

EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examination

SCIENCE

414/01

Paper 1 Multiple Choice

October/November 2020

1 hour

Additional Materials: Multiple Choice Answer Sheet
Electronic 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 S.I. unit for volume?

- A cubic centimetres, cm^3
- B cubic metres, m^3
- C millilitres, $\text{m}l$
- D litres, l

2 Fig. 2.1 shows an organism usually found on grass.

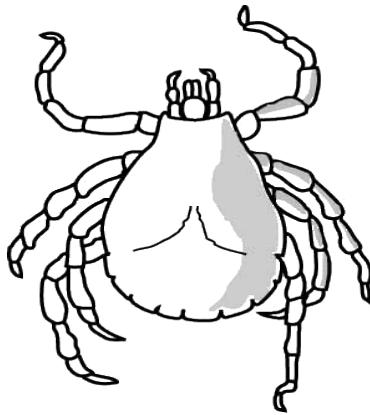


Fig. 2.1

To which class of arthropods does the organism in Fig. 2.1 belong?

- A insects
 - B arachnids
 - C myriapods
 - D crustaceans
- 3 Which list consists of characteristics of crystals that are of the same substance?
- A flat faces, distinct angles, straight edges
 - B distinct angles, same shape, round edges
 - C flat faces, different shapes, straight edges
 - D same shape, uneven faces, distinct angles
- 4 A marble has a volume of 150 cm^3 and its density is 2.7 g/cm^3 .
What is the mass of the marble?
- A 405 g
 - B 55.6 g
 - C 152.7 g
 - D 0.018 g

5 What is the correct sequence, starting with the smallest and ending with the largest?

- A tissue, organ, system, cell
- B cell tissue system, organ
- C tissue organ system, cell
- D cell tissue organ, system

6 Nail polish dissolves in methylated spirit.

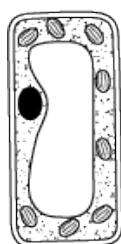
Which letter describes the nail polish and the methylated spirit?

	nail polish	methylated spirit
A	solvent	solute
B	solute	solution
C	solvent	solution
D	solute	solvent

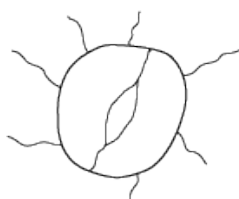
7 Which physical quantity is a type of force?

- A density
- B length
- C mass
- D weight

8 The diagram below shows three cells labelled **E**, **F** and **G**



E



F



G

What is the name of the three cells?

	E	F	G
A	sperm	guard cell	palisade
B	palisade	sperm	guard
C	guard cell	palisade	sperm
D	palisade	guard cell	sperm

- 9 Which statement is a property of a magnet?
- A It attracts all metallic materials.
- B It cannot lose its magnetism.
- C Like charges repel unlike charges attract.
- D Magnetism is strongest at the poles.
- 10 Fig.10.1 shows the circulation of blood around the body.

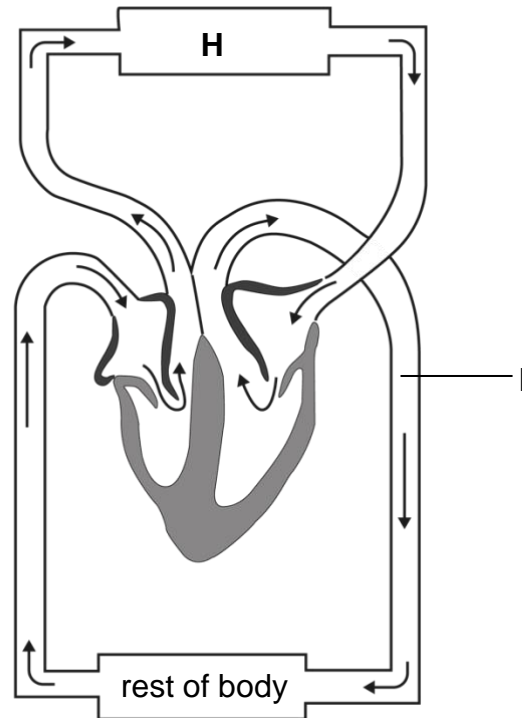


Fig. 10.1

What is the name of organ H and blood vessel I?

