



MAFIKENG HIGH SCHOOL

GRADE 8

TECHNOLOGY

JUNE 2023

MARKS: 100

DURATION: 2 Hours

NAME OF LEARNER: _____

CLASS: _____

EXAMINER: NKUNA TJ
MODERATOR: MATONYANE BS

INSTRUCTIONS

1. Answer all questions.
2. Write neatly and legibly.
3. All the answers should be written in the spaces provide in the question paper.
4. Follow instructions promptly.
5. All the drawings should be in pencil, neat and fully labelled.
6. Coloured pencils may be used only for shading where such is required.

This question paper consists of 12 pages.

QUESTION 1

1.1 **Four possible answers are given. Circle **A** the letter of the correct one.**

1.1.1 Frame structures support the load from.... (1)

- A. Inside
- B. Outside
- C. Both inside and outside
- D. Neither inside or outside

1.1.2 Bending as part of structural failure is usually caused by lack of... (1)

- A. Strength
- B. Stiffness
- C. Stability
- D. Hardness

1.1.3 To increase the speed in a gear system, the driver gear should be... (1)

- A. Smaller than the driven gear
- B. Bigger than the driven gear
- C. Same size as the driven gear
- D. Faster than the driven gear

1.1.4 Gears are... (1)

- A. Grooved wheels
- B. Wheels with teeth
- C. Small wheels
- D. Big wheels

1.1.5 Velocity ratio is.... (1)

- A. The speed of driver gear and driven gear
- B. Speed of idler gear
- C. Speed of two wheels
- D. Speed of small wheels

1.2 Which of the following statements are **TRUE** or **FALSE**? Just write true or false next to the statement.

1.2.1 Triangulation shapes makes a frame structure more rigid or stiff. _____ (1)

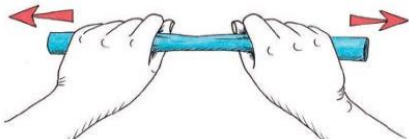
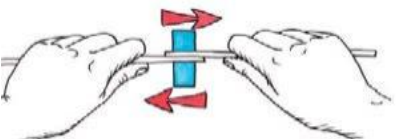
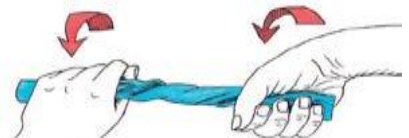
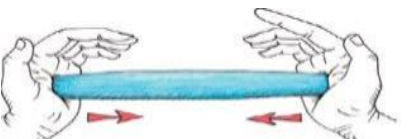
1.2.2 Beams do not reinforce structures. _____ (1)

1.2.3 To recycle is to re-manufacture waste materials into new products. _____ (1)

1.2.4 Mechanical system help us to do more work with less effort. _____ (1)

1.2.5 The 2-D drawing has 3 dimensions. _____ (1)

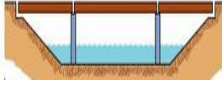
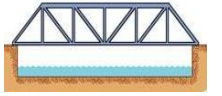


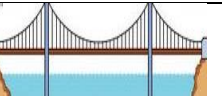
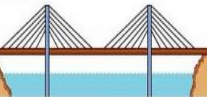
1.3 Match the type of force in **Column A** with its name in **Column B**. Write **ONLY** the letter of the appropriate name in the space provided. (4)

COLUMN A	COLUMN B
 : _____	A. Compression B. Torsion C. Shear D. Tension
 : _____	
 : _____	
 : _____	

TOTAL QUESTION 1: [14]

QUESTION 2

- 2.1. Match the type of force in **Column A** with its name in **Column B**. Write **ONLY** the letter of the appropriate name in the space provided. (6)

COLUMN A		COLUMN B
1.	 : _____	A. Arch bridge
2.	 : _____	B. Suspension bridge
3.	 : _____	C. Cable stayed bridge
4.	 : _____	D. Beam bridge
5.	 : _____	E. Cantilever bridge
6.	 : _____	F. Truss bridge

- 2.2. Choose the correct answer from those given between brackets. Just write the correct answer on the space provided. (4)

2.2.1 For keeping the dam wall upright and firm, we can use (*Guys; Buttresses*).

2.2.2 (*Strut; Stay*) is always mounted on the side of stress.

