



HILLCREST HIGH SCHOOL

Grade 9

TECHNOLOGY

NOVEMBER 2025

MARKS: 120

EXAMINER: Mrs Stols

TIME: 2 Hours

MODERATOR: Mrs Tonkin

	SECTION	MARKS	TIME (minutes)
QUESTION 1:	Short questions (All topics)	10	10
QUESTION 2:	Mechanical Systems	30	30
QUESTION 3:	Electrical Systems	22	22
QUESTION 4:	Food preservation	20	20
QUESTION 5:	Metal Preservation & Plastic	25	25
QUESTION 6:	Drawing	13	13
	TOTAL:	120	120

INSTRUCTIONS

1. The question paper consists of 6 questions and 8 pages including the cover page.
2. A calculator may be used.
3. Write your Technology teacher's name on your answer booklet.
4. Technological based answers must be written.
5. All drawings/sketches must be completed using a sharp pencil and drawing instruments unless otherwise instructed.
6. Marks will be deducted for untidy work especially drawings/sketches.

QUESTION 1 SHORT QUESTIONS**[10]**

1.1. Various options are provided as possible answers to the following (10) questions. Choose the answer and write only the letter (A – D) next to the question numbers (1.1.1. – 1.1.10.) in the ANSWER BOOK. EG: 1.1.1. E

1.1.1. The type of line shown below represents an/a ... 

- A Hidden detail line.
- B Construction line.
- C Out-line.
- D Dimension line

1.1.2. Which of the following will be used to guide a designer in the completion of a drawing?

- A Centre lines
- B Dashed lines
- C Outlines
- D Construction lines

1.1.3. The main purpose of dimensioning in graphic communication is to\ make sure that the drawing ...

- A Is neat.
- B Is accurate.
- C Informs the reader of its size.
- D Is complete.

1.1.4.slows the forward motion and stops a bicycle.

- A Brake lever
- B Brake cable
- C Brake callipers
- D All of the above.

1.1.5. states that PRESSURE exerted on one part of a HYDRAULIC SYSTEM, will be transferred equally in all directions to other parts of the system without any loss.

- A Pressure
- B Pascal's principle/law
- C Hydraulic system
- D Closed system

1.1.6. A measure of the amount of the mass of an object compared to its size.

- A Hardness
- B Density
- C Flexibility
- D Stiffness

1.1.7. The type of force applied in the picture below is a ... force.

- A Dynamic
- B Static
- C Torsion
- D Even



1.1.8. A process whereby metal and wood could be given the same coating to keep out moisture and/or oxygen that could cause wood to rot or metal to rust.

- A Electroplating
- B Varnishing
- C Painting
- D Galvanising

1.1.9. An ammeter is used to measure the ... in a circuit.

- A energy
- B resistance
- C voltage
- D current

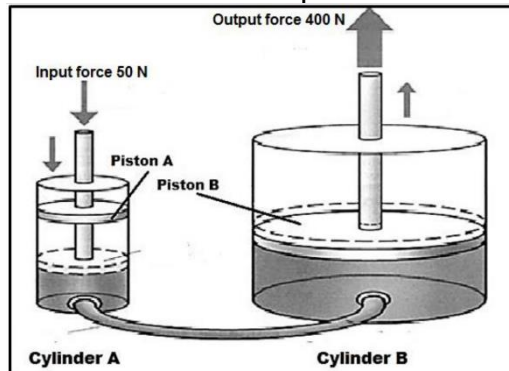
1.1.10. Which of the following would NOT be regarded as an output device?

- A Bulb
- B Motor
- C Light-dependent resistor
- D Buzzer

QUESTION 2 MECHANICAL SYSTEMS

[30]

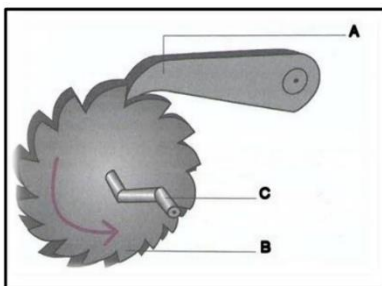
2.1. Study the hydraulic system diagram below, the input force is 50 N and the output force is 400 N. Answer the questions that follow:



- 2.1.1. If piston A is compressed, what happens to piston B? (1)
- 2.1.2. When piston A is compressed by 80 mm, how far will piston B move? (1)
- 2.1.3. Calculate the mechanical advantage of this hydraulic system. (3)

