



EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examination

SCIENCE

414/01

Paper 1 Multiple Choice

October/November 2024

1 hour

Additional Materials: Multiple Choice Answer Sheet
Calculator
Soft clean eraser
Soft pencil (type **B** or **HB** recommended)

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.

This document consists of **14** printed pages and **2** blank pages.

1 What is the unit for work done?

- A joule
- B watts
- C kelvin
- D newton

2 Fig. 2.1 shows organisms in the Animal Kingdom.

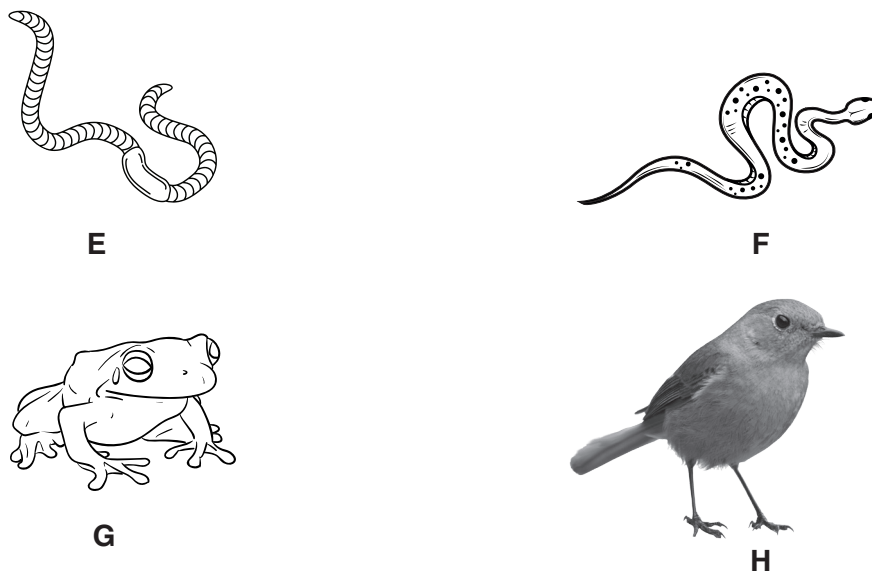


Fig. 2.1

Which feature makes animal **E** different from animals **F**, **G** and **H**?

- A long body
- B smooth skin
- C absence of legs
- D absence of a backbone

3 Which substance is ductile?

- A coal
- B sulfur
- C carbon
- D copper

4 Which statement is correct about water waves?

- A transfer energy.
- B travel in a vacuum.
- C transfer information.
- D are longitudinal waves.

- 5 During rains, excess kraal manure in crop fields may be discharged into rivers and dams.

Which statement describes the effect of discharging excess kraal manure into rivers and dams?

- A causes flooding.
- B death of water animals.
- C migration of water animals.
- D increase in the number of water animals.

- 6 Which statement about gold is correct?

- A occurs naturally as a pure element.
- B breaks into pieces when hammered.
- C is above copper in the reactivity series.
- D reacts with hydrochloric acid to produce hydrogen.

- 7 An ambulance has the following writing at the front.

AMBULANCE

The writing reads **AMBULANCE** when viewed in a plane mirror by a driver in front of the ambulance.

What property of a mirror image is shown by the writing on the ambulance?

- A image is real
- B image is magnified
- C image is diminished
- D image is laterally inverted

- 8 Table 8.1 shows examples of species likely to be found in certain habitats.

Table. 8.1

| | habitat | species |
|----------|---------|-----------|
| A | river | crocodile |
| B | desert | fish |
| C | grass | earthworm |
| D | rocks | frogs |

Which row about habitat and species is correct?

9 What is the charge of a neutron?

- A 1+
- B 0
- C 1–
- D 2+

10 A student rubs a rod held in her hand.

Which action causes the rod to gain a large electrostatic charge?

