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EXAMINATIONS COUNCIL OF ZAMBIA
JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2023

Integrated Science 502/1

Paper 1

(INTERNAL CANDIDATES)

Time: 2 hours 30 minutes

Marks: 80

Instructions to Candidates

- 1 Pull out the inserted **Answer Booklet** from the question paper.
- 2 Write your **examination number, school/centre name and code** on the **Answer Booklet**. www.eczpastpapers.com
- 3 Ensure that you **write** your **examination number** on **every page** of the Answer Booklet.
- 4 This paper consists of two Sections **A** and **B**. Answer **all** the questions in both sections of this paper.
- 5 Section **A**: for each question, **four** suggested answers **A, B, C** and **D** are given. Choose the best one and mark it on the answer grid provided in the Answer Booklet.
- 6 Section **B**: write all the answers in the spaces provided for Section **B** in the Answer Booklet.
- 7 Hand in the Answer Booklet and the rest of the question paper separately.

Information for Candidates

- 1 Cell phones are **not allowed** in the examination room.
- 2 Calculators are **not allowed** in the examination room.

SECTION A: [20 MARKS]

Answer **all** questions. Mark your answers with a **cross (X)** on the Answer Grid provided in the Answer Booklet.

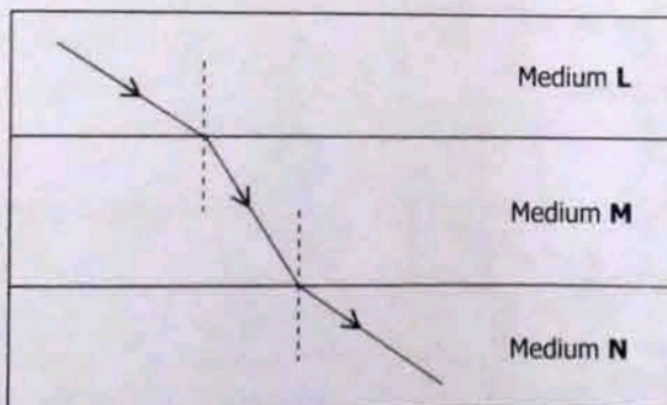
- 1 Which pair of the human reproductive organs are only found in females?
 - A Oviduct and ovary
 - B Oviduct and urethra
 - C Urethra and ovary
 - D Uterus and scrotum
- 2 Which statement explains the function of the placenta? This is ...
 - A the exchange point for nutrients and gases.
 - B the organ that produces female gametes.
 - C where birth takes place.
 - D where fertilisation takes place.
- 3 Which of the following is **not** a source of water pollution?
 - A Adding of chlorine to the water
 - B Chemicals from factories
 - C Chemicals from farmland
 - D Untreated sewage
- 4 In a plant cell, the part which is selectively permeable to materials is called ...
 - A cell membrane.
 - B cell wall.
 - C chloroplast.
 - D nucleus.
- 5 Which of the following are the correct mineral elements important for plant growth?
 - A Phosphorus and air.
 - B Phosphorus and nitrogen.
 - C Potassium and air.
 - D Potassium and hydrogen.
- 6 It is possible to separate a mixture of mealie meal and iron particles because mealie meal ...
 - A does not melt while iron particles melt.
 - B is less dense compared to iron particles.
 - C is non-magnetic while iron particles are magnetic.
 - D is soluble while iron particles are not.

- 7 Calculate the weight of an object with a mass of 40 000 grams (g). (take acceleration due to gravity to be 10N/Kg). The weight is ...
- A 4N.
B 400N.
C 4 000N.
D 400 000N.
- 8 Which of the following best explains how ships are made to avoid sinking in seas. The ...
- A height of the ship is increased while the base is reduced.
B mass of ship is increased while volume is reduced.
C volume of the ship is increased and mass is reduced.
D wood is used to make the ship instead of metal.
- 9 Which of the following shows the correct effect of heat and its use of expansion in everyday life?

