



HILLCREST HIGH SCHOOL

GRADE 9 - TECHNOLOGY EXAMINATION

6 JUNE 2019

TIME: 1 hour

TOTAL: 100 marks

Examiner: Mrs. A Stols

Moderator: Mrs. J Bega

Name: _____ Grade 9 _____

Please indicate your subject educator?

Mrs. T Tonkin	Mrs. A Stols	Mrs. J Bega

NB: READ THIS SPECIAL INSTRUCTIONS

1. This paper consists of 9 pages, and 5 questions.
2. Ensure that you have answered all questions in this booklet.
3. Take note of the mark allocation in each question.
4. Write in a neat and clear handwriting.
5. All drawings must be completed in a sharp pencil.

Section A Question1	Section B Question 2	Section C Question3	Section D Question4	Section E Question5	Total	Moderated Mark
/37	/23	/20	/10	/10	/100	

Section A Orthographic projection

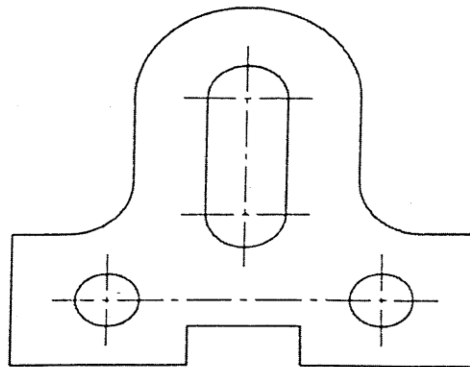
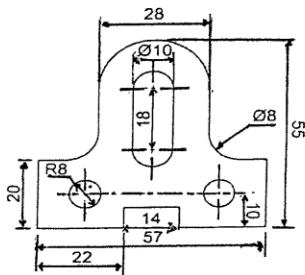
Question: 1

(37marks)

1.1) Draw the symbols and indicate the views of both first and third angle projections? (10)

Projection	Symbol

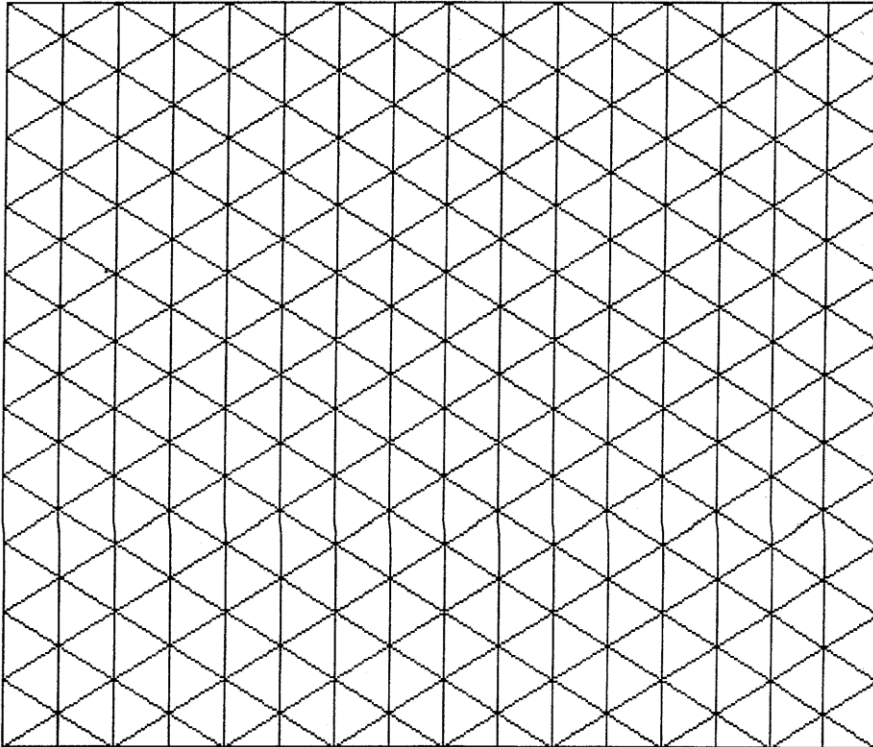
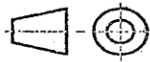
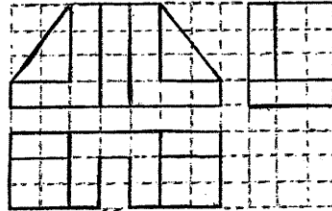
1.2) There are a number of dimensions displayed on the Latch Plate below which are incorrect. Identify the incorrect dimensions and place them correctly onto the Latch Plate underneath. (7)



Question 1.3

The given figure shows the front, top and the left view of the model.