	H	I
A	kidney	pulmonary artery
B	lung	aorta
C	brain	pulmonary vein
D	leg	vena cava

11 Which statements are true about the left side of the heart.

- 1 The left ventricle has more muscular wall than the right ventricle
- 2 The left atrium receives deoxygenated blood from the body
- 3 When the left ventricle contracts blood is prevented from flowing back into left atrium by the vena cava
- 4 The left ventricle pumps blood to the rest of the body in the aorta

- A 1 and 3
 B 2 and 3
 C 3 and 4
 D 1 and 4

12 What are symbols for sodium and helium?

	sodium	helium
A	S	H
B	Na	He
C	na	he
D	Na	he

13 Which letter matches the plant cell structure to its function?

	plant cell structure	function
A	cell wall	transports system in the cell
B	chloroplast	contains water and dissolved substances
C	cell membrane	traps light for photosynthesis
D	nucleus	controls all chemical activities in the cell

14 What is a sign of syphilis?

- A discharge from the penis
- B pain when passing urine
- C blockage of urethra
- D appearance of a painless sore

- 15 What is the name of the ore of aluminium?
- A iron ore
 - B bauxite
 - C haematite
 - D copper pyrites
- 16 Which statement describes why metals are good conductors of electricity?
- A they have free protons
 - B they have free electrons
 - C their neutrons are strongly held
 - D their particles are closely packed
- 17 Fig. 17.1 shows a leaf cell before and after it had been placed in a solution for several hours.

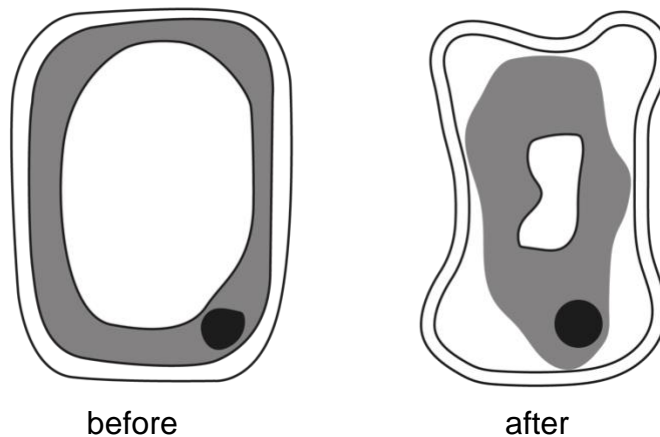


Fig. 17.1

Which statement describes the solution in which the leaf cell had been immersed?

- A Solution more dilute than in the leaf cell.
- B Low concentration of salts in the leaf cell than in solution.
- C High concentration of salts in the leaf cell than in solution
- D Same concentration of salts in the leaf cell and solution.

18 Four metals **L**, **M**, **N** and **O** are placed in dilute acid in four separate test-tubes. The following conclusions are made from the observations of the reactions.

- **L** - no reaction
- **M**- slow reaction
- **N** – very fast reaction
- **O** – moderate reaction

Which letter represents copper, magnesium, zinc and calcium respectively.

	L	M	N	O
A	calcium	magnesium	copper	zinc
B	magnesium	copper	zinc	calcium
C	zinc	calcium	magnesium	copper
D	copper	zinc	calcium	magnesium

19 Fig. 19.1 shows a type of lever.

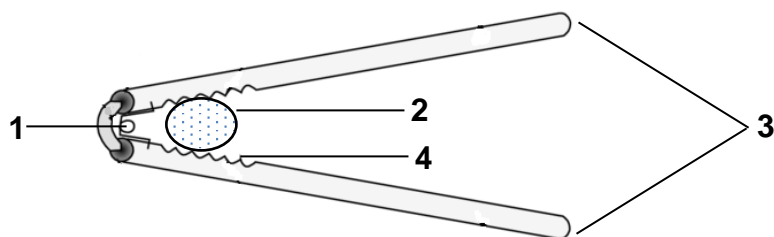


Fig. 19.1

Which parts represent the fulcrum and force?

- A** 1 and 2
- B** 1 and 3
- C** 2 and 3
- D** 2 and 4

20 What are the relative charges for a proton, a neutron and an electron?

	proton	neutron	electron
A	0	-1	+1
B	+1	-1	0
C	-1	0	-1
D	+1	0	-1

21 A girl is given a liquid in a container.

Which physical properties will show that the liquid in the container is water?

- A density and mass
- B volume and mass
- C boiling point and pH
- D melting point and density

22 Which object is a natural source of light?

- A sun
- B torch
- C moon
- D candle

23 A farmer adds lime to his soil to reduce its acidity.

What is the type of reaction that occurs to reduce the acidity?