2.2.3 In a cable stayed bridge, the cables are suspended on a (*Column, Beam*).

2.2.4 A (*King post; Strut*) is always mounted at right angle (perpendicular) with the tie beam.

- 2.3 In a local farmstead, majority of houses are roofed with thatch. The problem of this area is that it is usually affected by draught and veld fires which burn the thatch as it easily burns. You are now tasked to change the roofing of these houses to the one that cannot be easily affected by fire and you choose to use the zinc corrugated pitched roof.

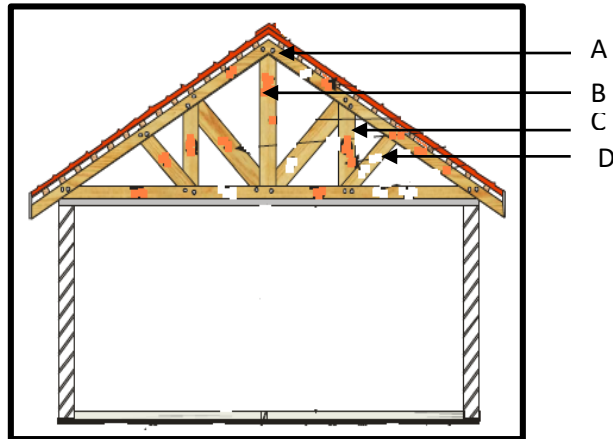


FIGURE 4: PITCHED ROOF CROSSSECTIONAL AREA

- 2.3.1 Carefully read through the above scenario and with the help of **FIGURE 4**, formulate your own design brief to solve the existing problem. (3)

- 2.3.2 **FIGURE 4** was drawn when the design for the solution was made. Write the names of the members labeled A – D on the spaces provided below. (4)

A. _____

B. _____

C. _____

D. _____

2.3.4 The foundation should be very strong to ensure that the house is stable. Which two materials would you use to ensure that the foundation is strong enough? (2)

_____ and

2.4 Give a reason why structural members: (3)

2.4.1 Fracture _____

2.4.2 Bend _____

2.4.3 Topple over _____

TOTAL QUESTION 2: [22]

QUESTION 3

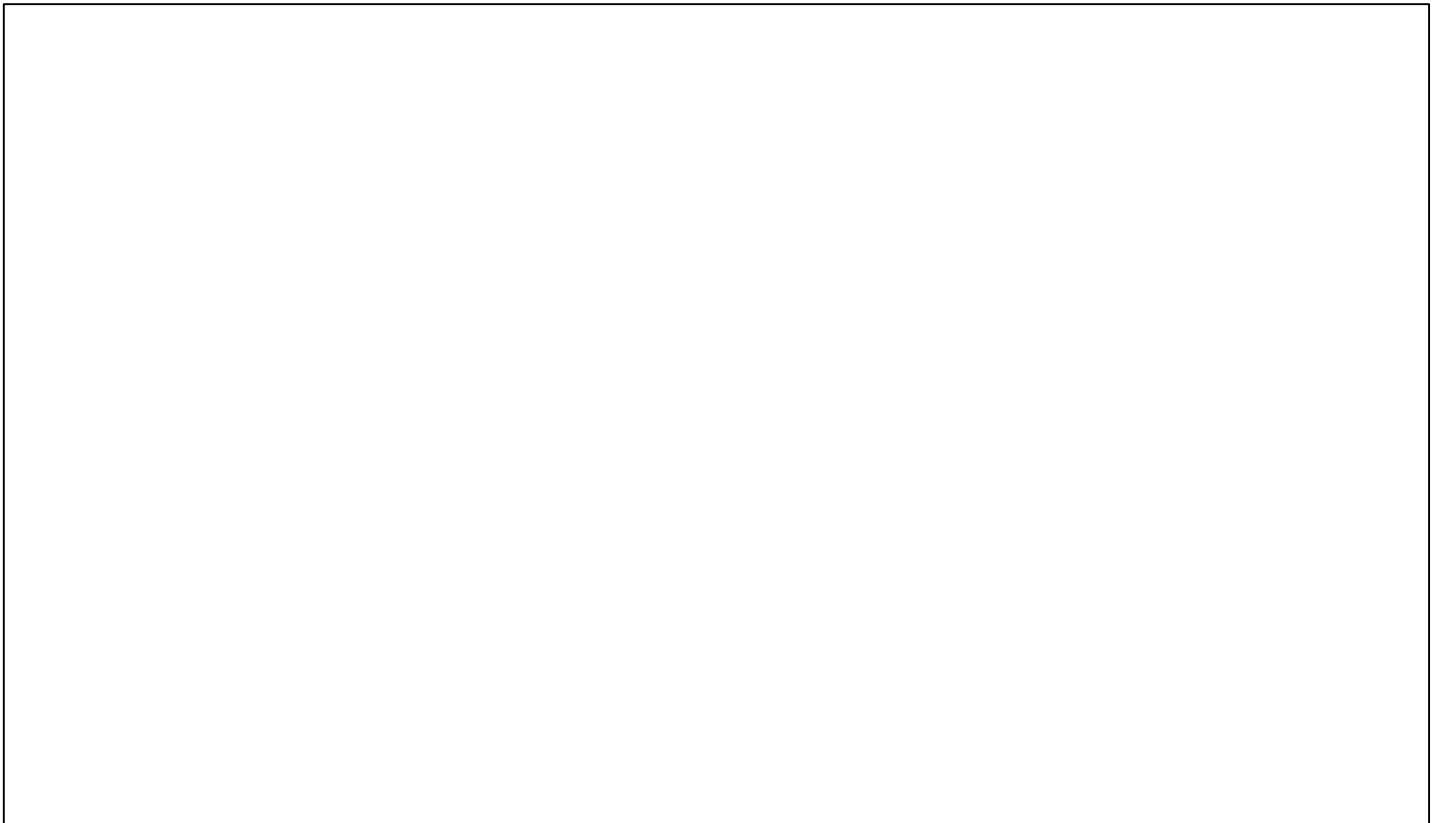
On August 2007 the Mississippi river arch bridge collapsed without warning. A design flaw was the likely cause of the collapse. The extra weight of cars added to the failure of the bridge.