- A rubbing an iron rod with a steel magnet.
- B rubbing an iron rod with a woolen cloth.
- C rubbing a plastic rod with a steel magnet.
- D rubbing a plastic rod with a woolen cloth.

11 Which row shows good sources of the nutrients listed in Table 11.1?

Table 11.1

| | carbohydrates | fats | proteins |
|----------|---------------|---------|----------|
| A | potato | peanuts | milk |
| B | spinach | peanuts | potato |
| C | peanuts | spinach | milk |
| D | potato | milk | spinach |

12 Which statement correctly describes brass?

- A mixture of carbon and zinc.
- B compound of carbon and zinc.
- C mixture of zinc and copper.
- D compound of zinc and copper.

13 “Energy is neither created nor destroyed but can be changed from one form to another”.

Which law does this statement represent?

- A law of moments
- B law of magnets
- C law of conversion of energy
- D law of conservation of energy

14 Fig. 14.1 shows a human heart.

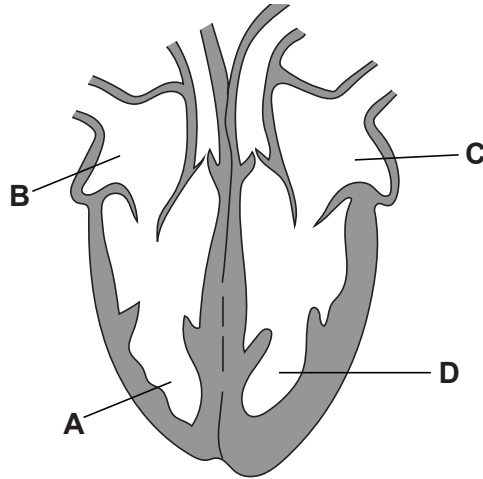


Fig. 14.1

Which chamber of the heart, in Fig. 14.1, pumps blood to the lungs?

15 Which gas is used for filling air balloons?

- A argon
- B helium
- C oxygen
- D hydrogen

For **questions 16 and 17**, refer to Fig. 16.1

A student investigates the force applied on an object.

Fig. 16.1 shows the instrument for measuring force before the measurement is made.

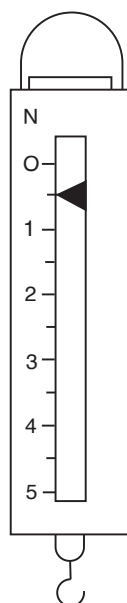


Fig. 16.1

16 What is the name of the instrument shown in Fig. 16.1?

- A** thermometer
- B** beam balance
- C** spring balance
- D** measuring cylinder

17 The student got an inaccurate reading of the force.

What could be the reason for the student to get an inaccurate measurement when using the instrument shown in Fig. 16.1

- A** scale is short
- B** scale is vertical
- C** instrument not adjusted to zero
- D** reading at eye level with the mark

18 Which action is an example of voluntary actions?

- A** blinking
- B** chewing
- C** sneezing
- D** salivating

For **questions 19 and 20**, use Fig. 19.1.

Fig. 19.1 shows apparatus that can be used to separate a mixture of sand and sodium chloride solution.

