

THE KENYA NATIONAL EXAMINATION AND ASSESSMENT PREDICTION SERIES

Candidate's Name		Assessment Number	
School Name		School Code	
Candidate's Signature		Date	

KENYA JUNIOR SCHOOL EDUCATION ASSESSMENT

905/1: INTEGRATED SCIENCE (Theory)

PAPER 1

TERM 2: END-TERM 2025

TIME: 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and assessment number in the spaces provided above.
2. Write the name and code of your school in the spaces provided above.
3. Sign and write the date of the assessment in the spaces provided above.
4. This paper consists of two sections: A and B.
5. Section A comprises Multiple Choice Questions numbered 1 to 30.
6. Section B comprises short, structured questions number 31 to 40.
7. Answer ALL the questions in section A on the separate ANSWER SHEET provided.
8. Answer ALL the questions in section B in the spaces provided in this QUESTION PAPER.
9. Do NOT remove any page from this question paper.
10. Answer ALL the questions in English. For official use only

SECTION B

Task	Question	Score per question	Maximum score	Candidate's score
Task 1	31		03	
Task 2	32		13	
	33			
	34			
Task 3	35		16	
	36			
Task 4	37		08	
	38			
	39			
	40			
Total			40	

This paper consists of 12 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

Read all the instructions carefully

1. You have been given this question paper and a separate answer sheet. This section consists of 30 multiple choice questions.
2. Answer ALL questions on the ANSWER SHEET provided, NOT on the question paper.
3. Do all the necessary rough work on the question paper.

HOW TO USE THE ANSWER SHEET 4. Use an ordinary HB pencil. 5. Confirm that the answer sheet you have been provided with has the following:

YOUR ASSESSMENT NUMBER

YOUR NAME

NAME OF YOUR SCHOOL

NAME OF THE SUBJECT

6. Keep the answer sheet clean and dry. DO NOT fold it.
7. For each of the questions 1 – 30, four options are given. The options are lettered A, B, C and D. In each case, only ONE of the four options is correct. Choose the correct option.
8. On the answer sheet, the correct answer is to be shown by drawing a DARK LINE inside the box in which the letter you have chosen is written.

Example:

In the Question Paper:

16. At Junior School, learners study Integrated Science. A learner in Junior School chose Mathematics, Physics, Chemistry and Biology for study at Senior School. Which of the subjects chosen by the learner are components of Integrated Science?

- A. Mathematics, Physics and Biology.
- B. Physics, Chemistry and Biology.
- C. Mathematics and Physics.
- D. Chemistry and Biology.

The correct answer is B.

On the answer sheet, in the set of boxes given for number 16, draw a DARK LINE inside the box with the letter B printed in it as marked below.

9. Your dark line MUST be within the box. DO NOT make any marks outside the boxes.
10. For each question, ONLY ONE box is to be marked.

SECTION A (30 marks)

Answer ALL the questions in this section.

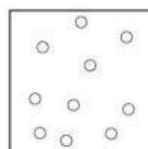
1. During a lab safety lesson, learners were shown various hazard symbols. Which of the following symbols (if provided as images) would indicate a substance that can cause severe burns upon contact with skin or other materials?



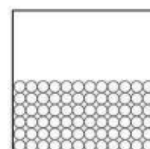
A B C D

2. A community leader noticed that local farmers struggle with understanding plant diseases, and the community also faces issues with waste management. Which two aspects of Integrated Science could best help them address these challenges?
- A. Understanding religious texts and cultural practices.
B. Applying knowledge of biological processes and environmental science.
C. Memorizing historical dates and artistic movements.
D. Focusing only on abstract mathematical theories.
3. During a science class, learners were asked to write down the chemical symbols for the elements Potassium, Nitrogen, and Calcium. Which of the following sets correctly lists the symbols for these elements?
- A. P, N, Ca B. K, N, Cal
C. Po, Ni, C D. K, N, Ca
4. A chemist is working with two unknown substances. Substance X readily forms rust when exposed to air and moisture, while substance Y is found in a clean glass bottle. Which one of the following pairs correctly classifies these substances as an element and a compound?
- A. Copper and Iron.
B. Water and Carbon dioxide.
C. Copper and Carbon dioxide.
D. Iron and Water.