2.2. What is the main function of disc brakes on a vehicle? (1)

2.3. The mechanism below is an important control device used in many systems.

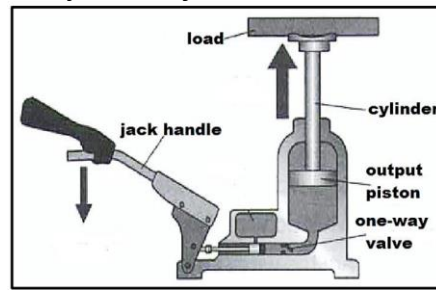


- 2.3.1. Name the parts labelled A, B and C. (3)
- 2.3.2. Give ONE example of a device that uses this locking system. (1)

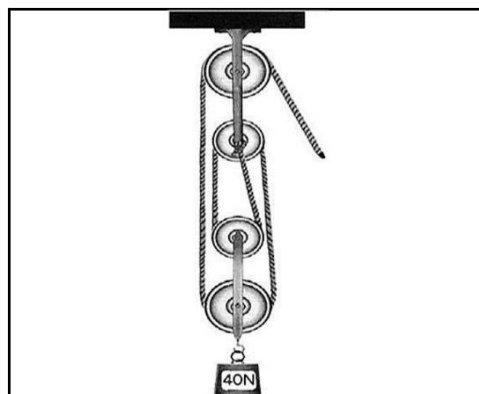
- 2.4. Match each description in column A with a word or term in column B. (5)
 Write down the letter from column B for the statement that matches 2.4.1. to 2.4.5. (No answer in column B is used more than once.)

COLUMN A		COLUMN B	
2.4.1.	Pneumatic system	A	When a force is applied to a piston with a small area the force is transmitted through water to another piston with a large area.
2.4.2.	Hydraulic system	B	The unit that measures force.
2.4.3.	Piston	C	Strength or energy exerted on something.
2.4.4.	Valve	D	Compressed air in a cylinder linked by a tube.
2.4.5.	Newton	E	Designed to allow or prevent movement
		F	Lever that performs linear movement due to force transfer from an input force
		G	The cylinder that does the work.

- 2.5. Below is a drawing of a hydraulic jack. Tabulate a SYSTEMS DIAGRAM for the hydraulic jack (5)



- 2.6. What is a pulley? (2)
- 2.7. In what way does a pulley system make work easier? (2)
- 2.8. What is a block and tackle pulley? (2)
- 2.9. In the lifting pulley system below a force of 40 N is lifted over a distance of 1 m.

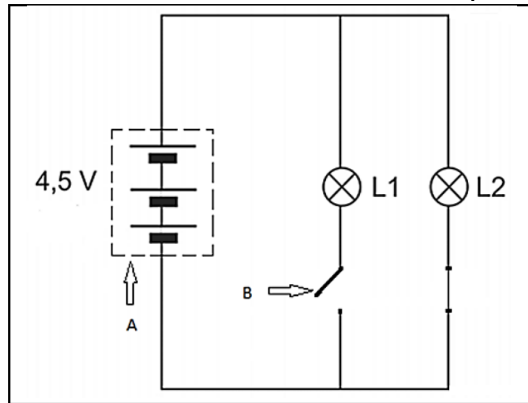


- 2.9.1. Calculate the force needed to lift the load. (2)
- 2.9.2. What is the mechanical advantage of this complex pulley system (2)

QUESTION 3 ELECTRICAL SYSTEMS

[22]

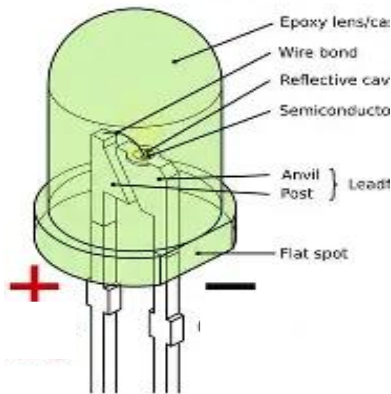
3.1. Study the electronic circuit below and answer the questions that follow.



- 3.1.1. Are the lamps in the above electric circuit connected in series, or parallel? (1)
- 3.1.2. If current is allowed to flow in this circuit, which lamp, L1 or L2, will glow? (1)
- 3.1.3. Identify the electrical components marked A and B (2)

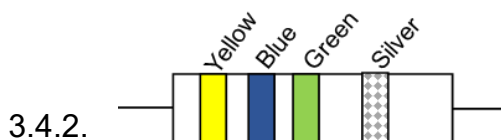
3.2. A generator has a resistance of 15 Ω and it generates a current of 2 A. Calculate the voltage that it will supply. (3)

3.3. The picture below shows an example of an electrical device that is used in many different circuits. Answer the following questions.