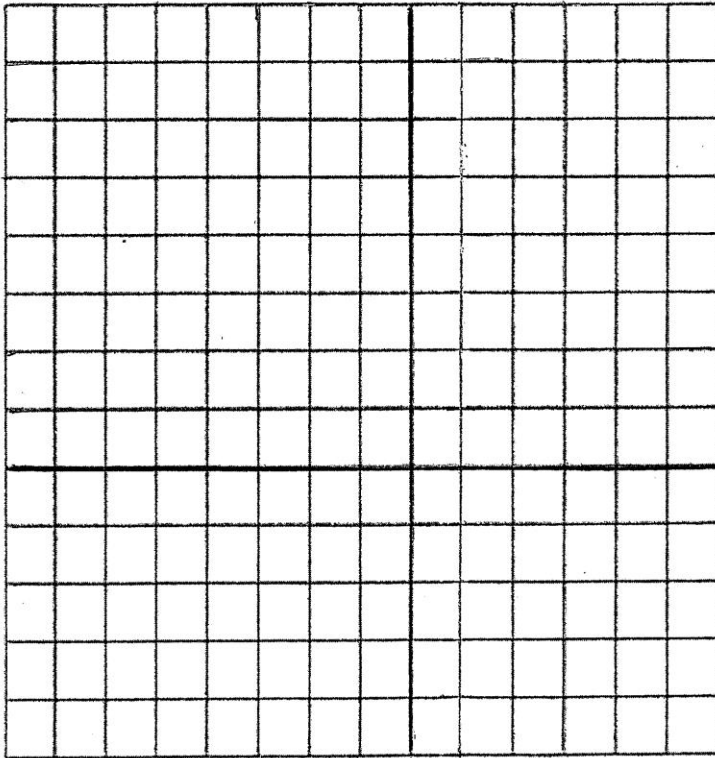
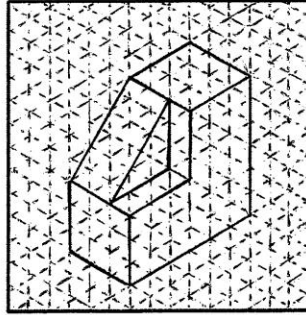
Draw an isometric view of the model in the grid below? (10)



Question 1.4

The given figure shows an isometric view of a simple object.

Draw the front, top and left view of the object in the grid below? (10)



Section B Structures and forces

Question 2

(23marks)

2.1) Match the word in Column A to the definition in Column B. Write the LETTER ONLY. (10)

Column A	Column B	ANSWERS
2.1.1) Idler	A The ability of a stiff material to resist scratches wear and tear and denting.	2.1.1)
2.1.2) Contact Force	B The ability of a material not to bend or lose shape under pressure	2.1.2)
2.1.3) Non-Contact Force	C A gear mechanism that can lock to prevent a load from rolling backwards	2.1.3)
2.1.4) Cross Bracing	D Forces that act across a distance	2.1.4)
2.1.5) Pascals Principle is	E A gear wheel that is inserted between two or more other gear wheels; to change the direction of rotation of the output shaft.	2.1.5)
2.1.6) Brakes	F A structure reinforced by an X shape	2.1.6)
2.1.7) Stiffness	G A device for slowing or stopping a moving vehicle, typically by applying pressure to the wheel	2.1.7)
2.1.8) Flexibility	H The property of a material to return to its original shape	2.1.8)
2.1.9) Ratchet and Pawl	I Pressure exerted on one part of a hydraulic system will be transferred equally, without any loss, in all directions to other parts of the system	2.1.9)
2.1.10) Hardness	J The force that acts in direct contact with another object	2.1.10)

2.2) Complete the following:

2.2.1) List the 5 types of forces? (5)

1)
2)
3)
4)
5)

2.2.2) Explain the difference between density and mass? (2)

Density:
Mass:

2.2.3) The poor man at the factory was confused with the steps of the galvanizing process. (6)
 Name the steps of the galvanizing process?