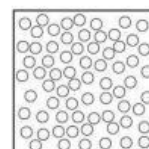
5. At a local bakery, the owner mixes sugar into warm water to make syrup. Separately, they also mix flour and water, creating a lumpy paste. Which two mixtures are homogeneous?
- A. Sugar and water, and flour and water.
B. Sugar and water, and air.
C. Flour and water, and sand and water.
D. Air, and sand and water.
6. During a practical session, learners were given samples of different materials: Zinc, Chlorine, Sodium, and Phosphorus. Which two of these elements are metals?
- A. Zinc and Chlorine.
B. Sodium and Phosphorus.
C. Zinc and Sodium.
D. Chlorine and Phosphorus.
7. A teacher illustrated the kinetic theory of matter by showing diagrams of particles in three different states.



(i)



(ii)

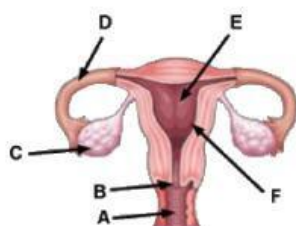


(iii)

Which two diagrams correctly represent the arrangement of particles in a solid and a gas, respectively?

- A. (i) solid, (ii) gas
B. (ii) solid, (iii) gas
C. (i) solid, (iii) gas
D. (iii) solid, (ii) gas
8. A small fire broke out in the school library due to a faulty electrical wire. The school's fire response team immediately cut off the electricity supply to the building. Which component of the fire triangle were they aiming to remove?
- A. Fuel
B. Heat
C. Oxygen
D. Chain reaction

9. A household in a rural area complains that their water supply does not lather well with soap, and their kettles often develop a white, crusty buildup. Which two methods would be most effective in making their water lather easily?
- Boiling the water and adding a water softener.
 - Filtering the water and adding cooking oil.
 - Boiling the water and adding salt.
 - Filtering the water and using less soap.
10. A learner observed ice melting into water, milk fermenting to yogurt, and iron nails rusting over time. Which of these changes are permanent and result in new substances?
- Ice melting and milk fermenting.
 - Milk fermenting and iron nails rusting.
 - Ice melting and iron nails rusting.
 - All of them are permanent.
11. A pharmaceutical company is developing new antacids to neutralize excess stomach acid. Another company is producing car batteries. Which of the following pairs correctly identifies the class of substance primarily used for antacids and in car batteries, respectively?
- Acid for antacids, Base for car batteries.
 - Base for antacids, Acid for car batteries.
 - Neutral salt for antacids, Acid for car batteries.
 - Base for antacids, Neutral salt for car batteries.
12. During a biology lesson on human reproduction, learners were discussing the changes that occur during adolescence. Which of the following changes is commonly observed in both boys and girls during this stage?
- Deepening of the voice.
 - Widening of hips.
 - Growth of pubic hair.
 - Development of breasts.
13. The diagram below represents a part of the female reproductive system.



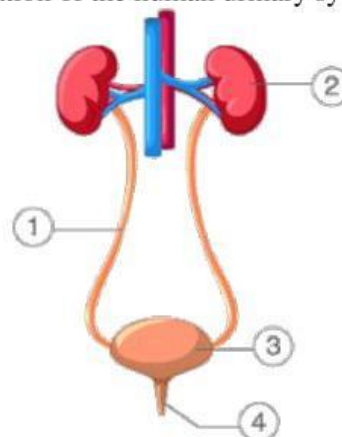
Fertilization, the fusion of male and female gametes, typically takes place at the part labelled:

- C
- D
- E
- F

14. During a guidance and counseling session, adolescents were advised on ways to cope with frequent mood swings. Which of the following would be the most constructive advice?

A	Isolate themselves from friends and family
B	Engage in regular physical exercise and seek support.
C	Consume more sugary foods to boost energy.
D	Avoid talking about their feelings.

15. The diagram below shows a simplified representation of the human urinary system.

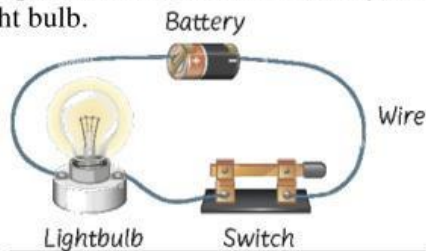


Which part is primarily responsible for filtering waste products from the blood to form urine?

