# EXAMINATIONS COUNCIL OF SWAZILAND
## Junior Certificate Examination

**SCIENCE**

Paper 1 Multiple Choice

**414/01**
**October/November 2018**
**1 hour**

Additional Materials: Multiple Choice Answer Sheet
Electronic calculators
Soft clean erasor
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.

Fig. 1.1 shows a scale balance used to measure mass.

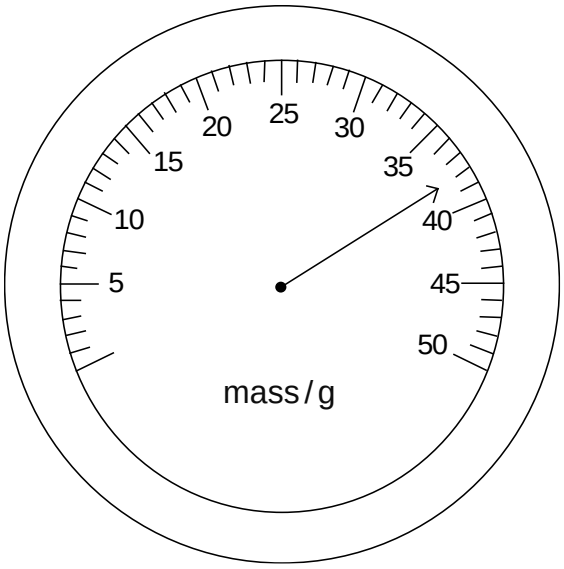



**Fig. 1.1**

What is the reading shown by the scale balance in the Fig.1.1?

**A** 38 g

**B** 380 g

**C** 46 g

**D** 47 g

**2** Which of the following is a symbol of magnesium?

**A** Mn

**B** Mo

**C** Mg

**D** Ar

**3** A tubing that contains sugar solution is immersed in pure water.

What is the name given to the process by which the water enters the tubing?

**A** osmosis

**B** absorption

**C** transpiration

**D** evaporation

**4** Which measurements are necessary in the calculation of the density of an irregular shaped object?

**A** weight and volume of object

**B** mass and volume of object

**C** volume of water plus object

**D** mass of water plus object

**5** Which **one** of the following methods is used to separate a mixture of dyes in ink?

**A** filtration

**B** chromatography

**C** distillation

**D** fractional distillation

**6** Which formula is used to calculate the average speed of a moving object?

**A** $\frac{\text{total time taken}}{\text{total distance}}$

**B** total distance x time taken

**C** $\frac{\text{total distance}}{\text{total time taken}}$

**D** mass of object x time taken

**7** Which apparatus can be used to separate oil and water?

**A** filter paper

**B** filter funnel

**C** separating funnel

**D** thistle funnel

**8** Which component of the blood is responsible for the transport of oxygen in the body?

**A** plasma

**B** red blood cells

**C** platelets

**D** white blood cells

**9** Which of the following is a method of magnetisation?

**A** hammering
**B** heating
**C** stroking
**D** dropping

**10** Fig. 10.1 shows an apparatus used during filtration.

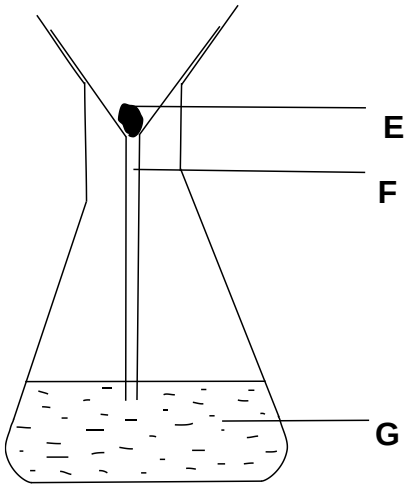



**Fig. 10.1**

What are the names of the labelled parts **E**, **F** and **G**?

| | E | F | G |
|---|---|---|---|
| **A** | filtrate | filter funnel | residue |
| **B** | residue | filter funnel | filtrate |
| **C** | residue | filter paper | filtrate |
| **D** | filtrate | filter paper | residue |

**11** A student wants to obtain pure water from a salt solution.

Which separation method can the student use?

**A** simple distillation
**B** fractional distillation
**C** filtration
**D** crystallisation

**Questions 12** and **13** refer to Fig.12.1.

Fig. 12.1 shows an internal structure of the human heart.

