



EXAMINATIONS COUNCIL OF ESWATINI  
Junior Certificate Examination

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**SCIENCE**

**414/01**

Paper 1 Multiple Choice

**October/November 2019**

**1 hour**

Additional Materials: Multiple Choice Answer Sheet  
Electronic calculator  
Soft clean eraser  
Soft pencil (type B or HB recommended).

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**READ THESE INSTRUCTIONS FIRST**

Write in soft pencil.

Write your Centre number, candidate number and name on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

**Read and follow the instructions on the separate Answer Sheet carefully.**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

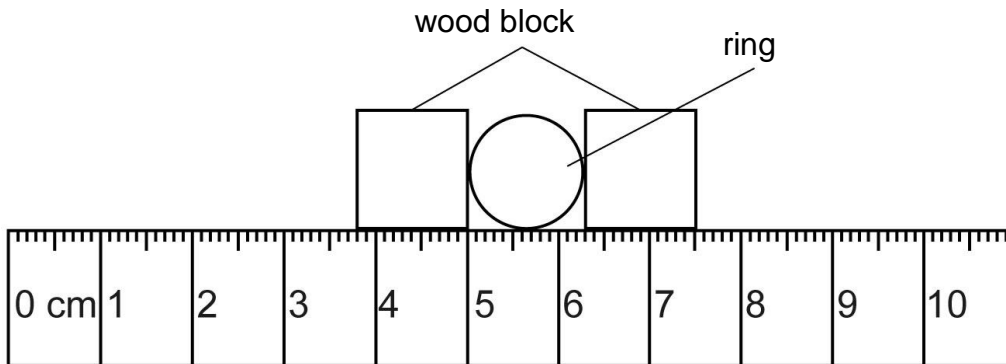
Any rough work should be done on this Question Paper and **not** on the Answer Sheet.

The total of the marks for this paper is 40.

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This document consists of **16** printed pages

- 1 Fig. 1.1 shows how Musa measures the external diameter of a ring.



**Fig. 1.1**

What is the external diameter of the ring?

- A 1.3 cm
  - B 3.5 cm
  - C 5.6 cm
  - D 7.7 cm
- 2 What are the uses of mild steel?
- A cutlery and kitchen sinks
  - B machinery and car bodies
  - C machinery and chemical plants
  - D surgical instruments and car bodies

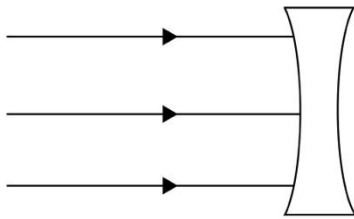
3 A boy accidentally steps on a nail in the garden and he quickly lifts his foot from the nail. What name is given to this response?

- A stimulus
- B reflex action
- C reaction time
- D voluntary action

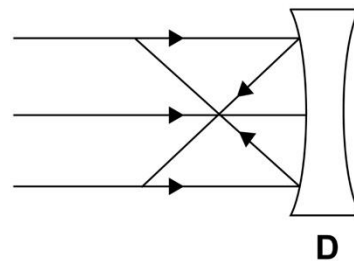
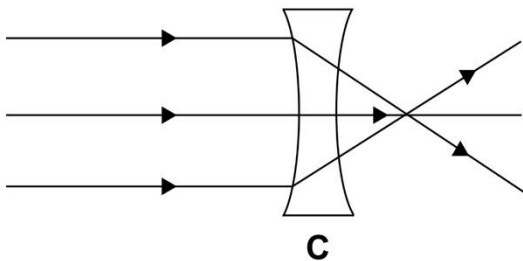
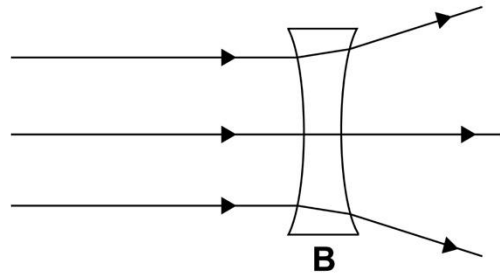
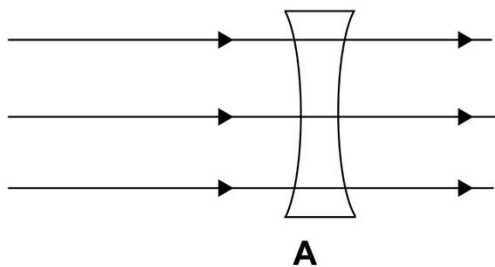
4 Which pair of metals **A**, **B**, **C** or **D** occur in a pure state?