- 1
- 4
- 3
- 2

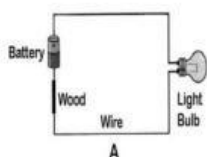
16. Sarah feels cold on a chilly morning and notices her skin developing "goosebumps." Which part of her skin contains the tiny muscles responsible for this reaction, helping to trap a layer of air for insulation?
- Epidermis
 - Dermis
 - Subcutaneous layer
 - Hair follicle
17. A patient presents with symptoms including frequent and painful urination, and sometimes blood in the urine. These symptoms are most indicative of a disorder affecting which part of the urinary system?
- Kidney
 - Ureter
 - Bladder
 - Urethra
18. A gardener wanted to remove small pieces of iron filings that had accidentally mixed with sand. Which of the following laboratory instruments would be most effective for separating the iron filings from the sand?
- Filter funnel
 - Evaporating dish
 - Magnet
 - Separating funnel

19. A simple circuit consists of a battery, a switch, and a light bulb.

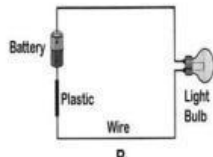


When the switch is closed, the bulb lights up. Which of the following correctly describes the main energy transformation in the light bulb?

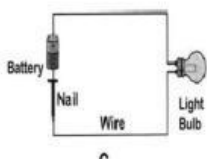
- A. Chemical energy to electrical energy.
 B. Electrical energy to light and heat energy.
 C. Mechanical energy to electrical energy.
 D. Heat energy to light energy.
20. Which of the following diagrams (if provided) represents a correctly connected simple electric



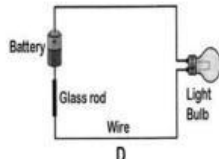
A



B

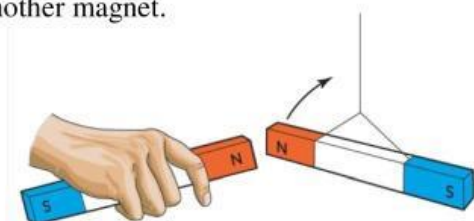


C



D

21. A learner is working with several electrical appliances in the lab. Which of the following actions demonstrates good electrical safety practice?
- A. Plugging multiple high-power appliances into a single wall socket.
 B. Using an appliance with a visible frayed electrical cord.
 C. Unplugging an appliance by pulling the plug itself, not the cord.
 D. Touching electrical switches with wet hands.
22. During a demonstration, a teacher brought the North pole of one magnet close to the North pole of another magnet.



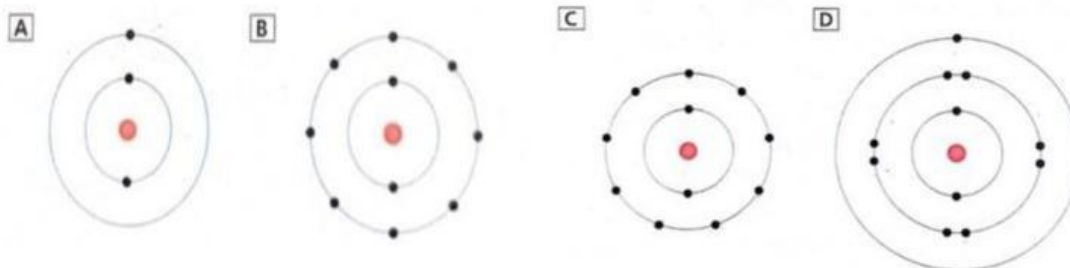
What observation was made?