3.1 What caused this arch bridge to collapse? (2)

3.2 What force acts on the bridge? (1)

3.3 In this case what is the load on the bridge. (1)

3.4 Draw a strong arch bridge to replace the collapsed Mississippi bridge. (4)



3.5 Name any THREE types of bridges. (3)

- a) _____
- b) _____
- c) _____

TOTAL QUESTION 3: [11]

QUESTION 4

FIGURE 6 below shows the oblique drawing of the one roomed house. Use it to answer the questions that follow.

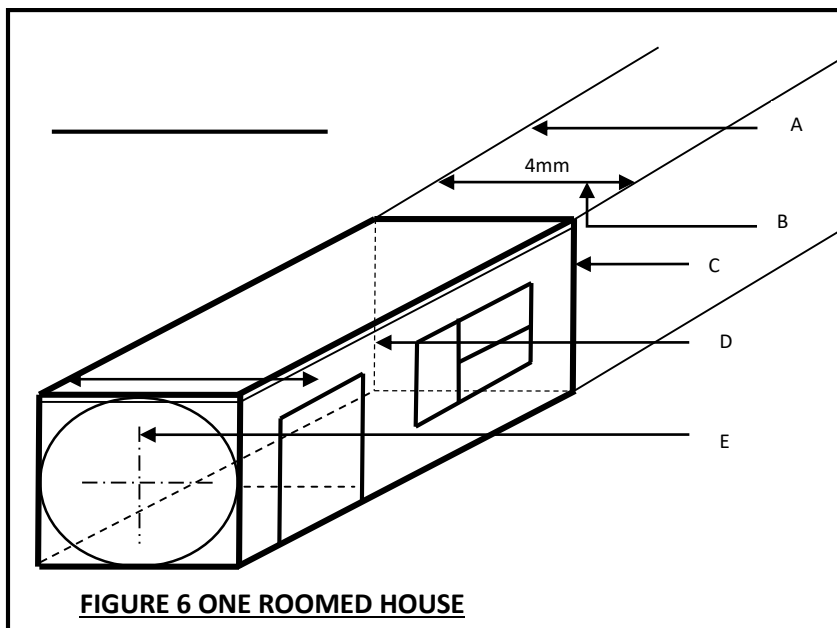


FIGURE 6 ONE ROOMED HOUSE

4.1 Give the names of the lines numbered B – E and its properties.

Name of line	[Property]
A. Construction Line	[Very thin and continuous]
B. _____	[_____]
C. _____	[_____]
D. _____	[_____]
E. _____	[_____]

TOTAL QUESTION 4: [8]

QUESTION 5

Draw a cube in double perspective drawing.
Then shade the cube to make it look real.