- A silver and lead
- B gold and copper
- C aluminium and iron
- D potassium and zinc

5 The diagram below shows a beam of light incident on a diverging lens.



Which diagram shows the correct path of light rays after passing through the lens?



6 Fig. 6.1 shows a group of muscle cells.

What is the name of the group of cells in the muscles?

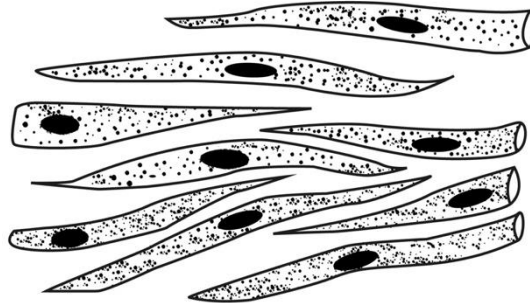


Fig. 6.1

- A organ
- B tissue
- C system
- D organism

7 Which term is used to describe a mixture of oil and water?

- A solution
- B miscible
- C insoluble
- D immiscible

8 A force has an effect on a body.

Which change is **not** an effect of force on a body?

- A change in shape
- B change in size
- C change in mass
- D change in speed

- 9 Fig. 9.1 shows organisms that are found in different habitats.



organism 1



organism 2

**Fig. 9.1**

To which groups do the organisms belong?

	organism 1	organism 2
<b>A</b>	insect	crustacean
<b>B</b>	crustacean	arachnid
<b>C</b>	arachnid	myriapod
<b>D</b>	myriapod	insect

- 10 Which factor decreases the rate of transpiration in a plant?
- A increase humidity
  - B increase temperature
  - C increase in light intensity
  - D increase in wind movements
- 11 A magnet is tied with a cotton thread and suspended horizontally such that it swings freely.
- In which direction does it come to rest?
- A east - north direction
  - B north - south direction
  - C south - east direction
  - D west - east direction

12 Aluminium is used to make food packages.

Which property of aluminium makes it suitable for use in food packaging?

- A is malleable
- B conducts electricity
- C resistant to corrosion
- D has a low boiling point

13 A student wants to view onion cells under a microscope.

Which part of the microscope should be adjusted to make the cells clearer?

- A handle
- B eyepiece
- C light source
- D focusing knob

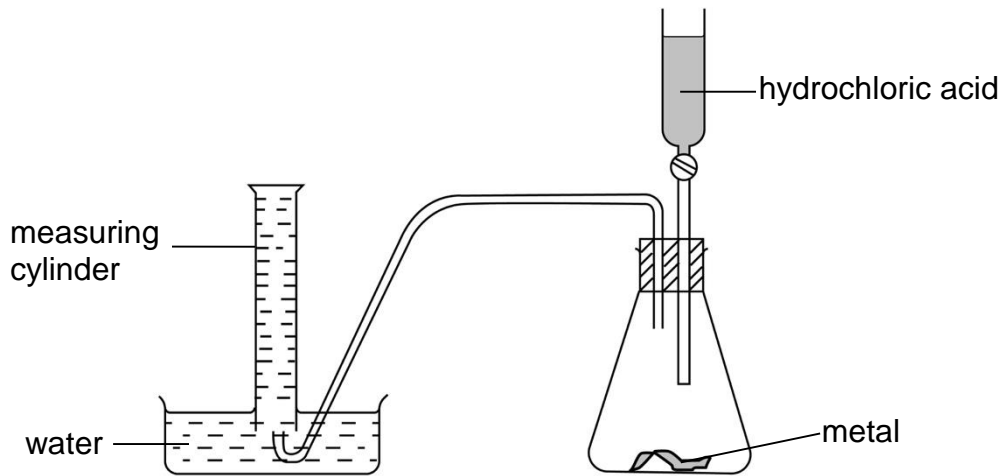
14 Atoms are made of electrons, protons and neutrons.

What is the relative charge of an electron?