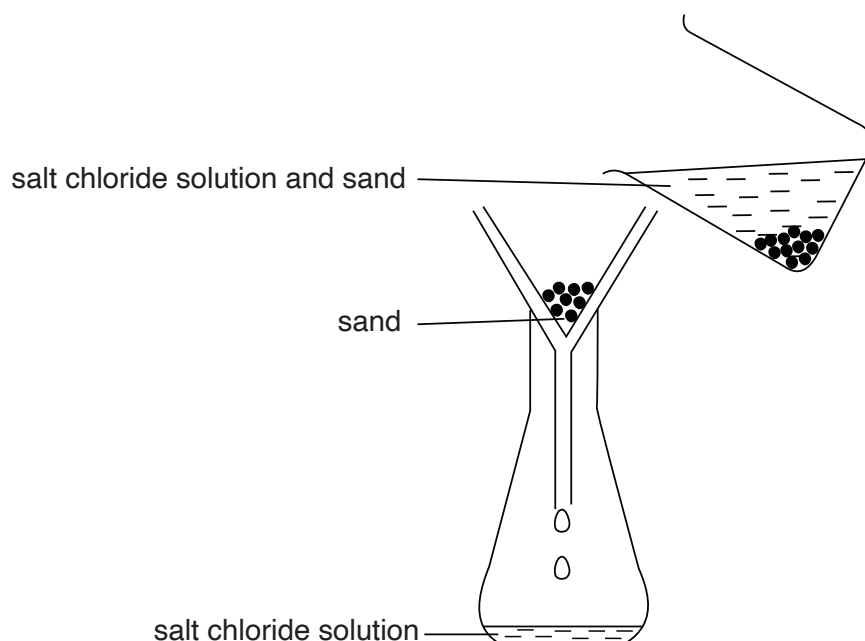


Fig. 19.1

- 19** What method of separation is shown in Fig. 19.1?
- A** filtration
 - B** decanting
 - C** distillation
 - D** crystallization
- 20** Which order of steps is correct when preparing large sodium chloride crystals from the salt solution in Fig. 19.1.
- A** heating, saturating, leaving in open air
 - B** heating, saturating, leaving in a refrigerator
 - C** heating, leaving in open air, saturating
 - D** heating, leaving in a refrigerator, saturating
- 21** Components of blood are red blood cells, white blood cells, platelets and plasma.
- Which statement is **true** about blood?
- A** is a tissue.
 - B** is an organ.
 - C** is a system.
 - D** is an organism.

- 22** Fig. 22.1 shows a house painter using a screwdriver to pull up the lid off a cylindrical tub of paint.

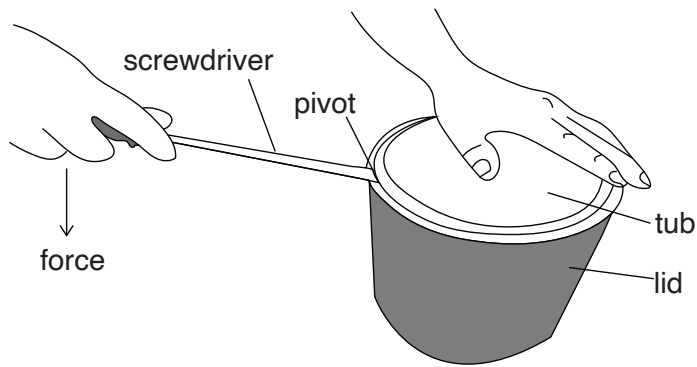


Fig. 22.1

Which row correctly shows how the house painter could increase the moment of force by the greatest amount?

| | size of screwdriver | force applied |
|----------|---------------------|---------------|
| A | wider | double |
| B | wider | half |
| C | longer | double |
| D | longer | half |

- 23** What is the chemical symbol for potassium?

- A** K
- B** P
- C** Pt
- D** Na

24 For **questions 24** and **25**, use Fig. 24.1.

Fig. 24.1 shows the human respiratory system.

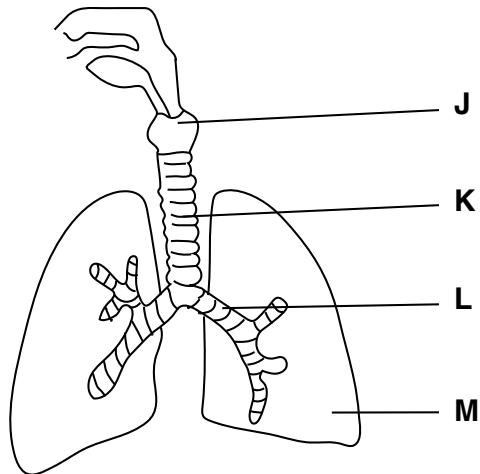


Fig. 24.1

| | J | K | L | M |
|----------|----------|----------|----------|----------|
| A | larynx | trachea | lungs | bronchus |
| B | trachea | larynx | bronchus | lungs |
| C | bronchus | lungs | trachea | larynx |
| D | larynx | trachea | bronchus | lungs |

25 Which part, in Fig. 24.1, removes carbon dioxide and water from the body?

- A** **J**
- B** **K**
- C** **L**
- D** **M**

- 26 Fig. 26.1 shows a method of magnetising iron.