- A. The magnets attracted each other strongly.
 B. The magnets repelled each other.
 C. Nothing happened; the magnets remained still.
 D. The magnets briefly attracted then repelled.
23. A group of friends is playing with various objects. They observe that a piece of paper, a plastic spoon, and a rubber band are not attracted to a magnet. Which of the following materials would also be non-magnetic?
- A. Iron B. Nickel C. Copper D. Steel
24. Dr. Anya, a forensic chemist, has received an unknown substance for analysis. Her first step is to identify the elements present. Using a specialized mass spectrometer, she determines that one of the predominant elements in the sample has atoms with **17 protons** each.
- Based on this information, what is the **atomic number** of this element, and which element is it likely to be?
- A. Atomic Number: 17, Element: Chlorine (Cl)
 B. Atomic Number: 35, Element: Bromine (Br)
 C. Atomic Number: 18, Element: Argon (Ar)
 D. Atomic Number: 17, Element: Sulfur (S)
25. A learner is listing the uses of common elements. Which of the following correctly matches an element with its common use?
- A. Hydrogen - used in incandescent light bulbs.
 B. Oxygen - used for respiration.
 C. Nitrogen - used in electrical wiring.
 D. Carbon - used for making magnets.
26. During a laboratory experiment, a learner mixed two clear liquids, and immediately a cloudy precipitate formed, and the test tube felt warm. This observation indicates that a:
- A. Physical change has occurred.
 B. Reversible change has occurred.
 C. Chemical change has occurred.
 D. Change of state has occurred.
27. A science enthusiast poured water into a freezer tray. After a few hours, the water turned into ice. This change of state is an example of a:
- A. Chemical change, which is permanent.
 B. Physical change, which is temporary.
 C. Chemical change, which is temporary.
 D. Physical change, which is permanent.

28. During a health education seminar, learners learned about common sexually transmitted infections. Which of the following STIs is caused by bacteria and can lead to infertility if untreated, characterized by painful urination and discharge?

- A. Herpes
- B. HIV
- C. Syphilis
- D. Gonorrhea

29. Mr.Lipton asked his learners to identify the electron configuration for Sodium. Which one is correct?



30. Study the following scenarios given below.

- i. Large herds of cattle graze in the fields, and often, small white birds called cattle egrets walk among them, feeding on insects stirred up by the movement of the livestock. The cattle appear unaffected by the presence of these birds.
- ii. A local farmer observes that some of his prize Boran cattle have become weak and their coats are dull. Upon closer inspection, he finds numerous ticks embedded in their skin, feeding on their blood. These ticks are known to transmit diseases that can be fatal to the cattle if left untreated.

Which of the following statements accurately identifies the type of ecological relationship described in each scenario?

- A. The relationship between the cattle and the cattle egrets is **mutualism**, and the relationship between the cattle and the ticks is **commensalism**.
- B. The relationship between the cattle and the cattle egrets is **parasitism**, and the relationship between the cattle and the ticks is **mutualism**.
- C. The relationship between the cattle and the cattle egrets is **commensalism**, and the relationship between the cattle and the ticks is **parasitism**.
- D. Both relationships are examples of **mutualism**.

SECTION B (40 marks)

Answer ALL the questions in this section.

31. (a) During a practical lesson, learners were asked to measure the length of their laboratory bench using a metre rule and then estimate its length without the rule.

(i) Identify two basic science skills applied in this activity. (2 marks)

(ii) State the International System of unit (SI unit) of length. (1 mark)

32. A group of learners was given a mixture of water and ethanol to separate. Ethanol has a boiling point of approximately 78°C , while water boils at 100°C .

(a) Is this a homogeneous or heterogeneous mixture? Give a reason. (2 marks)

(b) Describe a suitable method the learners can use to separate pure ethanol from the water-ethanol mixture. (4 marks)

(c) What separation technique would be used to obtain pure solid salt crystals from a salt solution? (1 mark)

33. (a) A curious learner found an unknown clear liquid in the lab. They noticed it felt soapy to touch and turned red litmus paper blue. State the general physical properties of this unknown liquid, other than what is mentioned. (2 marks)

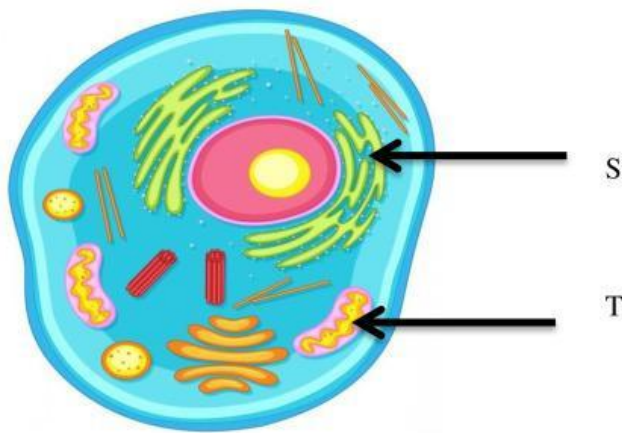
(b) Describe how you would prepare a plant extract from red cabbage to use as an acid-base indicator. (3 marks)

34. (a) A science teacher provided learners with a prepared temporary slide of a cheek cell and a prepared temporary slide of an onion epidermal cell.

