



EXAMINATIONS COUNCIL OF ESWATINI  
Junior Certificate Examination

**SCIENCE**

**414/01**

Paper 1 Multiple Choice

**October/November 2022**

**1 hour**

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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 the instructions on the separate Answer Sheet carefully.**

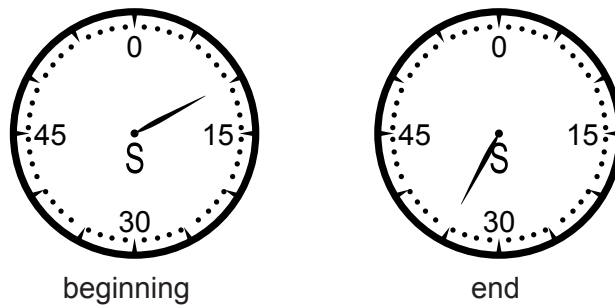
Each correct answer will score one mark. A mark will not be awarded for a wrong answer.

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

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This document consists of **16** printed pages.

- 1 Which unit is used in the measurement of pressure?
- A metre
  - B newton
  - C second
  - D Pascal
- 2 What is the symbol of the element chlorine?
- A CL
  - B Cl
  - C Ca
  - D Ch
- 3 Which vitamin prevents brittle bones?
- A vitamin B
  - B vitamin C
  - C vitamin D
  - D vitamin K
- 4 Fig. 4.1 shows the readings of a stopwatch at the beginning and at the end of an experiment.



**Fig. 4.1**

How long does the experiment take?

- A 10s
- B 25s
- C 35s
- D 45s

5 What is the density of pure water?

- A 1.0 g/cm<sup>3</sup>
- B 1.2 g/cm<sup>3</sup>
- C 1.3 g/cm<sup>3</sup>
- D 1.4 g/cm<sup>3</sup>

6 Fig. 6.1 shows a simple microscope.

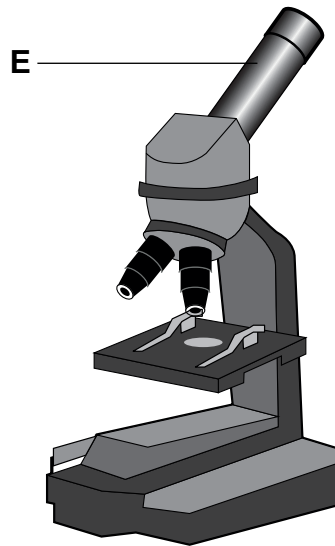


Fig. 6.1

What is the name of the part labelled E?

- A base
- B eye piece
- C nose piece
- D objective

- 7 Fig. 7.1 shows a girl wearing a parachute a few minutes after jumping from a helicopter.



**Fig. 7.1**

What is the name of the force that pulls the girl down?

- A air resistance
  - B electrical force
  - C magnetic force
  - D gravitational force
- 8 Which substance is a molecule?
- A air
  - B brass
  - C copper
  - D oxygen

- 9 A student breathes into limewater and the limewater turns milky.

Which difference between exhaled and inhaled air is responsible for turning the limewater milky.

	exhaled air	inhaled air
<b>A</b>	less oxygen	more oxygen
<b>B</b>	more carbon dioxide	less carbon dioxide
<b>C</b>	more moisture	less moisture
<b>D</b>	more warmth	less warmth

- 10 Which statement is true about mass and weight?

	mass	weight
<b>A</b>	the amount of space occupied by an object	the force of gravity acting on an object
<b>B</b>	increases when an object is taken to the moon	decreases when object is taken to the moon
<b>C</b>	SI unit is grams	SI unit is Newton
<b>D</b>	measured using a beam balance	measured with a spring balance

- 11 Which of the following is a physical property of sodium metal?

- A** low density
- B** dull surface
- C** hard surface
- D** high boiling point

12 Fig. 12.1 shows some blood components.

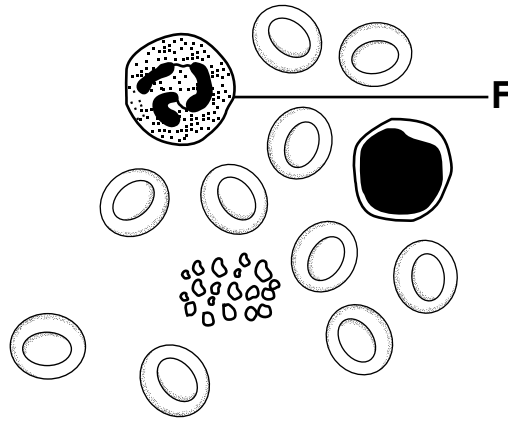


Fig. 12.1

What is the function of the cell labelled F?