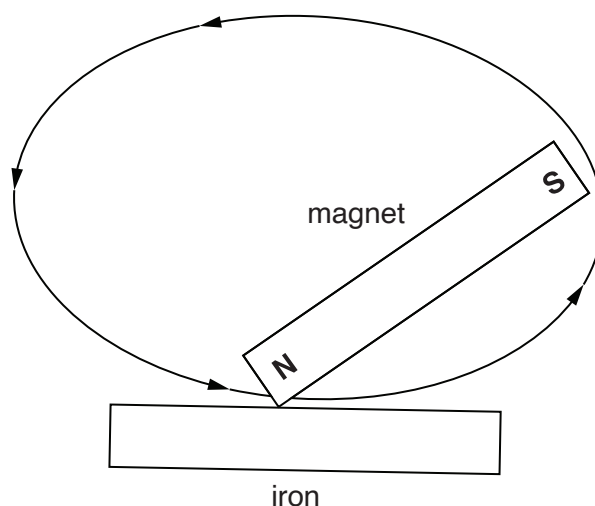


Fig. 26.1

Which method of magnetisation is shown in Fig. 26.1?

- A** stroking
- B** induction
- C** hammering
- D** electrical method

- 27 Which row is correct for the approximate percentage of the gases in air?

| | percentage oxygen | percentage nitrogen | percentage carbon dioxide |
|----------|-------------------|---------------------|---------------------------|
| A | 78 | 21 | 0.03 |
| B | 21 | 0.03 | 78 |
| C | 21 | 78 | 0.03 |
| D | 0.03 | 21 | 78 |

- 28 In a grassland, a cat eats a bird that has fed on termites. The termites feed on roots of grass plants.

Which food chain correctly shows a feeding relationship in the grassland?

- A** cat → bird → termite
- B** bird → termite → grass
- C** grass → termite → bird
- D** grass → cat → bird

- 29 Fig. 29.1 shows an ammeter fitted to a $300\ \Omega$ resistor.

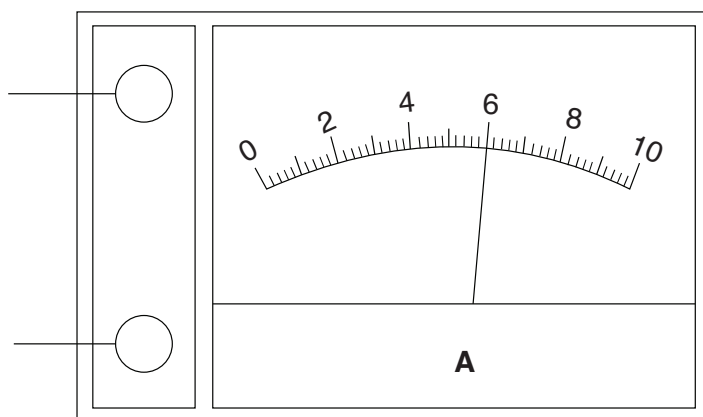


Fig. 29.1

What is the potential difference across the resistor?

- A 50 V
 - B 0.02 V
 - C 306 V
 - D 1800 V
- 30 The equation for the main reaction in a blast furnace is
- iron(III) oxide + carbon monoxide \longrightarrow iron + carbon dioxide.

Which substance is oxidised during this reaction?