Step 1:	Step 2:	Step 3:	Step 4:	Step 5:	Step 6:
Iron is washed in a hot alkaline liquid that removes soil, dirt and grease.	Iron washed in an acid to remove surface rust and other chemicals.	Iron is dipped into a chemical called zinc ammonium chloride to prevent any further oxidation.	Iron is dipped into a bath of molten liquid zinc. Zinc bonds with the iron and forms a zinc layer on the object.	The object is removed from zinc bath. Excess zinc removed, and the object is cooled. As it cools, a hard zinc layer forms on the object.	The galvanized object is inspected to make sure that the galvanizing process has been successful

Section C Hydraulic and Pneumatic systems

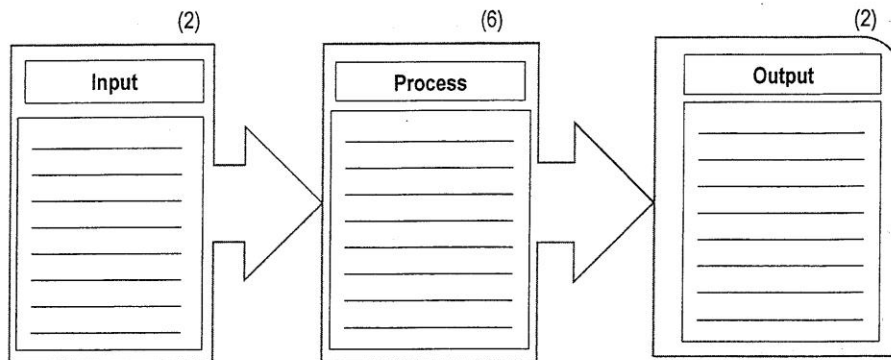
Question 3

(20marks)

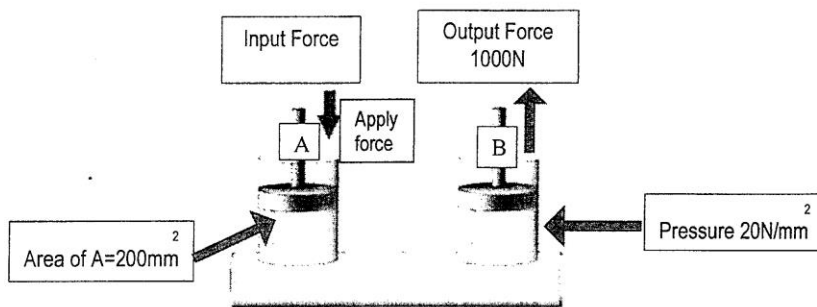
3.1) Define the following terms? (2)

Hydraulic system:
Pneumatic system:

3.2) Complete the system diagram on a hydraulic jack?



3.3) Study the following diagram and answer the questions that follows?



Given specifications:

- Area of piston A= 200mm²
- Output force=1000N
- Pressure=20N/mm²

3.3.1) Calculate the area of piston B?

(2)

3.3.2) Calculate the force of the whole system of the above diagram?

(3)

3.3.3) Calculate the mechanical advantage of this system?

(3)

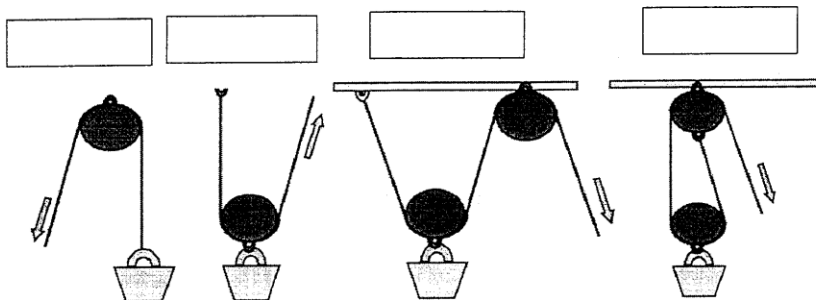
Section D Pulleys and Gears

Question 4

(10marks)




4.1) Name the different type of pulleys below?

(4)



4.2) Complete the following table below?

(6)

	What are these different cleats called?	Give one use of each cleat?
4.2.1) 		
4.2.2) 		
4.2.3) 		





Section E

Question 5

(10 Marks)

5.1) Match the picture in column A to the type of gear in column B.

(4)

	Column A	Column B	Students answer (LETTER ONLY)
5.5.1)		(A) Rack and pinion system	
5.5.2)		(B) Spur gear	
5.5.3)		(C) Bevel gear system	
5.5.4)		(D) Worm gear system	