- A help the body to stop bleeding
  - B help fight against infection
  - C distribute heat around the body
  - D transport oxygen
- 13 A force is applied to move a brick along the table in the laboratory.  
In which direction does the force of friction act on the brick?
- A in any direction of movement
  - B in the same direction as the force
  - C in the opposite direction of the force
  - D in a perpendicular direction to the force

- 14 Which statement explains why aluminium is used in the manufacture of aircraft bodies?
- A It conducts heat well.
- B It has low density.
- C It is a good insulator.
- D It is easy to recycle.
- 15 Table 15.1 shows descriptions of visible characteristics of vertebrates **G**, **H** and **I**.

**Table 15.1**

vertebrate	visible characteristics
<b>G</b>	smooth, moist skin
<b>H</b>	streamlined body with fins
<b>I</b>	dry scaly skin

Which statement gives the correct class of each named vertebrate?

	<b>G</b>	<b>H</b>	<b>I</b>
<b>A</b>	fish	reptile	amphibian
<b>B</b>	amphibian	reptile	fish
<b>C</b>	reptile	amphibian	fish
<b>D</b>	amphibian	fish	reptile

- 16 An athlete is running a 100 m race at a speed of 8 m/s.
- What is the time taken by the athlete to complete the race?
- A 12.5 s
- B 800 s
- C 0.08 s
- D 108 s

17 Fig. 17.1 shows changes of states of matter.

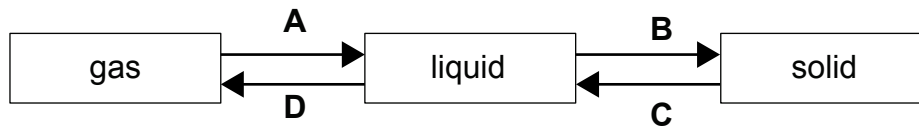


Fig. 17.1

Which letter **A**, **B**, **C** or **D** shows condensation?

18 Which statement is **not** correct about the consequences of teenage pregnancy?

- A rejection by peers
- B dropping out of school
- C being infected with STI's
- D child loved by both parents

19 Which list consists of only forms of energy?

- A water, kinetic, electrical
- B chemical, coal, potential
- C chemical, kinetic, potential
- D potential, electrical, temperature

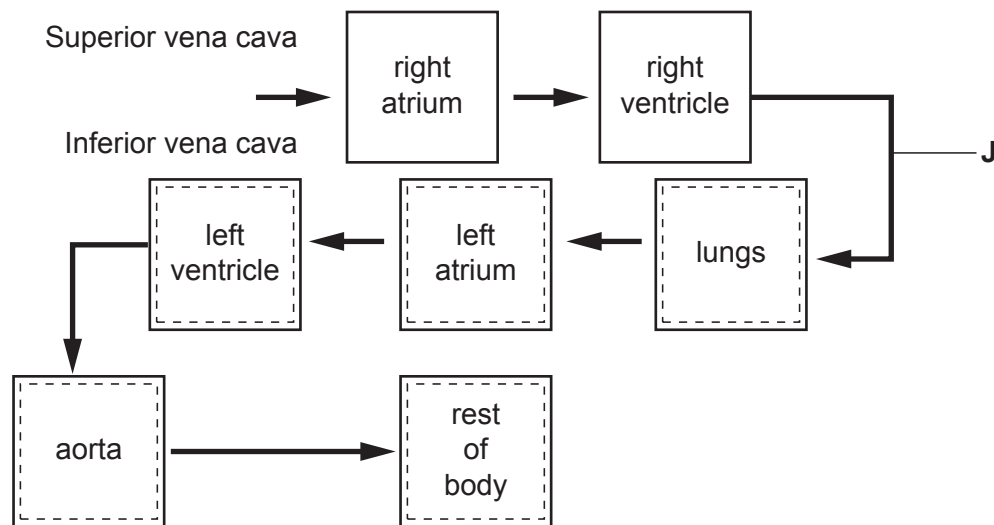
20 Which method is used to separate a mixture of oil and water?

- A filtration
- B decanting
- C crystallisation
- D gravity



21 Fig. 21.1 shows the circulation of blood through the heart.

Questions 21 and 22 refer to Fig. 21.1.



**Fig. 21.1**

What is the name of the part labelled **J** in Fig. 21.1?