(8)

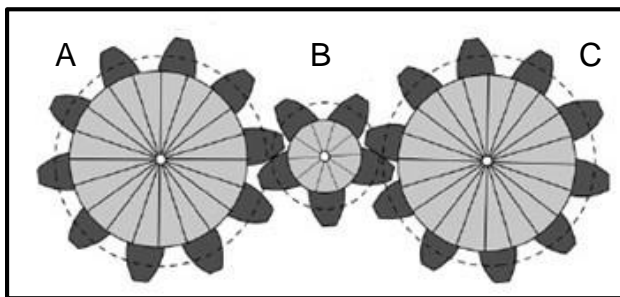
LVP

RVP

TOTAL QUESTION 5: [8]

QUESTION 6

Use the diagram below to answer the questions that follow:



6.1 What is the name of a gear labelled A, B and C.

(3)

6.2 What is the main function of the middle gear?

(2)

6.3 If gear A was to rotate in clockwise direction, what would be the direction of rotation for:

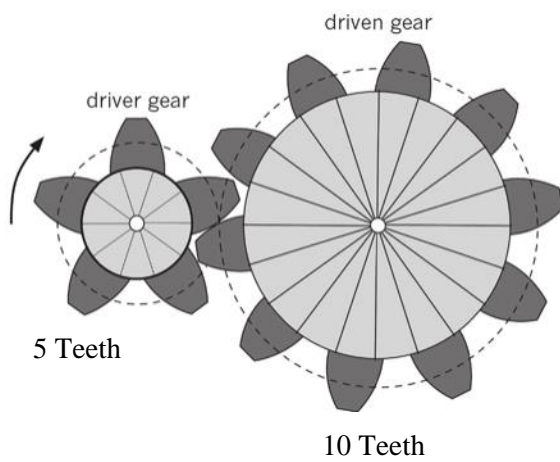
a) Gear A _____ (1)

b) Gear B _____ (1)

c) Gear C _____ (1)

6.4 Calculate the following gear ratio: (4)

CALCULATE HERE:



6.5 Is the output speed fast or slow? _____ (1)

6.6 Which movement change is made by cams and cranks? (2)

6.7 Define eccentric wheel? (2)

6.8 Give only one practical use of a crank. (1)

TOTAL QUESTION 6: [18]

QUESTION 7

Read the case study below and answer questions that follow

HELP PREVENT THE PLASTIC PERIL!

Plastic bags are so convenient that South Africans use approximately eight billion of tons of them annually. Even **biodegradable** plastic bags take 15 to 100 years to break down. Thin plastic bags don't biodegrade. Some plastics are photodegradable (This means that the sunlight breaks them down into **smaller toxic** bits) and then they contaminate the soil and waterways. Because they are light and moist-resistant, they can travel long distances into the sea.

The result is not only a solid waste problem; animals choke on plastic or they get tangled in and trapped by plastic. Hundreds of thousands sea birds, sea turtles, whales and other marine mammals die each year from plastic they mistaken for food. You can make a difference! Take part in our beach cleanup on the first Sunday of each month between (9:00 and 16:00.)

Source: [Technology today]

7.1 Explain what bio-degradable materials are? (2)

7.2 Give one negative impacts of plastic. (2)

7.3 What can be done to reduce the negative impact of plastic?
(2)

7.4 Identify any two-biodegradable waste in your school environment. (2)

TOTAL QUESTION 7: [8]

QUESTION 8

Read the scenario below and answer questions below.

Martha does not have a pencil case and she keeps losing her school stationery. She decides she needs to solve this problem. The pencil case she needs to make should have a replaceable lid to keep her stuff enclosed. The length of the pencil case must be 32 cm to accommodate the ruler. The box must be made of recyclable cardboard.



8.1 Identify the problem in the scenario. (3)

8.2 Create a design brief to solve the problem. (4)

8.3 Write any two specifications for the solution of the problem. (2x2=4)

TOTAL QUESTION 8: [11]

TOTAL MARKS: [100]