- A iron
- B iron(III) oxide
- C carbon dioxide
- D carbon monoxide

31 Fig. 31.1 shows the human urinary system.

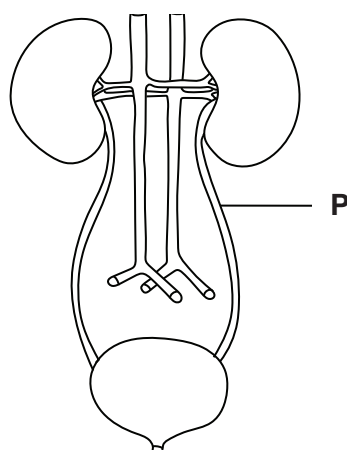


Fig. 31.1

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

- A** stores urine
- B** removes urea from the blood
- C** transports urine to the bladder
- D** carries deoxygenated blood to the kidney

32 Fig. 32.1 shows a standard mains three-pin plug connected to a three cord cable.

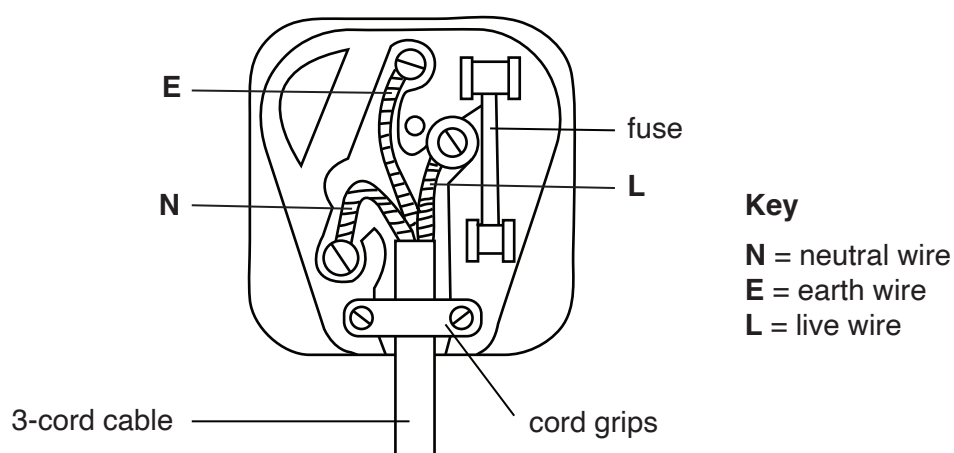


Fig. 32.1

What are the correct colours for the wires?

| | N | E | L |
|----------|------------------|------------------|------------------|
| A | blue | brown | green and yellow |
| B | blue | green and yellow | brown |
| C | brown | green and yellow | blue |
| D | green and yellow | blue | brown |

33 Which metals can be easily cut using a knife?

- A sodium, potassium, lithium
- B calcium, sodium, potassium
- C magnesium, lithium, calcium
- D beryllium, magnesium, potassium

34 Fig. 34.1 shows two students measuring their reaction time using a 30 cm ruler. one student labelled dropper, drops the ruler and the other labelled catcher, catches the ruler. They determine how long each one takes to catch a ruler.

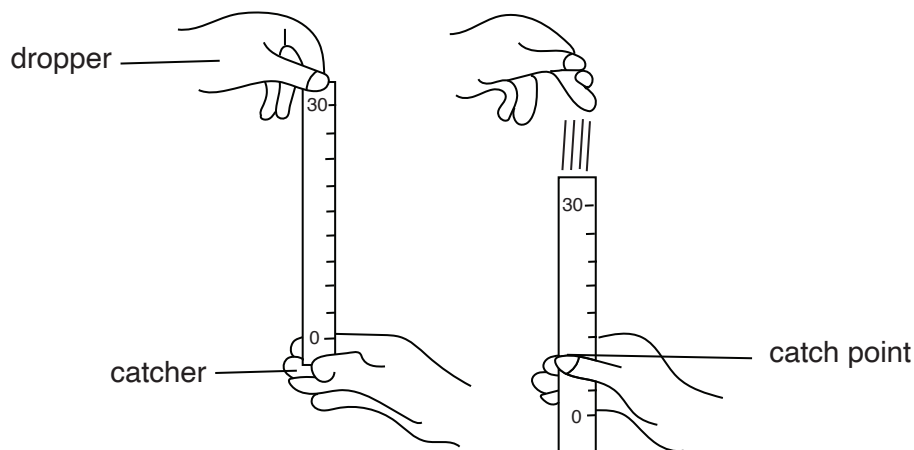


Fig. 34.1

Which mark on the ruler shows the fastest reaction time?