(i) State two organelles that would be clearly visible in both cells under a light microscope. (2 marks)

(ii) Describe the process of preparing a temporary slide of an onion epidermal cell for observation under a light microscope. (3 marks)

iii) Identify the following parts of a cell.(2 marks)



S: _____

T: _____

(b) Explain two roles of diffusion in living things. (2 marks)

35. (a) A person was rushed to the hospital complaining of severe pain during urination and the presence of pus in their urine. The doctor diagnosed them with a urinary tract infection affecting the bladder.

(i) Name the two main parts of the human urinary system responsible for producing and transporting urine to the bladder. (2 marks)

(ii) State one common cause of urinary tract infections. (1 mark)

(b) During a reproductive health class, the teacher explained the menstrual cycle.

(i) Name the two main hormones that control the menstrual cycle. (2 marks)

(ii) Briefly describe the process of implantation in human reproduction. (2 marks)

36. (a) A school dormitory caught fire due to a short circuit from faulty electrical wiring.

(i) What class of fire is this, and what type of fire extinguisher would be most appropriate to put it out? (2 marks)

(ii) Explain two dangers posed by such a fire in a dormitory setting. (2 marks)

(b) State one method of fire control that involves removing the heat from a burning object. (1 mark)

37. (a) A village relies on energy sources for lighting and cooking. They currently use kerosene lamps and firewood. Suggest two alternative renewable energy sources that could be introduced to the village. (2 marks)

- (b) Explain the energy transformation that occurs when a hand-cranked generator is used to light a bulb. (2 marks)

38. A construction worker is using steel beams for building a skyscraper, while a sculptor is using pure copper to create a statue.



steel beams



copper statue

- (a) Describe two physical properties that make steel a suitable material for construction, considering it is an alloy. (2 marks)

- (b) Name the types of magnets shown below. (2 marks)





39. (a) A science learner was tasked with writing word equations for simple chemical reactions.

(i) Write a word equation for the reaction where Carbon burns in Oxygen to form Carbon Dioxide. (1 mark)

(ii) Write a word equation for the reaction between Magnesium and Oxygen to form Magnesium Oxide. (1 mark)

(b) An element has an electron arrangement of 2.8.1.

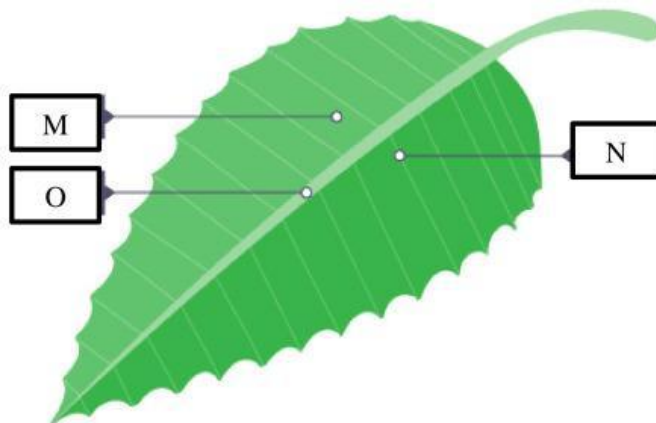
(i) Name this element. (1 mark)

(ii) Is this element a metal or a non-metal? (1 mark)

40. (a) A farmer observes that the leaves of his maize plants are yellowing, and the growth is stunted despite adequate watering. Upon inspection, he notices that the underside of the leaves has fewer stomata than expected.

(i) What process in plants is likely being affected by the reduced number of stomata? (1 mark)

(ii) Name the parts of a leaf shown below. (2 marks)



N: _____

O: _____

(b) During a school trip, Marsabit Junior School learners were told that carnivores like lions have specific types of teeth for tearing meat. Name the type of teeth that are well-adapted for tearing. (1 mark)



T

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