Name: _____ **Grade 9** .

Teacher: _____

Hillcrest High School

GRADE 9 - TECHNOLOGY EXAM

June 2018

TIME: 2 hours | TOTAL: 140 marks

Examiner: Mrs E Naidoo | Moderator: Mrs L Baxter/ Mrs J Steytler

QUESTION & ANSWER PAPER

NB: READ THE INTRUCTIONS

1. Ensure that you have answered all questions in this booklet.
2. Take note of the mark allocation in each question.
3. Write in a neat and clear handwriting.
4. All drawing should be done in pencil with a ruler.

Question 1:
Match the word in Column A to the definition in Column B. Write the LETTER ONLY on the right hand side of the table.

Column A		Column B	ANSWERS	
1.1)	Idler	A The ability of a stiff material to resist scratches wear and tear and denting.	1.1)	
1.2)	Contact Force	B The ability of a material not to bend or lose shape under pressure.	1.2)	
1.3)	Non-Contact Force	C A closed system that uses liquid to do work.	1.3)	
1.4)	Cross Bracing	D Forces that act across a distance.	1.4)	
1.5)	Hydraulics	E A gear wheel that is inserted between two or more other gear wheels; to change the direction of rotation of the output shaft.	1.5)	
1.6)	Brakes	F A structure reinforced by an X shape.	1.6)	
1.7)	Stiffness	G A device for slowing or stopping a moving vehicle, typically by applying pressure to the wheel.	1.7)	
1.8)	Flexibility	H The property of a material to return to its original shape.	1.8)	
1.9)	Dynamic force	I Force acting on a moving object.	1.9)	
1.10)	Hardness	J The force that acts in direct contact with another object.	1.10)	

Question 2:
Complete the following:

2.1. List 4 main types of Forces. (4)

_____ _____

_____ _____

2.2. Explain the difference between dynamic forces and static force.

_____

_____

_____

_____ (4)

2.3 State if the following statements are dynamic force or static force. Write your answer on the right hand side of the table.

2.3.1 Walking across suspension bridge	
2.3.2 Sitting on a chair	
2.3.3 Rocking on a chair	
2.3.4 Standing on a trampoline	
2.3.5 A car driving over a bridge	
2.3.6 A bouncing ball	
2.3.7 A bus, car and taxi crossing a bridge	
2.3.8 Heavy and light persons on see-saw	
2.3.9 Standing at end of diving board	
2.3.10 Man lifting child on bicycle	

(10)

Question 3:

Use the following words in the block, to answer the whole of question 3 below. You may not repeat a word in your answers below.

Steel, Glass, Toughness, Water, Wood, Fatigue, Wind, Brittleness, Aluminium, Stone, Synthetic rubber, Sunlight, Plastic, Stability, Leather

3.1. Give 2 examples of the following:

3.1.1. Metals _____ _____

3.1.2. Non-Metals _____ _____

3.1.3. Synthetic materials _____ _____

3.1.4. Natural materials _____ _____

(8)

3.2. Construction materials must be able to stand up to the weather elements, name these elements:

_____ _____ _____

(3)

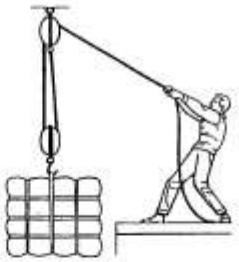
3.3. Properties of materials determine what the material can be used for and how they will react to outside forces. Name the 4 properties. (4)

_____ _____

_____ _____

Question 4:

Study the diagram on the right hand side and answer the questions to follow.



4.1 What are pulleys used for?

_____

_____ (2)

4.2 explain what a movable pulley is.

_____

_____

_____

_____ (2)

4.3 Explain what a fixed pulley is.

_____

_____

_____

_____ (2)

Question 5:

Look at the diagram alongside. Identify the **TYPES** of gears labeled A – D and Indicate the direction of rotation for each gear labeled 1 – 5 by only using the term (Clockwise or Anti-clockwise).
Write your answers in the spaces provided.

A _____

B _____

C _____

D _____

1 _____

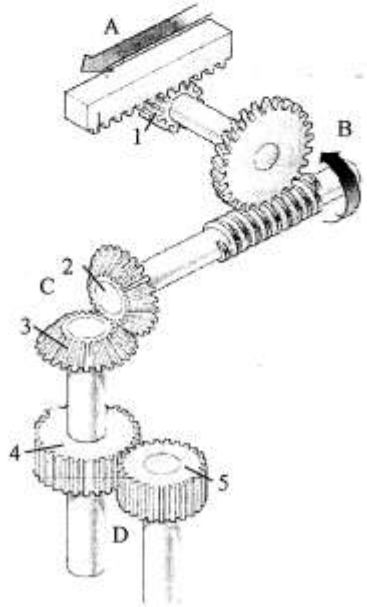
2 _____

3 _____

4 _____

5 _____

(9)