- A +1
- B -1
- C -2
- D 0

- 15** A burning candle is put in a closed bottle. After a few minutes it stops burning.  
What stops the candle from continuing to burn?
- A** water vapour in the bottle
  - B** it is too hot inside the bottle
  - C** carbon dioxide in the bottle is used up
  - D** oxygen in the bottle has been used up
- 16** Which cells carry information about the characteristics that are passed on from parents to their offspring?
- A** sex cells
  - B** red blood cells
  - C** white blood cells
  - D** epidermal cells
- 17** Which statement best describes electric current?
- A** rate of flow of atoms in a conductor
  - B** rate of flow of protons in a conductor
  - C** rate of flow of neutrons in a conductor
  - D** rate of flow of electrons in a conductor

18 Fig. 18.1 shows apparatus used in the preparation of a gas in a laboratory.



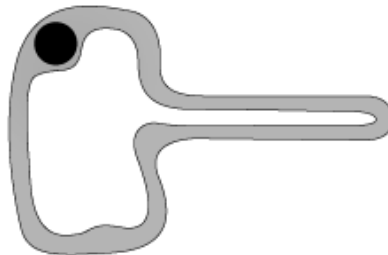
**Fig. 18.1**

Which gas is prepared in Fig. 18.1?

- A oxygen
- B nitrogen
- C hydrogen
- D carbon dioxide

19 Fig. 19.1 shows a plant cell.

What is the name given to this type of cell?

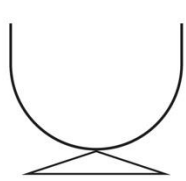


**Fig. 19.1**

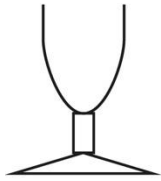
- A xylem cell
- B guard cell
- C palisade cell
- D root hair cell



- 20 A hotel chef wants to buy glasses of wine. He is given different designs to choose from. Which design would be most stable?



A



B



C



D

- 21 Which property is a characteristic of hydrogen?

- A has a low density
- B highly flammable
- C has a choking smell
- D supports combustion

- 22 The diagram shows a food chain found in a certain habitat.

lettuce → snail → chicken → man

Which organism is a producer?

- A man
- B snail
- C lettuce
- D chicken

- 23 Zandi is cold and she decides to sit some distance away from a fire place. After sometime she feels warmer.

What is the mode of heat transfer from the fire to Zandi?

- A by radiation only
- B by convection only
- C by radiation and convection
- D by radiation and conduction

- 24 A student prepares carbon dioxide in a conical flask. She then pours the gas into a beaker with limewater. The limewater turns milky.

Which property of carbon dioxide makes it possible to be poured into the beaker?

- A is denser than air
- B dissolves in water
- C is less dense than air
- D does not support combustion

- 25 What is the main function of the phloem in a plant?

- A site for photosynthesis in a plant
- B transports water and mineral salts
- C strengthens and supports the plant
- D transports sugars made in photosynthesis

- 26 Fig. 26.1 shows a diagram with ice cubes in water being heated. Heat is applied next to the mouth of the test-tube as shown in Fig. 26.1.

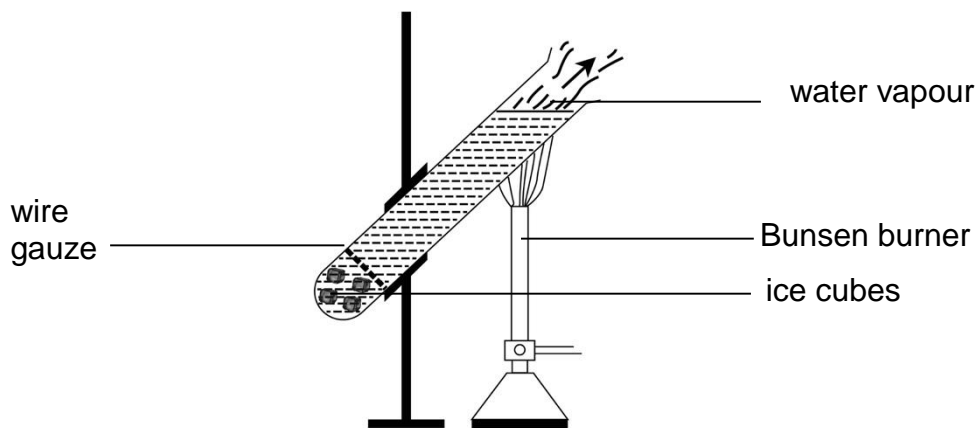


Fig. 26.1

What causes the ice at the bottom of the test-tube not to melt?