- A oxidation
- B reduction
- C acidification
- D neutralisation

- 24 What test result is used to identify hydrogen in the laboratory?
- A turns limewater milky
 - B burns with a 'pop' sound
 - C it relights a glowing splint
 - D red litmus paper turns blue
- 25 Which list contains only fuels?
- A electricity, wood, coal
 - B wood, natural gas, sun
 - C coal, petroleum, electricity
 - D wood, natural gas, cow dung
- 26 Which statement about the ecosystem is correct?
- A Plants and animals living in a large environment.
 - B Plants in an area and the physical factors that influence them.
 - C Physical factors that influence animals found in an area.
 - D Plants and animals in an area and the interaction between them.
- 27 From which food chain below is the most energy lost?
- A maize → beef → cattle → man
 - B carrots → rabbit → snake → eagle
 - C cabbage → man
 - D dandelion → snail → frog → bird → fox
- 28 When dipped into a solution, universal indicator paper changes to an orange colour. What is the most likely pH of the solution?
- A 2
 - B 4
 - C 7
 - D 9

29 Fig 29.1 shows a fish in a pond.

A student aims at shooting the fish as he sees it in the pond.

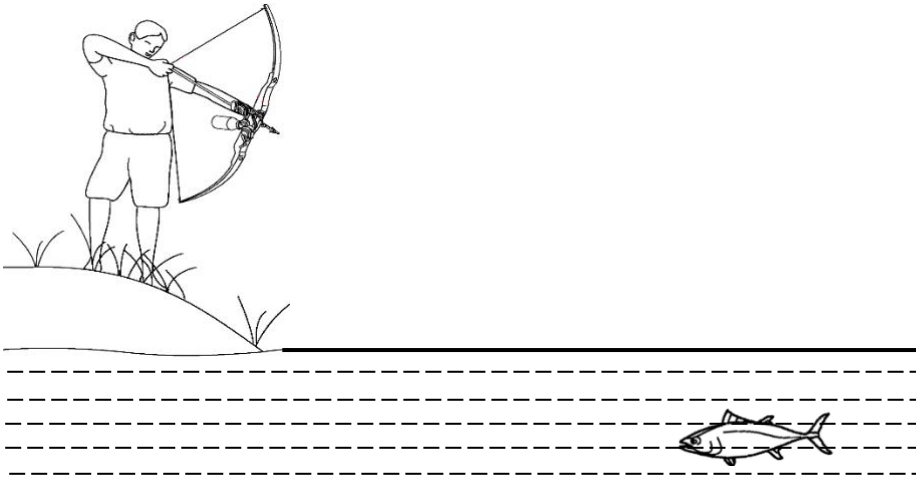


Fig. 29.1

Why is it most likely that the student will miss the fish?

- A Light from the student is reflected away from the fish.
 - B Light from the fish is refracted as it leaves the pond.
 - C Light from the fish is reflected away from the student.
 - D Light from the student is refracted as it enters the pond.
- 30 Why are steel buckets coated with zinc?
- A To increase the capacity of the bucket.
 - B To improve the strength of the bucket.
 - C To make bucket last longer.
 - D To make it lighter.

- 31 When an object is taken from the Earth to the moon, the following may occur:
- 1 its mass remains constant.
 - 2 its density remains the same.
 - 3 the force of gravity acting on it remains the same.

Which statement(s) correctly describes the effect of taking an object from the Earth to the moon?

- A 1 only
 B 1 and 2
 C 1 and 3
 D 1, 2 and 3
- 32 Fig. 32.1 shows a urinary system.

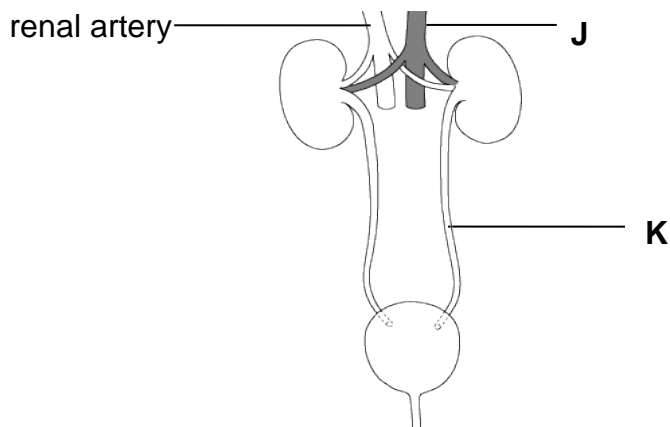


Fig. 32.1

Which substance is less concentrated in J than in K?

- A urea
 B salts
 C water
 D oxygen
- 33 Many industrial processes cause fine powders to get into the air
 Why is this action dangerous?
- A Fine powders burn readily in air because of their large surface area.
 B Fine powders combine with many gases in the air.
 C Fine powders dissolves in rain water producing acid rain.
 D Fine powders burn readily in air because of their small surface area.