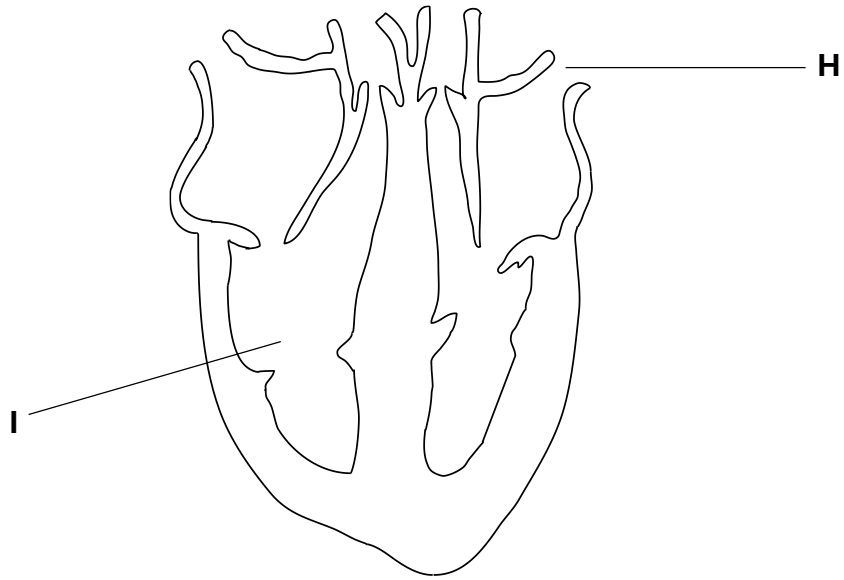



**Fig. 12.1**

**12** What is the name of the blood vessel labelled **H**?

**A** aorta

**B** pulmonary vein

**C** pulmonary artery

**D** vena cava

**13** What is the function of the part labelled **I**?

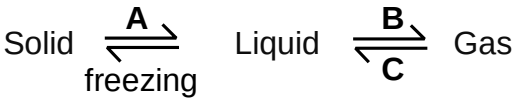
**A** carries oxygenated blood.

**B** carries deoxygenated blood

**C** pumps blood to the lungs

**D** transport blood to the cells

**14** The three states of matter can be converted to one another.




What is the name given to the change of states in **A**, **B** and **C**

| | **A** | **B** | **C** |
|---|---|---|---|
| **A** | melting | boiling | condensing |
| **B** | boiling | condensing | melting |
| **C** | condensing | melting | boiling |
| **D** | melting | condensing | boiling |

**15** Which quantity is measured in Hertz?

**A** period
**B** wavelength
**C** amplitude
**D** frequency

**16** Fig. 16.1 shows a ray of light from a fish under water.

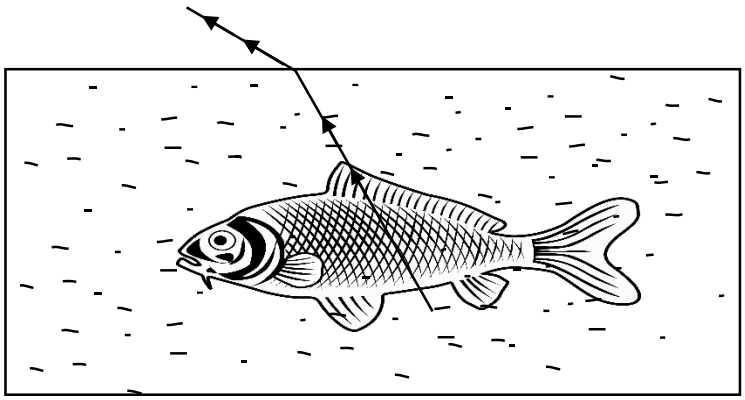


**Fig. 16.1**

What property of light is shown in Fig. 16.1?

**A** reflection
**B** refraction
**C** converging
**D** diverging

**17** A polythene strip rubbed with a piece of cloth becomes negatively charged.

Which statement best describes what has happened to the polythene strip?

**A** It has lost electrons to the cloth.

**B** It has gained electrons from the cloth.

**C** It has lost protons to the cloth.

**D** It has gained protons from the cloth.

**18** An ammeter is used to measure current in a circuit. Fig. 18.1 shows the connection of ammeters in circuit diagrams.