Question 6

Calculate the Velocity ratio for the questions below:

6.1. Calculate the velocity ratio if the driver gear has 24 and the driven gear has 12 teeth.

(3)

6.2. Calculate the velocity ratio if the driver gear has 9 teeth and the driven gear has 72 teeth.

(3)

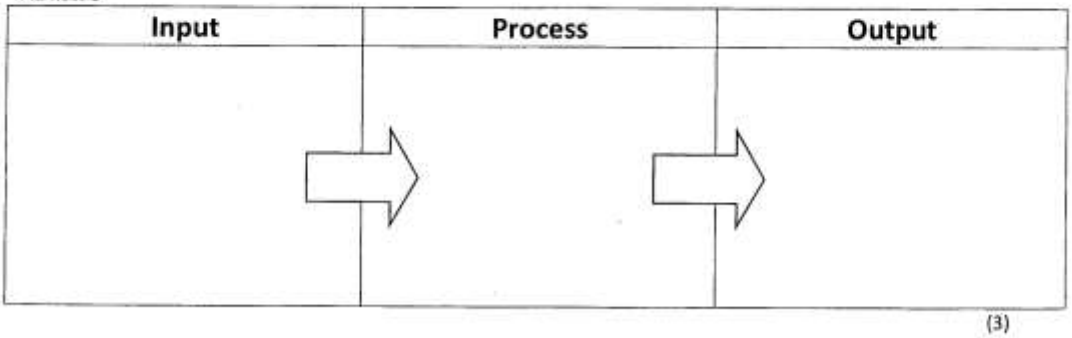
6.3. Calculate the velocity ratio if the driver gear has 39 teeth and the driven gear has 13 teeth.

(3)

Question 7

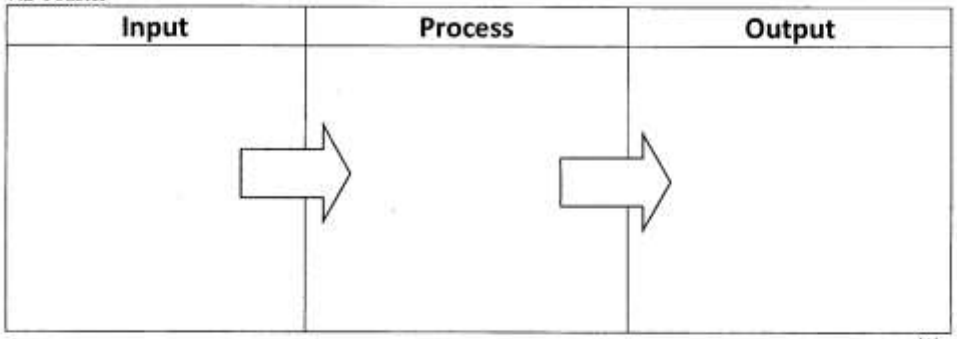
Complete the following systems diagram below.

7.1 kettle



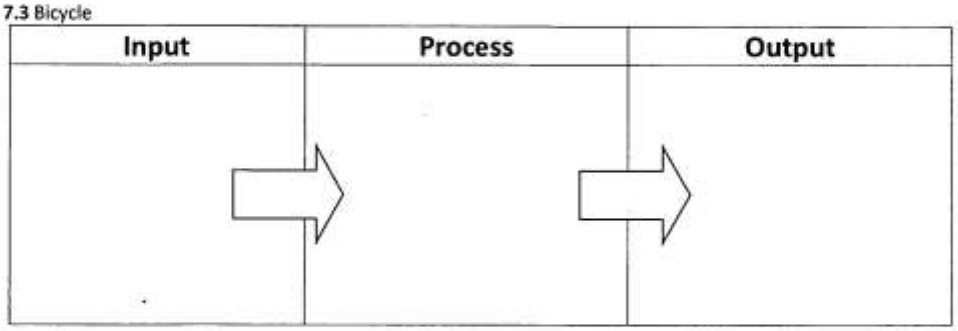
(3)

7.2 Toaster



(3)