- A 5 cm
- B 10 cm
- C 15 cm
- D 25 cm

35 Fig. 35.1 shows one method of measuring the diameter of a beaker.

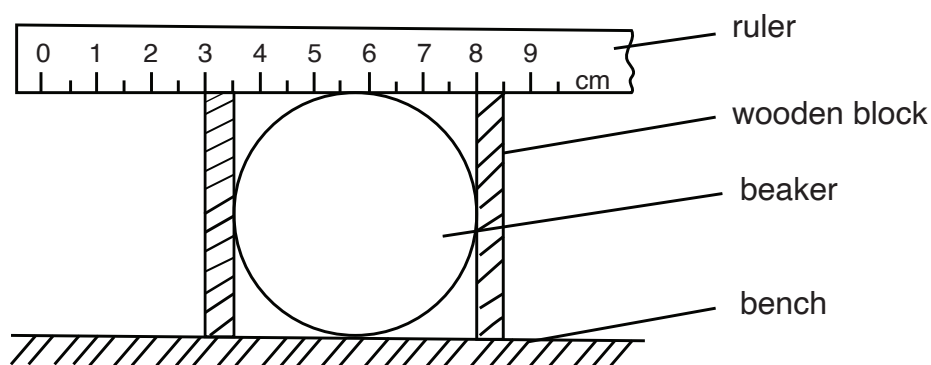


Fig. 35.1

What is the diameter of the beaker in Fig. 35.1?

- A 8.0 cm
- B 5.5 cm
- C 5.0 cm
- D 4.5 cm

36 Which is the correct formula for hydrogen chloride?

- A NaCl
- B H₂Cl
- C NaCl₂
- D HCl

37 Which process releases energy in the body?

- A nutrition
- B excretion
- C respiration
- D reproduction

38 What is the difference between total distance and displacement?

| | total distance | displacement |
|---|-----------------|-----------------|
| A | scalar quantity | vector quantity |
| B | vector quantity | scalar quantity |
| C | measured in m | measured in m/s |
| D | measured in m/s | measured in m |

39 What is the major use of zinc metal?

- A coating iron
- B making cutlery
- C electrical wiring
- D making aircraft bodies

40 Fig. 40.1 shows the female reproductive system.

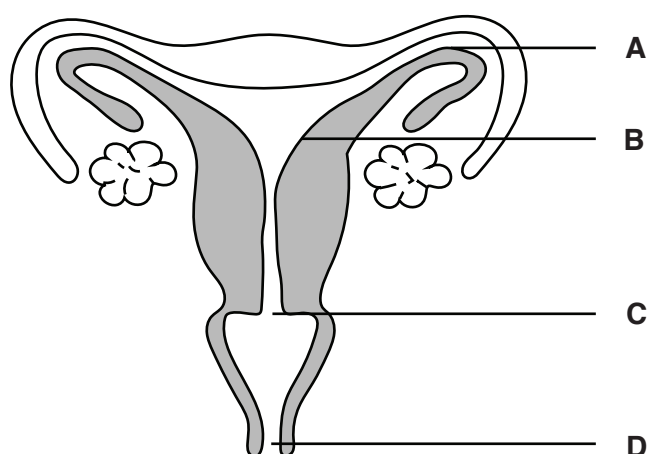


Fig. 40.1

Which part, in Fig. 40.1, closes the uterus off during pregnancy?

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