- A heat is conducted downwards
- B the ice is denser than water
- C convection currents transfer heat upwards
- D the wire gauze prevents heat from reaching the ice

- 27 A student puts a piece of universal indicator paper in lemon juice. The indicator turns orange.

Which pH value could be that of lemon juice?

- A pH 2
- B pH 5
- C pH 8
- D pH 12

- 28 A boy eats banana for lunch.

What will be the product of digestion of the banana in the mouth?

- A maltose
- B glucose
- C fatty acids
- D amino acids

- 29 Fig. 29.1 shows a wave diagram.

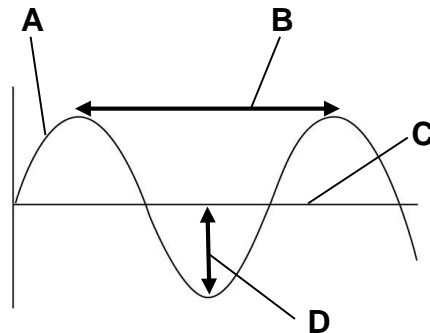


Fig. 29.1

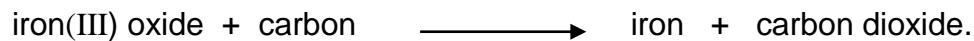
Which feature **A**, **B**, **C** or **D** is the amplitude of the wave?

- 30 Metals are good conductors of electricity.

Which statement describes why metals are good conductors of electricity?

- A they have free protons
- B they have fixed protons
- C they have free electrons
- D they have fixed electrons

31 In the extraction of iron from iron ore, one of the reactions is:



Which statement describes reduction in this reaction?

- A iron(III) oxide loses oxygen
- B iron(III) oxide gains oxygen
- C carbon gains oxygen
- D carbon loses oxygen

32 Which statement describes melting?

- A Particles move slower and further apart.
- B Particles expand and occupy more space.
- C Particles move slower and closely packed.
- D Particles vibrate faster and leave their fixed positions.

33 Which statement is correct about sound waves?

- A Sound waves are transverse in nature.
- B Sound waves are longitudinal in nature.
- C Waves cannot travel through solids sound.
- D Sound waves can travel through a vacuum.

34 Which conditions are most suitable for rusting to occur?

- A oxygen and water
- B carbon dioxide and water
- C carbon dioxide and water
- D oxygen and carbon dioxide