- 3.3.1. Name this device. (1)
- 3.3.2. Give at least ONE basic function performed by this device. (1)
- 3.3.3. Give two factors the help you tell the difference between the negative and positive leg of this electrical component. (2)

3.4. Write down the resistance and the tolerance for the following-coloured resistors: (6)



- 3.5. Fill in the missing words: (5)
- 3.5.1. _____ current flows from positive to negative
 - 3.5.2. If cells are connected in _____, the voltage will not increase, but the currents will be added together.
 - 3.5.3. If there are two switches connected in _____, both switches must be closed for the current to flow through the circuit.
 - 3.5.4. _____ is when current flows from negative to positive.
 - 3.5.5. If cells are connected in _____, then the voltages of each cell are added together, but the current will stay the same.

QUESTION 4 FOOD PRESERVATION

[20]

- 4.1. Read the following passage about food preservation and answer the questions that follow.

Food begins to spoil the moment it is harvested. Food preservation has been part of all cultures throughout history. It has enabled some groups to live in one place and form a community. The discovery of food preservation methods meant that humans no longer had to consume hunted animals or harvests immediately. They could preserve some of their food to eat later. It is interesting that different cultures preserved their local food sources using some basic methods of preservation such as heating, pickling, salting, refrigerating, drying, freezing and fermenting.

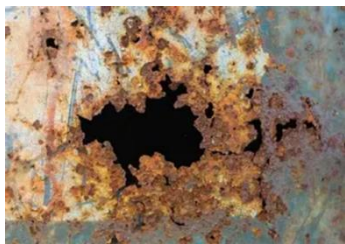
Match each description in column A with a word or term in column B. Write (5) down the letter from column B for the statement that matches 4.1.1. to 4.1.5. (No answer in column B is used more than once.)

Preservation method		Description of preservation method	
4.1.1.	Dehydration	A	Partial heating of milk to reduce bacterial growth
4.1.2.	Pickling	B	Moisture is removed from the food
4.1.3.	Drying	C	Salt is added to prevent bacterial growth
4.1.4.	Pasteurization	D	Old method that uses the sun or an oven
4.1.5.	Salting	E	Food is preserved in liquid like brine or vinegar

- 4.2.1. Name any THREE reasons why people process food. (3)
 - 4.2.2. Name ONE disadvantage of processed food. (1)
 - 4.2.3. Name one natural and chemical preservative. (2)
 - 4.2.4. Name two disadvantages of pickling. (2)
 - 4.2.5. Give three examples of herbs that you could add with your pickled products? (3)
- 4.3. Explain the following terms:
- 4.3.1. Germination (2)
 - 4.3.2. Aeration (2)

QUESTION 5 METAL PRESERVATION & PLASTIC

[25]



- 5.1.1. What is corrosion? (2)
- 5.1.2. Why do ferrous metals rust? (1)
- 5.1.3. Name two ways that corrosion of a ferrous metal can be prevented. (2)

5.2. Match the identification symbol with its uses: Write the number and the letter only. (7)

Identification symbol		Uses	
5.2.1.		A	Frozen food bags; rubbish bags, soft squeezable bottles, milk sachets
5.2.2.		B	Clear trays for food and toiletries, clear bottles, pipes, credit cards, blood transfusion bags, cling film
5.2.3.		C	Beverage bottles; baby milk bottles. Non-packaging uses for polycarbonate: compact discs.
5.2.4.		D	Egg cartons; packing peanuts; disposable cups, plates, trays and cutlery.
5.2.5.		E	Packaging of various foodstuffs and liquids, such as soft drink
5.2.6.		F	Milk bottles, motor oil containers, buckets, crates, and bags
5.2.7.		G	Reusable microwaveable ware; kitchenware; yogurt containers; margarine tubs.

5.3. Name FOUR different properties of plastic. (4)

5.4. The picture below shows plastic containers that have been collected at a recycling depot. These have been sorted by hand and they are all made of HDPE.



- 5.4.1. How does the work of the depot shown above have a positive impact on SOCIETY and the ENVIRONMENT? (2)
- 5.4.2. Why must all the plastics collected in recycle sorting bins be the same kind of plastic? (1)

- 5.4.3. Define thermosetting plastic (1)
- 5.4.4. What is thermosetting plastic valued for? (3)
- 5.4.5. Define thermoplastic? (1)
- 5.4.6. Write down the full name for HDPE. (1)

