

KJSEA 2026 PREDICTION EXAMINATION

INTEGRATED SCIENCE

Paper 1 (Objective and Structured)

Time: 1 hour 40 minutes

INSTRUCTIONS TO CANDIDATES (Please read these instructions carefully)

1. This paper consists of TWO sections: A and B.
2. Section A has 30 questions carrying 30 marks. Section B has 10 questions carrying 40 marks.
3. Answer ALL the questions in both sections in the spaces provided.
4. All working must be clearly shown where necessary.
5. Non-programmable calculators may be used where necessary.

This paper consists of printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

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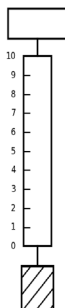
SECTION A (30 marks)

Answer ALL the questions in this section.

1. During a school fire drill, learners were taught how to respond to different emergencies. Cooling, smothering and starving are methods used to

- A. prevent an electric shock
- B. extinguish a fire
- C. treat a burn wound
- D. purify drinking water

2. The following diagram represents an instrument used by a learner during a practical lesson.



- A. Mass
- B. Force
- C. Volume
- D. Time

3. Electric cables used to transmit electricity in homes are mostly made of copper. Which property of copper makes it suitable for this purpose?

- A. Good conductor of electricity
- B. Low density
- C. High melting point
- D. Resistance to rusting

4. Protons, neutrons and electrons make up an atom. Which of the following particles are found outside the nucleus of an atom?

- A. Protons only
- B. Neutrons only
- C. Electrons only
- D. Protons and neutrons

5. A learner tasted a piece of ripe lemon and noted it was sour. Which of the following substances is likely to be responsible for the sour taste?

- A. A base
- B. An acid
- C. A salt
- D. An alkali

6. Kevin, a Grade 9 learner, learnt that some elements exist as diatomic molecules. Which of the following pairs of elements can combine to form water?

- A. Hydrogen and oxygen
- B. Nitrogen and oxygen
- C. Carbon and hydrogen
- D. Sodium and chlorine

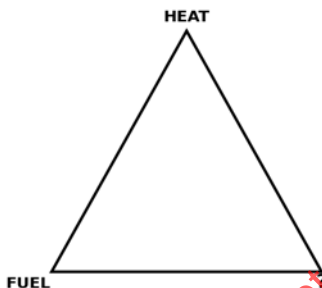
7. During a field trip, learners collected a sample of muddy river water. They observed that the sample contained visible soil particles suspended in water. Which of the following best describes the sample?

- A. A homogeneous mixture
- B. A heterogeneous mixture
- C. A pure compound
- D. A solution

8. The following are changes that occur in nature: (i) melting of ice (ii) burning of firewood (iii) souring of milk (iv) folding of paper. Which two of the changes are chemical changes?

- A. (i) and (iv)
- B. (ii) and (iii)
- C. (i) and (ii)
- D. (iii) and (iv)

9. The following diagram represents a fire triangle.



- A. Oxygen
- B. Water
- C. Carbon dioxide
- D. Sand

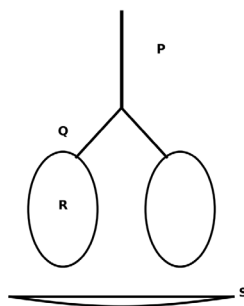
10. A learner used a measuring cylinder to determine the volume of an irregular stone by the displacement method. The initial reading was 40 ml and the final reading after immersing the stone was 55 ml. What was the volume of the stone?

- A. 15 ml
- B. 40 ml
- C. 55 ml
- D. 95 ml

11. Brass and stainless steel are commonly used to make household items. Which statement correctly describes these two materials?