- A** aorta
- B** pulmonary vein
- C** right ventricle
- D** pulmonary artery

22 Which parts of the heart receive oxygenated blood in Fig. 21.1?

- A** left atrium and left ventricle
- B** left atrium and Inferior vena cava
- C** right atrium and lungs
- D** right atrium and right ventricle

- 23** Which process is endothermic?
- A** burning of coal in the atmosphere
  - B** release of energy from food in living cells
  - C** nail turning brown when exposed to water
  - D** manufacture of glucose in the presence of sunlight
- 24** In which part of the digestive system is starch digested to maltose?
- A** ileum
  - B** colon
  - C** mouth
  - D** stomach
- 25** Which nutrient is the end product of digestion of fats?
- A** fatty acids only
  - B** amino acids only
  - C** fatty acids and glycerol
  - D** amino acids and glycerol
- 26** Which type of wave is a longitudinal wave?
- A** light wave
  - B** rope wave
  - C** water wave
  - D** sound wave

- 27 What colour does a Universal Indicator paper turn to when dipped into a weak acid?
- A red
  - B blue
  - C green
  - D orange

Fig. 28.1 shows a balloon placed next to a charged rod. Questions 28 and 29 refer to Fig. 28.1.

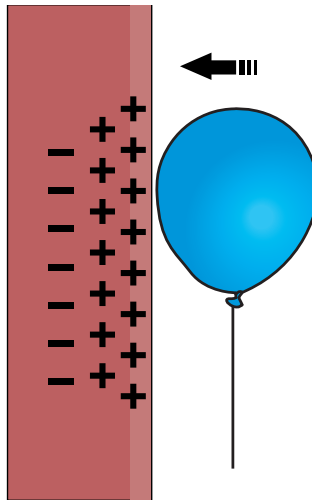


Fig. 28.1

- 28 What charge does the part of the balloon next to the rod acquire?
- A positive charge
  - B neutral charge
  - C negative charge
  - D proton charge
- 29 How is the part of the balloon next to the rod in Fig. 28.1 charged?
- A Electrons in balloon are repelled by the rod.
  - B Protons in balloon are attracted by the rod.
  - C Electrons in balloon are attracted towards the rod.
  - D Protons in the rod are repelled towards the balloon.

- 30** Which gas is used for welding?
- A** ozone
  - B** nitrogen
  - C** acetylene
  - D** hydrogen
- 31** Shops are no longer giving out plastic bags to shoppers because of the 'bring your own bag' campaign.
- What is the main reason for the 'bring your own bag' campaign?
- A** Plastic is non-biodegradable.
  - B** Shoppers do not like plastic bags.
  - C** Plastic decays within a short time.
  - D** Material for making plastics is scarce.
- 32** Which properties describe the image formed by a plane mirror?
- A** real, upright, same size
  - B** virtual, upright, same size
  - C** real, upside down, same size
  - D** virtual, upside down, same size
- 33** Which element is found in Group VII of the Periodic Table?
- A** Bromine
  - B** Calcium
  - C** Carbon
  - D** Nitrogen

Fig. 34.1 shows a food web.

Questions 34 and 35 refer to the food web

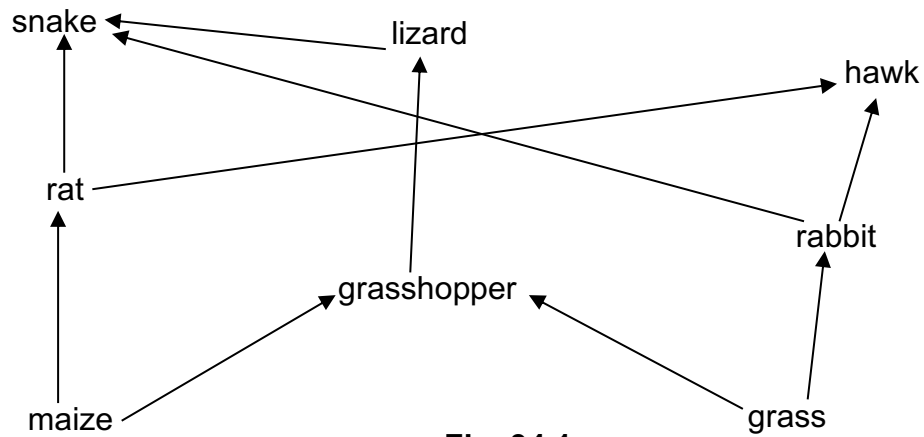


Fig. 34.1

- 34** Which organism in Fig. 34.1 is a carnivore?
- A rat
  - B hawk
  - C rabbit
  - D grasshopper
- 35** Which organism will receive the highest concentration of pesticides when they are sprayed on the grass ?
- A grasshopper
  - B lizard
  - C snake
  - D rabbit