	Expansion Effect on	Use in everyday life
A	Air	Thermometers in laboratories
B	Gas	Thermometers in clinics
C	Liquid	Thermostat in pressing iron
D	Solid	Thermostat in pressing iron

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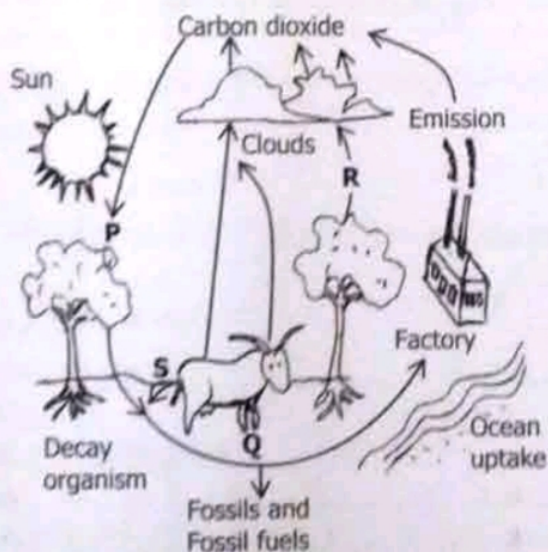
- 10 The following diagram shows a light ray passing through three different media.



Which of the following is the correct statement about the media used in the experiment? Medium ...

- A L is denser than M.
B L is denser than N.
C M is denser than L.
D M has the same density as N.

- 11 Which of the following blood components prevent excessive bleeding by clotting the blood?
- A Plasma
 - B Platelets
 - C Red blood cells
 - D White blood cells
- 12 Which of the following is a function of the ribs in the respiratory system? They ...
- A enable contraction and relaxation of intercostal muscles.
 - B enable lungs to carry out exchange of gases.
 - C hold the delicate lungs in place.
 - D provide physical protection to the lungs.
- 13 Which of the following describes the best method of preventing contraction of sexually transmitted infections in adolescents?
- A Abstinence
 - B Avoiding casual sex
 - C Correct and consistency use of condoms
 - D Having one faithful partner
- 14 The following diagram shows the carbon cycle.



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Which letters in the diagram correctly indicate where the process of photosynthesis and respiration are taking place?

Photosynthesis		Respiration	
A	P		R
B	P		S
C	Q		P
D	Q		R

- 19** Which of the following is an advantage of digital signals over analogue signals?

The digital signals ...

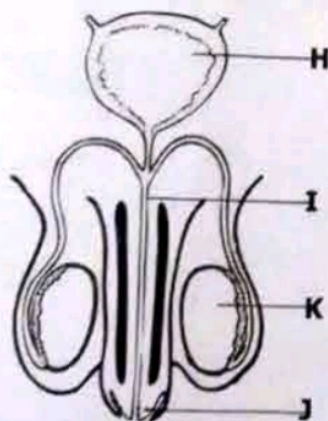
- A** can be amplified together with other sounds such as background noise.
 - B** can be stored and processed by computers.
 - C** carry less information per second than analogue.
 - D** vary continuously in amplitude and frequency.
- 20** A satellite is a device used for ...
- A** amplifying of signals for transmission.
 - B** decoding signals into audio and video signals.
 - C** preventing signal failure or loss.
 - D** transmitting signals over long distance.

SECTION B: [60 MARKS]

Write all the answers in the spaces provided in the Answer Booklet.

1 THE HUMAN BODY

The diagram shows the male reproductive system.



- (a) Identify the parts labelled **I** and **K**. [2]
- (b) Which labelled part
- (i) is used to deposit male gametes into the female reproductive organ; [1]
- (ii) shows where male gametes are formed? [1]
- (c) Which labelled part in the diagram is also found in the female reproductive system? [1]
- (d) Name **one** part found in the female reproductive system with similar functions to that of the part labelled **K**. [1]

- (b) Which labelled part
- (i) is used to deposit male gametes into the female reproductive organ; [1]
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- (c) Which labelled part in the diagram is also found in the female reproductive system? [1]

- (d) Name **one** part found in the female reproductive system with similar functions to that of the part labelled **K**. [1]

[Total: 6 marks]

2 HEALTH

The following is a list of foodstuffs which provides different nutrients.