- A. Both are pure metals
- B. Both are alloys
- C. Brass is a pure metal while steel is an alloy
- D. Steel is a pure metal while brass is an alloy

12. The following diagram represents the human respiratory system. Gaseous exchange takes place at the part labelled



- A. P
- B. Q
- C. R
- D. S

13. Which of the following is not a function of the human skin?

- A. Regulation of body temperature
- B. Protection against pathogens
- C. Manufacture of red blood cells
- D. Excretion of excess salts and water

14. Which of the following cell structures is present in plant cells but absent in animal cells?

- A. Nucleus
- B. Cell wall
- C. Cytoplasm
- D. Cell membrane

15. During an experiment, a learner placed raisins in clean water. After some time, the raisins became swollen. Which process explains this observation?

- A. Diffusion of water out of the raisins
- B. Osmosis of water into the raisins
- C. Active transport of sugar into water
- D. Evaporation of water from the raisins

16. A community was concerned about the increasing number of tsetse flies near a river. Which of the following control methods would cause the least ecological damage?

- A. Clearing all vegetation along the river bank
- B. Setting up baited traps to catch the flies
- C. Spraying the entire river bank with insecticide
- D. Burning the bushes along the river

17. Which of the following combinations represents the raw materials required by a green plant for photosynthesis?

- A. Carbon dioxide and water
- B. Oxygen and glucose
- C. Water and glucose
- D. Oxygen and carbon dioxide

18. The following picture shows the dentition of an animal with long, sharp and pointed canines and incisors, and small flat molars.

- A. The animal feeds on vegetation only
- B. The animal feeds on flesh
- C. The animal feeds on decaying matter
- D. The animal feeds on grain only

19. During a nature walk, learners observed a dull-coloured flower with no scent, small petals, long feathery stigma and light, powdery pollen grains. This flower is likely to be pollinated by

- A. insects
- B. wind
- C. water
- D. birds

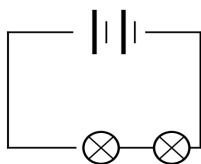
20. A tick was observed feeding on the blood of a dog, causing irritation and harm to the dog. The relationship between the tick and the dog is

- A. mutualistic
- B. parasitic
- C. commensal
- D. predatory

21. The following diagram represents part of the human alimentary canal. Identify the physiological processes taking place at the parts marked X and Y.

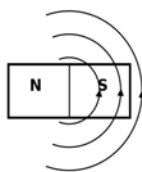
- A. X – Absorption, Y – Egestion
- B. X – Digestion, Y – Absorption
- C. X – Ingestion, Y – Digestion
- D. X – Egestion, Y – Ingestion

22. The following diagram shows an arrangement of two cells and two bulbs in a circuit.



- A. Cells in series, bulbs in series
- B. Cells in series, bulbs in parallel
- C. Cells in parallel, bulbs in series
- D. Cells in parallel, bulbs in parallel

23. The following diagram shows the pattern of magnetic field lines around a bar magnet.



- A. The field lines show a repulsive force only
- B. The field lines emerge from the north pole and enter the south pole
- C. The field lines emerge from the south pole and enter the north pole
- D. The field lines indicate the magnet has lost its magnetism

24. A learner was given four objects: a plastic ruler, a nail, a rubber band and a coin. When tested with a bar magnet, only the nail was attracted. The nail is most likely made of

- A. aluminium
- B. copper
- C. iron
- D. brass

25. A wind turbine converts the kinetic energy of wind into electrical energy which lights a bulb. What is the correct sequence of energy transformation?

- A. Electrical → kinetic → light
- B. Kinetic → electrical → light
- C. Light → kinetic → electrical
- D. Kinetic → light → electrical

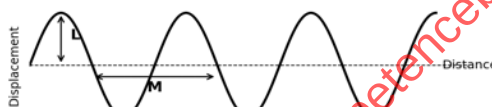
26. A girl wearing high-heeled shoes exerts more pressure on the ground than when wearing flat shoes, even though her weight remains the same. This is because

- A. her weight increases when wearing heels
- B. the area of contact with the ground decreases
- C. the area of contact with the ground increases
- D. the force of gravity acting on her decreases

27. A ray of light travelling through air is directed towards a plane mirror at an angle of 40° to the mirror surface. What is the size of the angle of reflection, measured from the normal?

