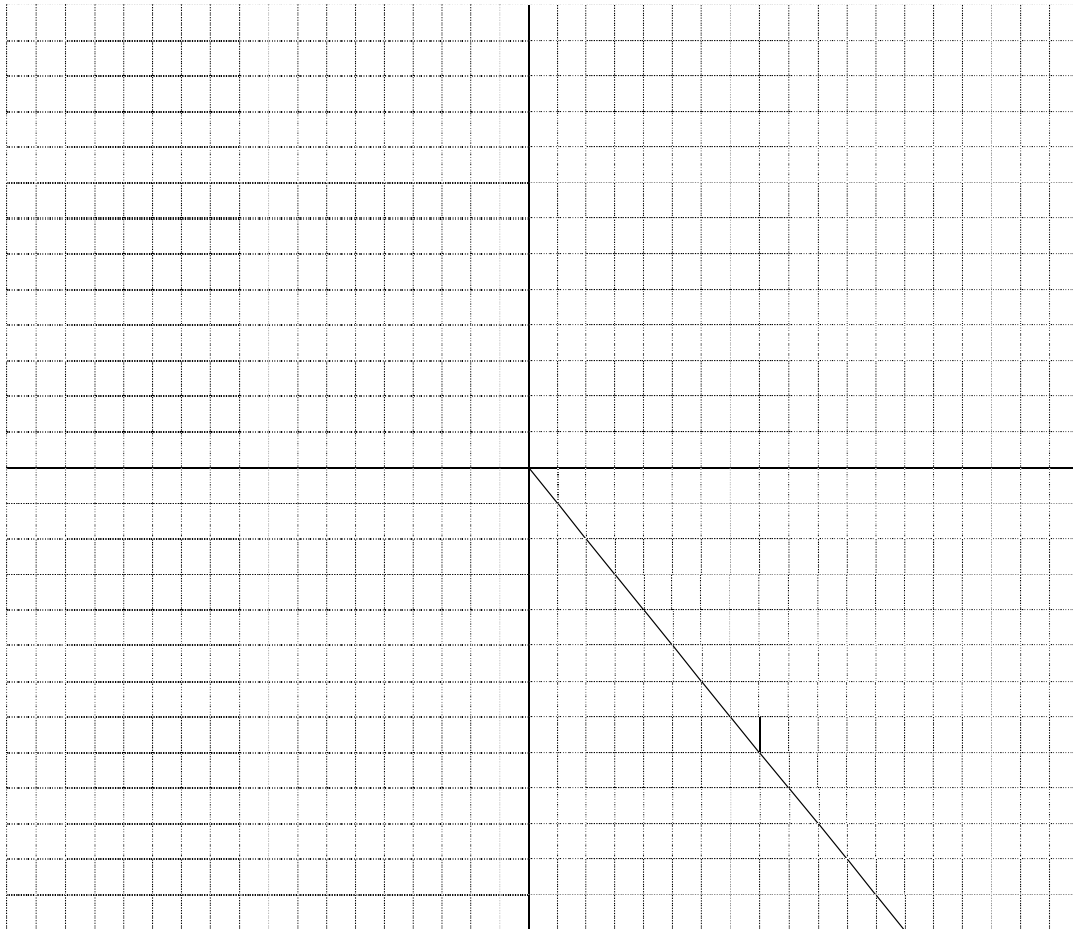
**GRAND TOTAL: [80]**



NAME OF LEARNER: \_\_\_\_\_

CLASS: \_\_\_\_\_

**QUESTION 6 (ANSWER SHEET)**



NAME OF LEARNER: \_\_\_\_\_

CLASS: \_\_\_\_\_

**QUESTION 7 (ANSWER SHEET)**



**GRAND TOTAL: 80**