- (i) Beans
- (ii) Bread
- (iii) Fish
- (iv) Cassava
- (v) Pumpkin
- (vi) Eggs

(a) Identify

(i) **two** foodstuffs that belong to carbohydrates; [2]

(ii) **one** foodstuff that provides vitamins. [1]

(b) Which among the foodstuffs has several food nutrients? [1]

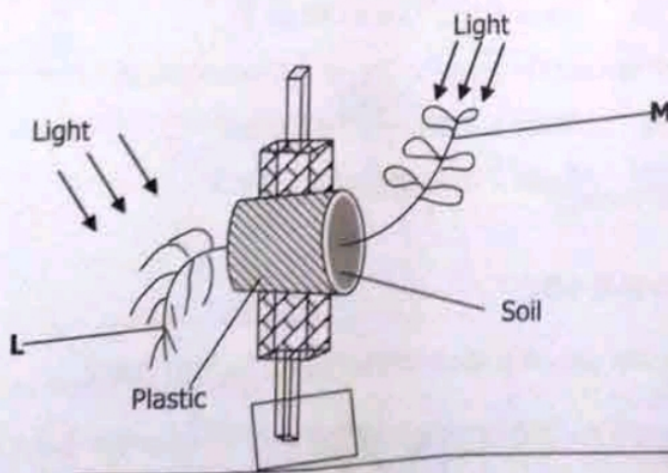
(c) State the dietary needs of a pregnant woman. [1]

(d) State **one** symptom of kwashiorkor. [1]

[Total: 6 marks]

3 PLANTS AND ANIMALS

The following diagram shows growth response in a plant placed in light.



(a) Identify the response demonstrated by the part marked **M**. [1]

(b) Which stimulus is responsible for the response marked **L**? [1]

(c) What is the importance of the response made by the part labelled **M**? [1]

(d) State **one** other response to stimulus in plants apart from the ones demonstrated in the diagram. [1]

(e) Explain **two** diverse effects of excessive use of inorganic fertilisers. [2]

[Total: 6 marks]

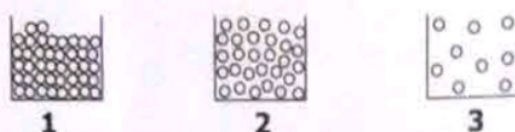
4 MATERIALS AND ENERGY

- (a) Define an atom. [1]
- (b) On the basic structure of an atom, identify **one** particle found in the nucleus. [1]
- (c) In terms of matter, what does the term 'element' mean? [1]
- (d) (i) What atoms do the symbols **C** and **O** represent? [2]
- (ii) What molecule can be formed from the symbols **C** and **O**? [1]

[Total: 6 marks]

5 MATERIALS AND ENERGY

The following diagrams show a substance in three different states.



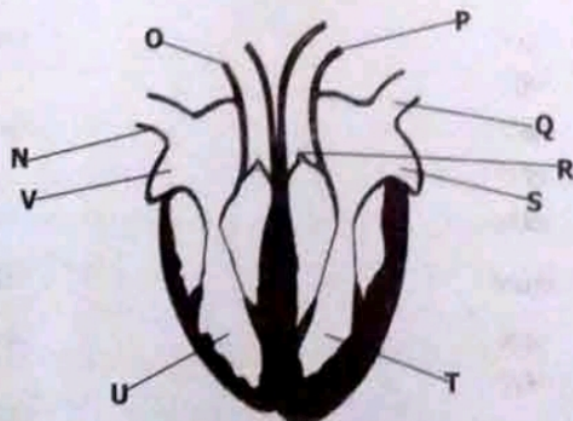
- (a) In what state is the substance at
- (i) 2? [1]
- (ii) 3? [1]
- (b) Identify the process that occurs when the substance in
- (i) State 3 changes directly to State 1. [1]
- (ii) State 1 changes to State 2. [1]
- (c) What term is given to the temperature at which
- (i) State 1 changes into State 2? [1]
- (ii) State 2 changes into State 3? [1]

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[Total: 6 marks]

6 THE HUMAN BODY

The diagram shows a section through a human heart.