35 Fig. 35.1 shows an incident ray and a reflected ray.

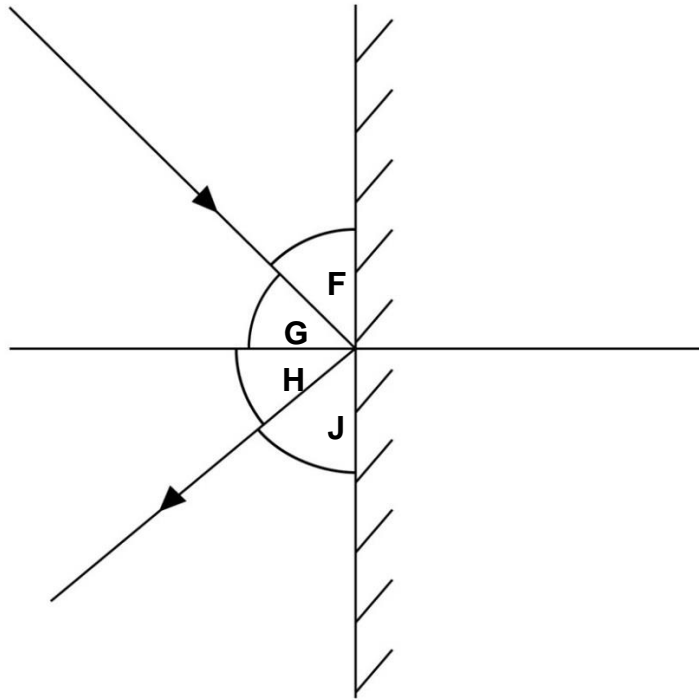


Fig. 35.1

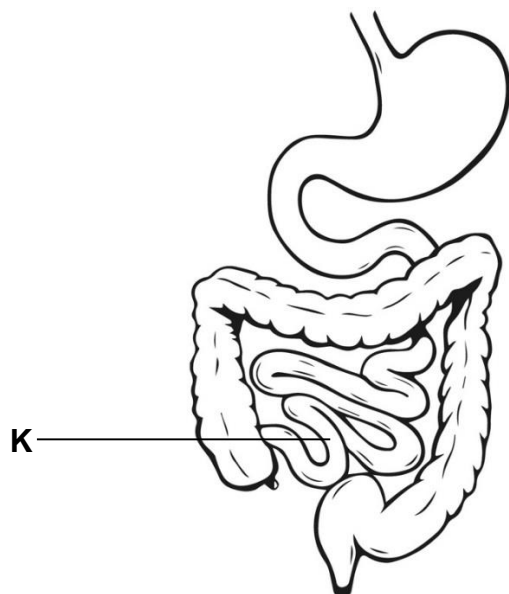
Which angles must always be equal?

- A F and G
- B G and H
- C H and J
- D G and J

36 Which element is used to make brass?

- A tin
- B iron
- C zinc
- D carbon

37 Fig. 37.1 shows part of the alimentary canal with associated organs.



**Fig. 37.1**

What is the name of the part labelled K?

- A stomach
- B pancreas
- C small intestine
- D large intestine

38 Fig. 38.1 shows a crowbar used to lever up a large stone.

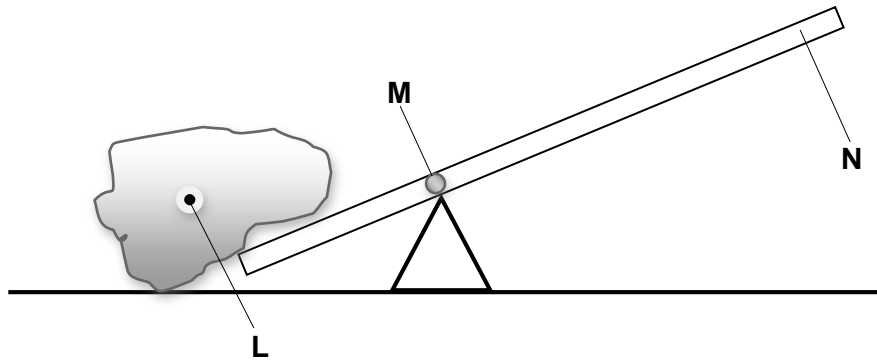


Fig. 38.1

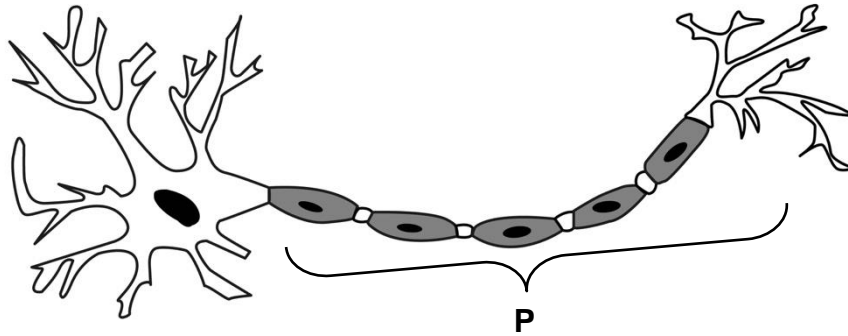
Assuming the force is the same as the effort, what are the names of the points labelled **L**, **M** and **N**?

	<b>L</b>	<b>M</b>	<b>N</b>
<b>A</b>	effort	load	fulcrum
<b>B</b>	fulcrum	load	effort
<b>C</b>	load	fulcrum	effort
<b>D</b>	effort	fulcrum	load

39 Which quantities show the correct composition of air?

- A** 21% oxygen, 78% nitrogen, 0.3% carbon dioxide
- B** 78% oxygen, 21% nitrogen, 0.03% carbon dioxide
- C** 21% oxygen, 78% nitrogen, 0.03% carbon dioxide
- D** 0.03% oxygen, 78% nitrogen, 21% carbon dioxide

40 The diagram shows a motor neurone.



What is the name of the part labelled **P**?

- A axon
- B nucleus
- C cytoplasm
- D cell membrane

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