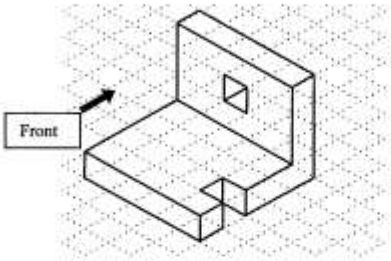
7.3 Bicycle

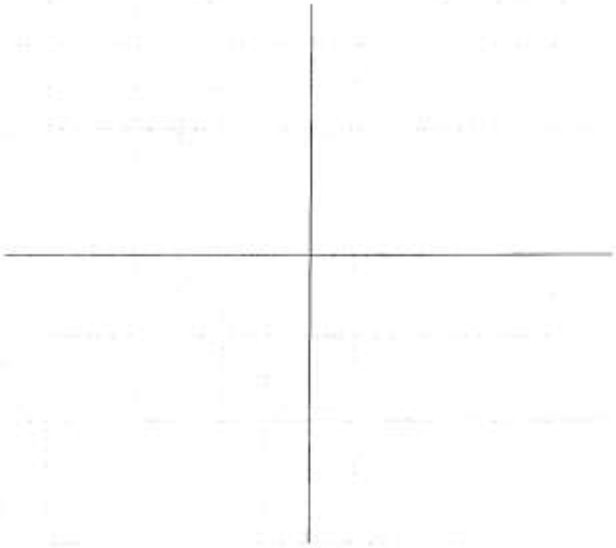


(3)

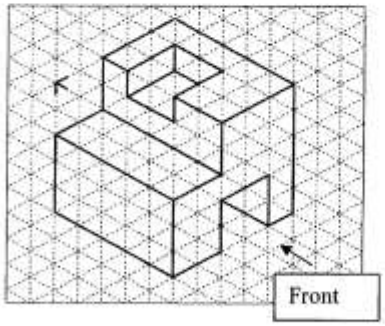
Question 8
Orthographic drawing (30)

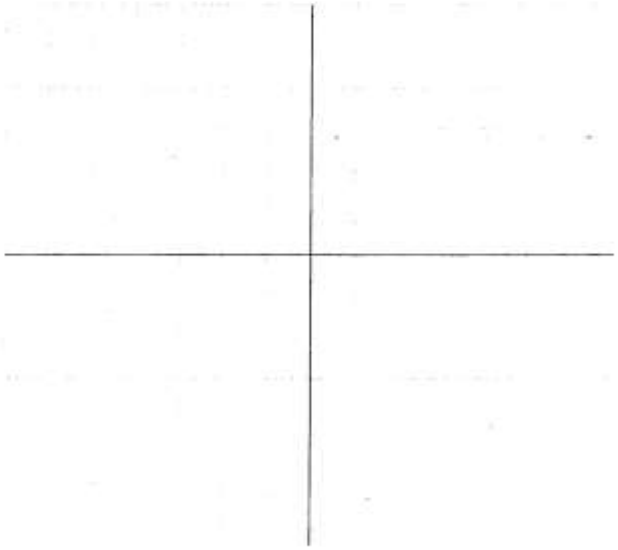
8.1
Complete the orthographic drawing on the right by using the 3D drawing below. (15)





8.2 Complete the orthographic drawing on the right by using the 3D drawing below. (15)

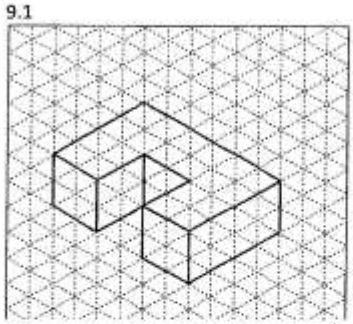




Question 9

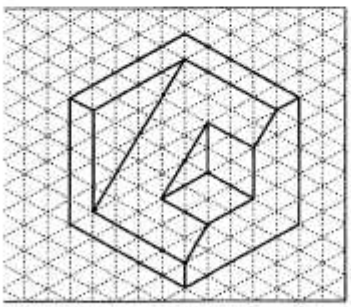
Isometric drawing (20)
Redraw the following 3D drawing on the grid provided on the right hand side.

9.1



(10)

9.2

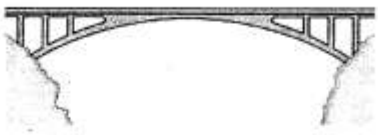


(10)

Question 10

Types of bridges – Identify the following types of bridges and write your answer in the table provided.

10.1

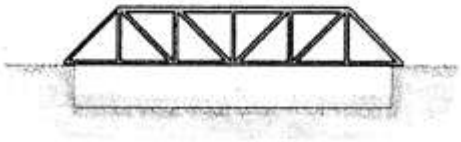


10.2

10.3

10.4

10.5



10.1	
10.2	
10.3	
10.4	
10.5	

(5)

Question 11

Corrosion

11.1 What is corrosion?

_____

_____

_____(2)

11.2 Name the chemical reaction in corrosion. _____ (1)

11.3 State the common name given to corrosion. _____ (1)

11.4 There are many materials that resist corrosion. Name 3 types of materials that resist corrosion.

_____

_____(3)

11.5 Name 2 methods that prevents materials from corroding.

_____

_____

_____

_____(2)

(9)

End!!!!!