36 Fig. 36.1 shows bar magnets arranged in pairs.

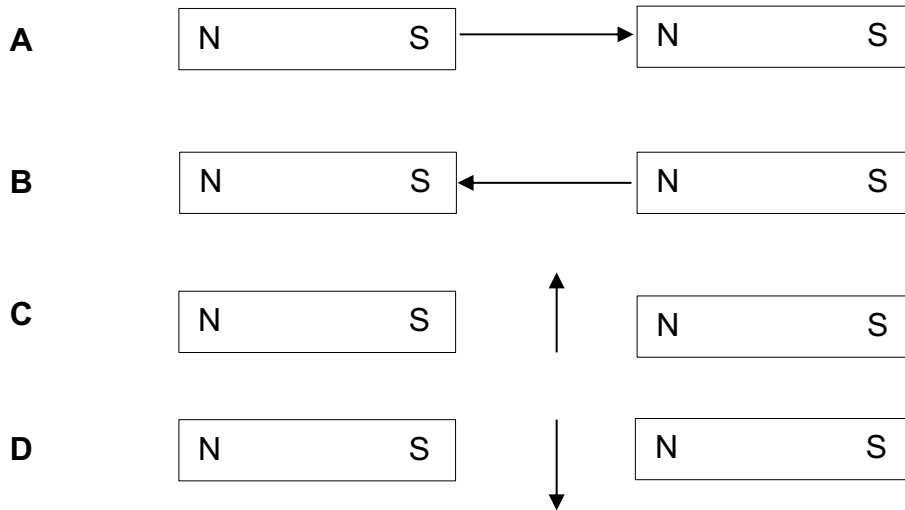


Fig. 36.1

Which diagram **A**, **B**, **C** or **D** correctly shows the direction of the magnetic field between the ends of the magnets?

- 37 What is the method that could be used to collect larger crystals of copper(II) sulfate.
- A** heating it strongly
  - B** adding more water
  - C** allowing it to evaporate slowly
  - D** heating it until crystals are formed

38 Fig. 38.1 shows an electrical circuit.

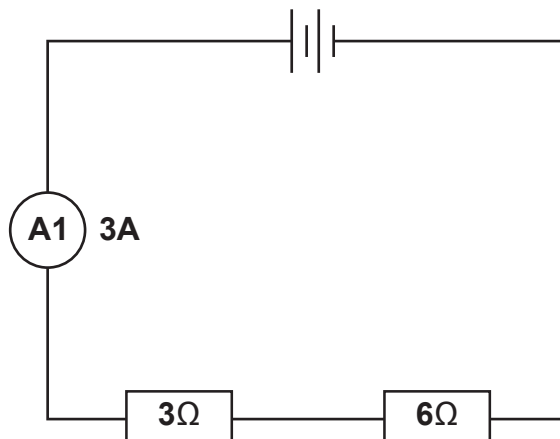


Fig. 38.1

What is the combined resistance of the resistors in this circuit?

- A 0.5  $\Omega$
  - B 2  $\Omega$
  - C 9  $\Omega$
  - D 18  $\Omega$
- 39 What is the name of the salt formed when hydrochloric acid reacts with sodium carbonate?
- A sodium oxide
  - B sodium chloride
  - C sodium hydroxide
  - D sodium hydrogen carbonate

40 A student measures the volume of a stone as shown in Fig. 40.1.

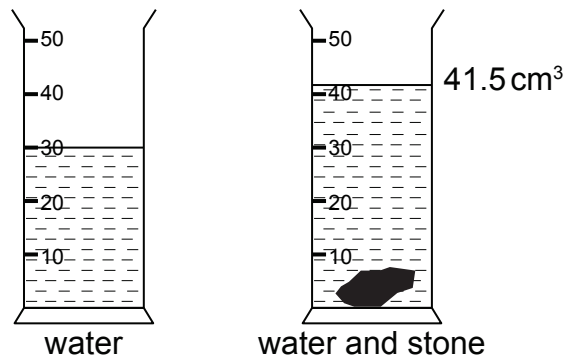


Fig. 40.1

What is the volume of the stone?

- A 2.5 cm<sup>3</sup>
- B 11.5 cm<sup>3</sup>
- C 41.5 cm<sup>3</sup>
- D 61.5 cm<sup>3</sup>

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