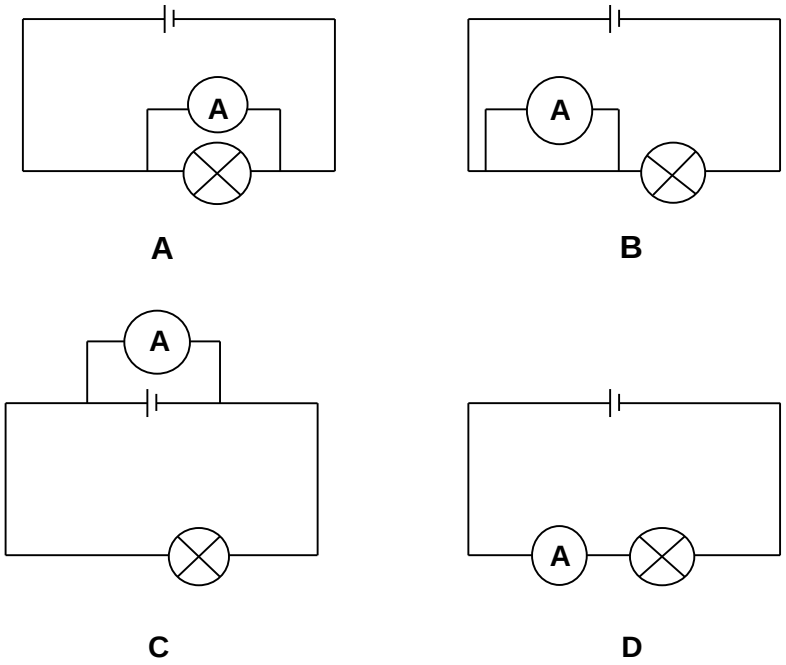



**Fig. 18.1**

Which circuit diagram shows the correct connection of an ammeter measuring the current through the bulb?

**19** Crystals are formed during crystallisation.

Which method is used to produce small crystals during crystallisation?

**A** slow cooling

**B** fast cooling

**C** heating

**D** cooling

**20** Fig. 20.1 shows the human respiratory system.

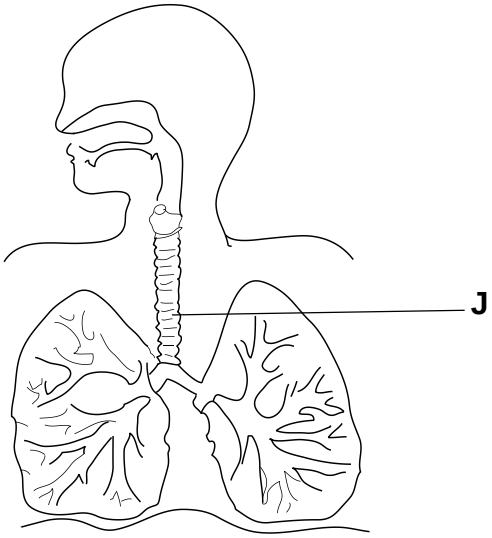



**Fig. 20.1**

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

**A** larynx

**B** trachea

**C** bronchi

**D** lungs

**21** What happens to the diaphragm, rib cage and lungs during inhalation?

**A** diaphragm is lowered, rib cage is raised and the lungs increase in volume

**B** diaphragm is lowered, rib cage is lowered and the lungs increase in volume

**C** diaphragm is raised, rib cage is raised and the lungs decrease in volume

**D** diaphragm is raised, rib cage is lowered and the lungs increase in volume

**22** Girly heats water in the laboratory using a Bunsen burner.

What happens to the temperature of the water as she continues to apply heat even when the water boils?

**A** increases

**B** stays the same

**C** increases then decreases

**D** decreases then increase

**23** Why are rusting and respiration similar reactions?

**A** are exothermic reactions

**B** both produce carbon dioxide

**C** are oxidation reactions

**D** are endothermic reactions

**24** Thabo exhaled air into a bottle.

What is the difference between the air breathed into the bottle and the air outside?