- 34 What is the effect of heating a magnet?
- A The strength increases.
 - B The strength decreases.
 - C There is no effect on the strength.
 - D the strength decreases and then increases.
- 35 Many people are arrested during weekends in Eswatini due to driving under the influence of alcohol.

Why is it illegal for a person to drive when under the influence of alcohol?

- A decreases reaction time making the person to act slower
 - B increases reaction time making the person to act slower
 - C decreases reaction time making the person to act faster
 - D increases reaction time making the person to act faster
- 36 Which action will decrease the strength of an electromagnet?
- A decreasing the number of turns in the coil
 - B increasing the number of turns in the coil
 - C increasing the number of cells
 - D using a soft iron for the core
- 37 Fig. 37.1 shows the percentage composition of air.

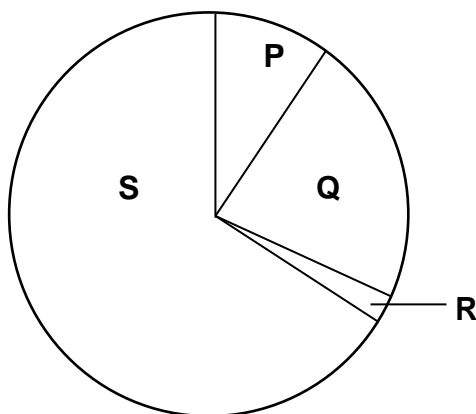


Fig. 37.1

Which gas is represented by the part labelled Q?

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

38 Fig. 38. 1 shows the respiratory system.

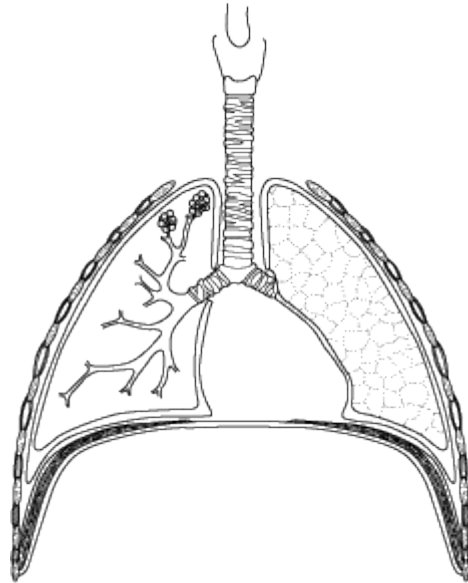


Fig. 38.1

What happens to the lungs, diaphragm and rib cage when you breathe in?

	diaphragm	lungs	ribs
A	contract	expand	move up
B	relax	contract	move down
C	contract	expand	move up
D	relax	contract	move down

39 Which metal occurs in its pure state?

- A gold
- B iron
- C potassium
- D magnesium

- 40** Fig. 40.1 shows a leaf that was covered with an aluminium foil for several hours. It was picked up later and tested for starch.

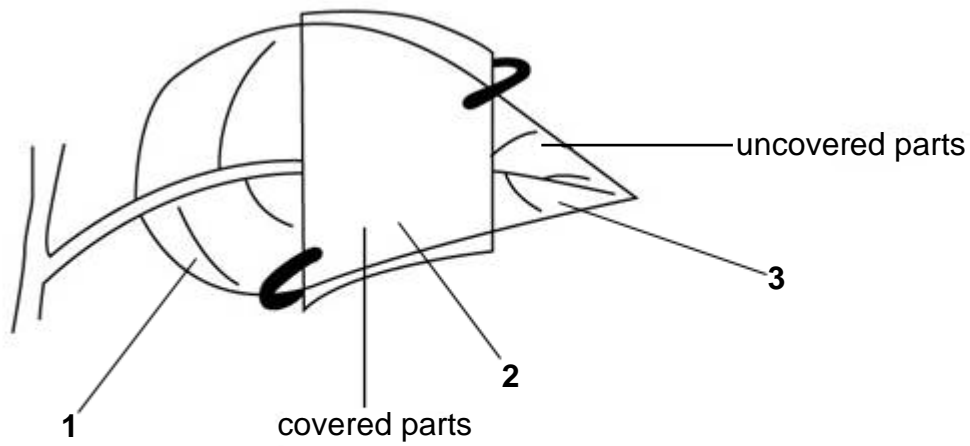


Fig. 40.1

Which part of the leaf will test positive with iodine solution?

- A** 1, 2 and 3
- B** 1 and 2 only
- C** 2 and 3 only
- D** 1 and 3 only

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