- A. 40°
- B. 50°
- C. 80°
- D. 90°

28. The following diagram represents a transverse wave.



- A. amplitude
- B. wavelength
- C. frequency
- D. period

29. In the human female reproductive system, fertilisation normally takes place in the

- A. uterus
- B. oviduct (fallopian tube)
- C. cervix
- D. vagina

30. Which of the following is a nitrogenous waste product excreted by the human kidney?

- A. Glucose
- B. Urea
- C. Water vapour
- D. Carbon dioxide

SECTION B (40 marks)

Answer ALL the questions in this section in the spaces provided.

31. (3 marks)**(a)** Name two basic science process skills a learner applies when using a measuring cylinder. (2 marks)**(b)** State the SI unit of mass. (1 mark)**32. (5 marks)****(a)** The following substances were listed during a class activity: (i) sea water (ii) milk (iii) a mixture of rice and stones (iv) soda water. In the table below, classify the substances as either homogeneous or heterogeneous mixtures. (2 marks)

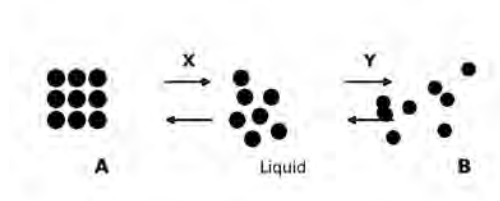
Type of mixture	Substance(s)
Homogeneous	
Heterogeneous	

(b) Describe how a mixture of sand and common salt can be separated into its components. (3 marks)**33. (4 marks)****(a)** Give the correct chemical symbol for each of the following elements. (3 marks)

Element	Symbol
Nitrogen	
Hydrogen	
Iron	

(b) State one use of nitrogen in day-to-day life. (1 mark)**34. (4 marks)**

The following diagram shows the arrangement of particles in different states of matter.

**(a)** Identify the states of matter represented by A and B. (2 marks)

(b) Identify the processes labelled X and Y. (2 marks)

35. (4 marks)

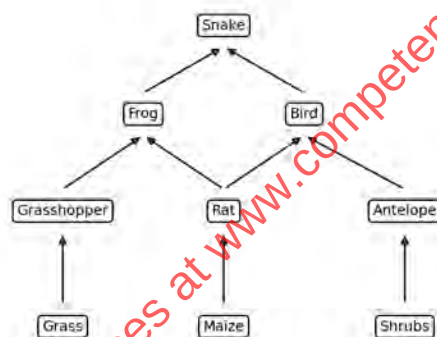
(a) Name the raw materials required by a green plant during photosynthesis. (2 marks)

(b) Identify the cell organelle in which photosynthesis takes place. (1 mark)

(c) State how a broad leaf surface aids in photosynthesis. (1 mark)

36. (4 marks)

The following diagram shows a food web in a grassland ecosystem.



(a) Use the food web to construct one food chain that ends with a tertiary consumer. (1 mark)

(b) Identify one producer in the food web. (1 mark)

(c) Explain one effect of a prolonged drought on this ecosystem. (2 marks)

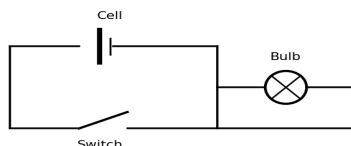
37. (4 marks)

(a) Name two parts of the human urinary system apart from the kidney. (2 marks)

(b) State two nitrogenous waste products excreted through the kidney. (2 marks)

38. (3 marks)

The following diagram shows a simple electric circuit.