**A** The air in the bottle has a higher concentration of carbon dioxide.

**B** The carbon dioxide concentration is the same inside and outside bottle.

**C** The air in the bottle has a higher concentration of oxygen outside.

**D** The concentration of carbon dioxide is more than oxygen in the bottle.

**25** What is the approximate composition of oxygen, carbon dioxide and nitrogen in the air?

| | oxygen | carbon dioxide | nitrogen |
|---|---|---|---|
| **A** | 21% | 0.03% | 78% |
| **B** | 78% | 1.0% | 21% |
| **C** | 0.03% | 21% | 1.0% |
| **D** | 1.0% | 78% | 1.0% |

**26** Which one of these statements about the reaction of Group I elements with water is true?

**A** A solution of halides ions is formed.

**B** An acidic solution is formed.

**C** Oxygen is given off.

**D** An alkaline solution is formed.

**27** Which statement is true about Vitamin C and D?

**A** They are not digested or broken down for energy.

**B** They are mostly built up into the body structures.

**C** They are essential in very large quantities for normal health.

**D** They are related to each other in their chemical structures.

**28** A school uses painted steel drums as rubbish bins.

Which **one** of these statements explains the importance of painting the steel drums?

**A** to make school beautiful

**B** paint excludes oxygen from steel

**C** drums can carry more refuse

**D** drums can last longer

**29** Which **one** of the following statements correctly defines the amplitude of a wave?

**A** The distance occupied by one complete wave.

**B** The rate at which the wave passes through the material.

**C** The number of complete waves produced per second.

**D** The maximum displacement of each particle from rest position.

**30** Which **one** of the statements about metals is true?

**A** All metals make a dull sound when hit.

**B** All metals are solids at room temperature.

**C** All metals are good conductors of electricity.

**D** All metals have high melting points.

**31** What are the end products of the digestion of carbohydrates, proteins and fats in the body?

| | carbohydrates | proteins | fats |
|---|---|---|---|
| **A** | glucose | fatty acids and glycerol | amino acids |
| **B** | fatty acids and glycerol | glucose | amino acids |
| **C** | amino acids | glucose | fatty acids and glycerol |
| **D** | glucose | amino acids | fatty acids and glycerol |

**32** Calcium reacts with water producing two products.

What are the names of the **two** products for this reaction?

**A** calcium oxide and hydrogen

**B** calcium hydroxide and oxygen

**C** calcium oxide and oxygen

**D** calcium hydroxide and hydrogen

**33** A girl runs up a hill at a constant speed.

Which energy(s) does she gain?

**A** kinetic energy

**B** gravitational potential

**C** kinetic and potential energy

**D** heat and kinetic energy

**34** Fig. 34.1 shows water boiled from a kettle and then condensed on a cold metal plate.

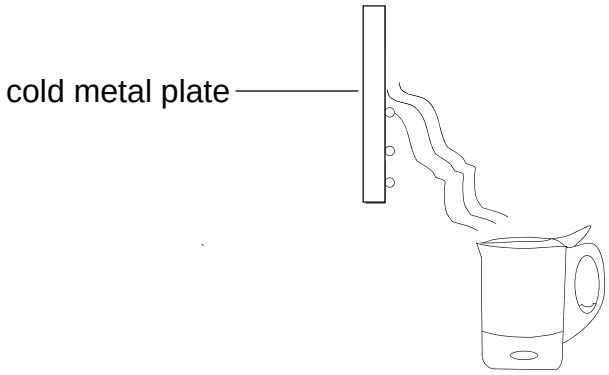



**Fig. 34.1**

What happens to the particles when the water condenses?

**A** They get bigger.

**B** They move slower.

**C** They move faster.

**D** They remain fixed.

**35** Fig. 35.1 shows the human urinary system.

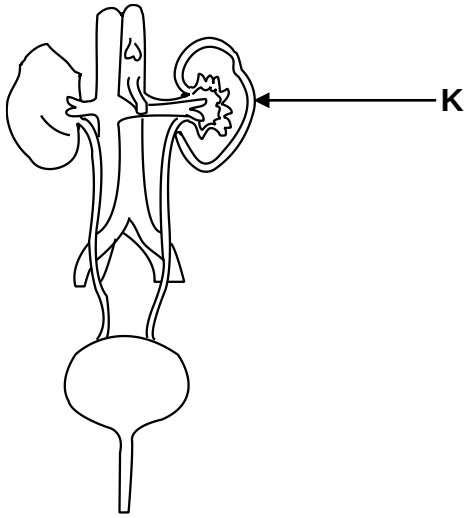



**Fig. 35.1**

State the function of the part labelled **K**.