- (a) Identify the parts labelled **U** and **P**. [2]
- (b) Which letter represents the vena cava? [1]
- (c) What is the function of the valve labelled **R**? [1]
- (d) Why is the wall of chamber **T** thicker than that of chamber **U**. [1]
- (e) Describe the difference in composition of the blood found in chamber **U** and **T**. [1]

[Total: 6 marks]

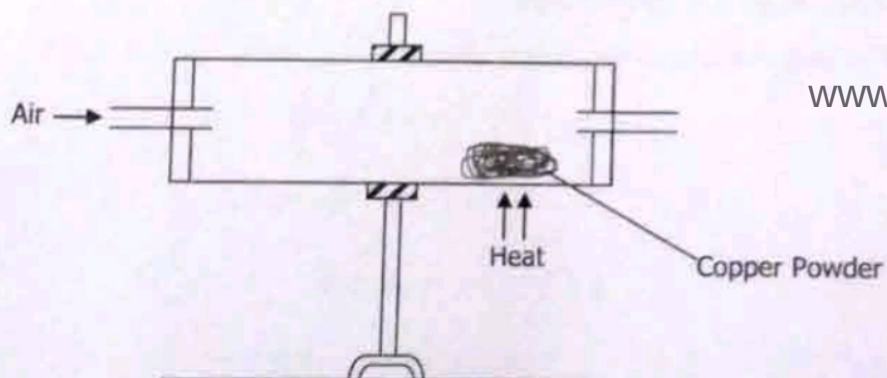
7 PLANTS AND ANIMALS

- (a) What is photosynthesis? [1]
- (b) Mention **one** condition necessary for photosynthesis. [1]
- (c) Apart from starch, mention **one** other product of photosynthesis. [1]
- (d) What reagent is used to test for starch in a leaf? [1]
- (e) State **two** differences between the process of photosynthesis and respiration. [2]

[Total: 6 marks]

8 MATERIALS AND ENERGY

The diagram shows an experiment on chemical reactions.

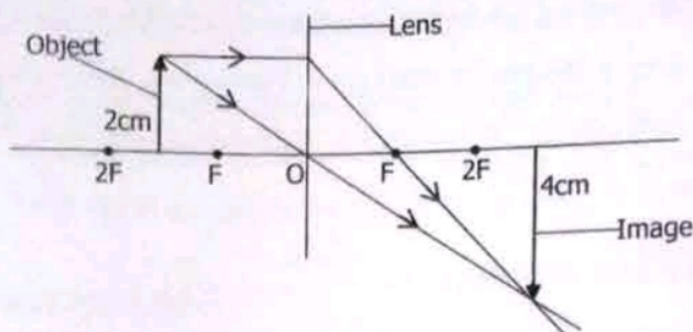

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- (a) What is a chemical reaction? [1]
- (b) Write a word equation of the chemical reaction on an experiment shown in the diagram. [1]
- (c) (i) What type of chemical reaction is taking place in the experiment? [1]
- (ii) State another type of a chemical reaction. [1]
- (d) Describe the nature of the chemical reaction shown in the diagram. [1]
- (e) Name the chemical process that result into splitting of water into hydrogen and oxygen gases. [1]

[Total: 6 marks]

9 MATERIALS AND ENERGY

The following ray diagram is on an experiment on light.



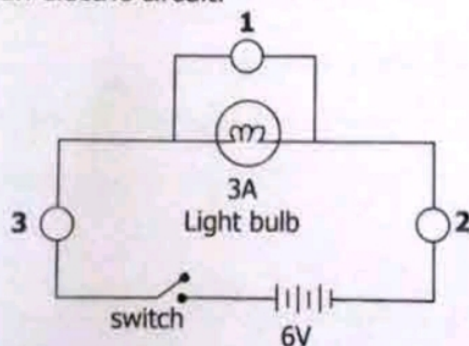
- (a) What type of lens was used in the experiment? [1]
- (b) Which letter(s) show the location of the
 - (i) focal point; [1]
 - (ii) focal length? [1]
- (c) State **one** characteristic of the image formed in the experiment. [1]
- (d) Explain **one** use of the lens used in this experiment. [1]
- (e) Calculate the magnification of the image. [1]

[Total: 6 marks]

10 MATERIALS AND ENERGY

The diagram shows an electric circuit.

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- (a) What is
 - (i) an electric current; [1]
 - (ii) voltage? [1]
- (b) Name the device that is used to measure current. [1]
- (c) Which number in the diagram shows the correct position for the device used to measure voltage? [1]
- (d) Calculate the resistance of the light bulb when the switch is closed. [1]
- (e) Apart from lighting, state **one** other use of electricity in the local environment. [1]

[Total: 6 marks]