(a) Identify the source of electrical energy in the circuit. (1 mark)

(b) State what would be observed at the bulb when the switch is closed. (1 mark)

(c) State one way of increasing the brightness of the bulb in the circuit. (1 mark)

39. (4 marks)

(a) Describe how a transverse wave can be generated using a rope fixed at one end. (2 marks)

(b) Name one example of a transverse wave and one example of a longitudinal wave. (2 marks)

40. (5 marks)

(a) A learner set up an experiment to investigate the factors affecting pressure in liquids using a plastic bottle with three holes made at different depths, filled with water. State the factor being investigated. (1 mark)

(b) State the expected observation regarding the water jets from the three holes. (2 marks)

(c) Apart from depth, name one other factor that affects pressure in liquids. (1 mark)

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INTEGRATED SCIENCE

Paper 2 (Practical / Structured)

Time: 1 hour 30 minutes

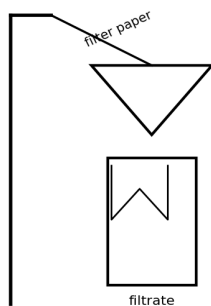
INSTRUCTIONS TO CANDIDATES (Please read these instructions carefully)

1. This paper consists of THREE questions. Answer ALL the questions in the spaces provided.
2. Each question carries 10 marks.
3. Candidates are advised to use the values and data given in each question.
4. Non-programmable calculators may be used where necessary.

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QUESTION ONE (10 marks)

(a) (i) Name the process that would be used first to remove the iron filings from the mixture. (1 mark)

(ii) State one observation that confirms the iron filings have been removed. (1 mark)

(b) The remaining mixture of salt and sand was added to water and stirred, then filtered as shown above. (i) Identify the residue collected on the filter paper. (1 mark)

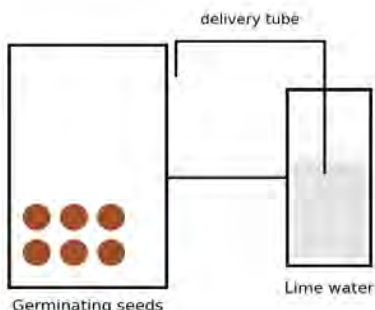
(ii) Identify the filtrate. (1 mark)

(c) Explain why stirring was necessary before filtration. (1 mark)

(d) (i) Describe how pure, dry crystals of common salt can be obtained from the filtrate. (2 marks)

(ii) Name the method of separation described in (d)(i). (1 mark)

(e) State one laboratory safety measure that should be observed during this experiment. (1 mark)

QUESTION TWO (10 marks)

(a) Identify the substance used in the second container of the set-up. (1 mark)

(b) State the expected observation in the second container if respiration is taking place. (1 mark)

Temperature (°C)	10	20	30	40	50
Time taken (s)	180	126	84	60	96

(c) (i) State the manipulated (independent) variable in this experiment. (1 mark)

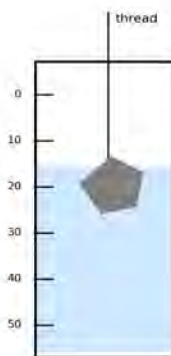
(ii) State the responding (dependent) variable in this experiment. (1 mark)

(d) Between 30°C and 40°C, calculate the change in time taken. (1 mark)

(e) Explain the trend observed in the results between 10°C and 40°C. (2 marks)

(f) Suggest a reason why the time taken increased again at 50°C. (1 mark)

(g) State one precaution that should be observed when heating the water bath in this experiment. (1 mark)

QUESTION THREE (10 marks)

(a) (i) Record the initial volume of water in the measuring cylinder shown, before the stone was lowered in. (1 mark)

(ii) The stone was gently lowered into the water using the thread, and the new water level was read as 42 ml. Determine the volume of the stone. (2 marks)

(b) The stone was then placed on a beam balance and its mass recorded as 54 g. (i) Calculate the density of the stone in g/cm^3 . (Density = Mass $\div$ Volume) (2 marks)

(ii) State why the thread was used to lower the stone into the water rather than dropping it directly. (1 mark)

(c) Calculate the weight of the stone in Newtons, given that gravitational field strength, $g = 10 \text{ N/kg}$. (Weight = Mass $\times g$; convert mass to kg first) (2 marks)

(d) If the stone rests on the ground with its flattest face, of area 18 cm^2 , in contact with the ground, calculate the pressure it exerts on the ground. (Pressure = Force $\div$ Area) (2 marks)

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