**A** stores urine and faeces

**B** transports urine to the bladder

**C** removes urea from the blood

**D** carries deoxygenated blood to the kidney

**36** Three metals are put in dilute hydrochloric acid in three separate test-tubes labelled **M, N and O**.

The results of the experiment are shown in the table below.

| metal | result |
|---|---|
| **M** | no bubbles |
| **N** | many bubbles |
| **O** | few bubbles |

What is the order of reactivity of these metals, starting with the most reactive?

| | | | |
|---|---|---|---|
| **A** | **M** | **N** | **O** |
| **B** | **N** | **O** | **M** |
| **C** | **M** | **O** | **N** |
| **D** | **O** | **M** | **N** |

**37** Which human activity increases the concentration of sulfur dioxide in the atmosphere?

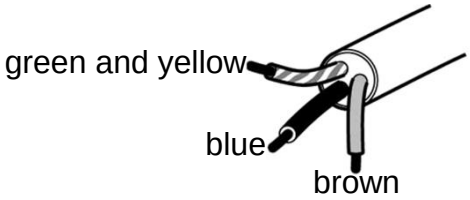
**A** burning of fossil fuels

**B** use of insecticides to kill pests

**C** discharge of sewage in the rivers

**D** solid waste buried in ground

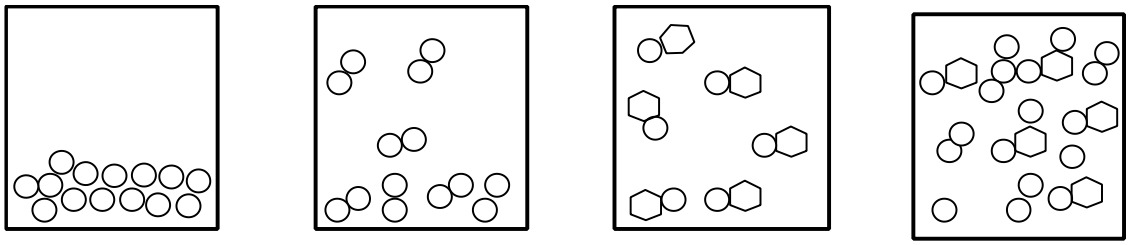
**38** The diagram shows the colours of the three wires of a cable from a heater to a 3-pin plug.




Which letter, **A**, **B**, **C** or **D** describes the correct connection of the cable to the 3-pin plug?

| | live | neutral | earth |
|---|---|---|---|
| **A** | blue | brown | green and yellow |
| **B** | brown | blue | green and yellow |
| **C** | green and yellow | blue | brown |
| **D** | brown | green and yellow | blue |

**39** Which **one** of these diagrams represents a mixture?



**A** **B** **C** **D**

**40** Fig. 40.1 shows a section of a wind pollinated flower.

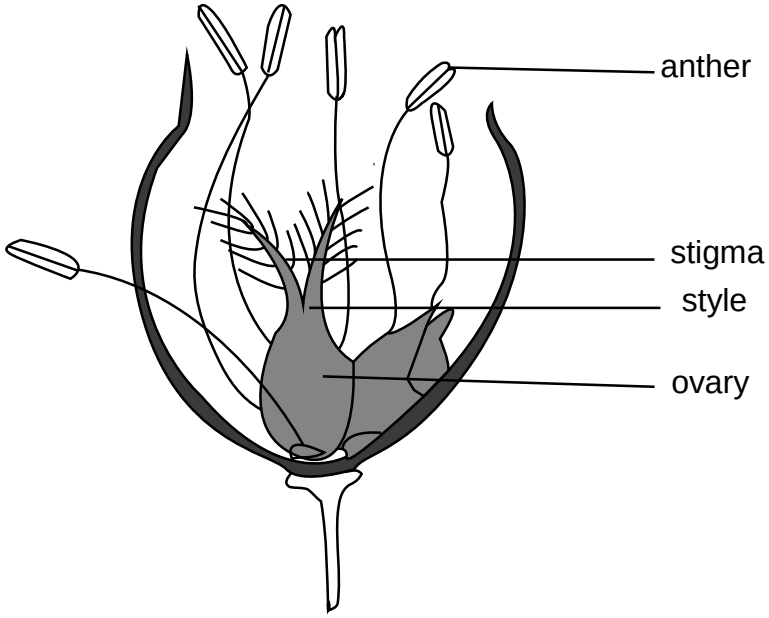



**Fig. 40.1**

Which feature indicates that it is a wind pollinated flower?

**A** stigma feathery

**B** large petals

**C** anthers inside flower

**D** nectar guides

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