EDUCATION-NEWS CONSULT
END OF FIRST TERM EXAM

SCIENCE
BASIC 9

2 HOURS

Name.....

Date.....

EDUCATION-NEWS CONSULT – DODOWA, ACCRA

Enhancing student performance through quality assessment

EDUCATION-NEWS CONSULT MOCK – 1ST TERM EXAM

Call us on 0550360658 to register your school or ward for our monthly result focused mocks set by top examiners

DECEMBER, 2024 SCIENCE 2 HOURS

PAPER TWO

*This paper is **in two** sections: **A** and **B**. Answer Question **1 (compulsory)** in Section **A** and any other **three** questions in Section **B.** Answer all the questions in your answer booklet.*

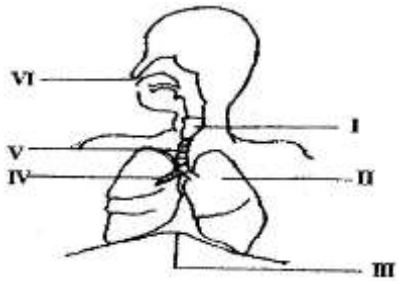
Credit will be given for clarity of expressions and orderly presentation of materials.

SECTION A [40 marks]

[Compulsory]

*Answer **all** the questions in this section.*

1. (a) The diagram below is an illustration of a system in humans. *Study the diagram and answer the questions that follow.*



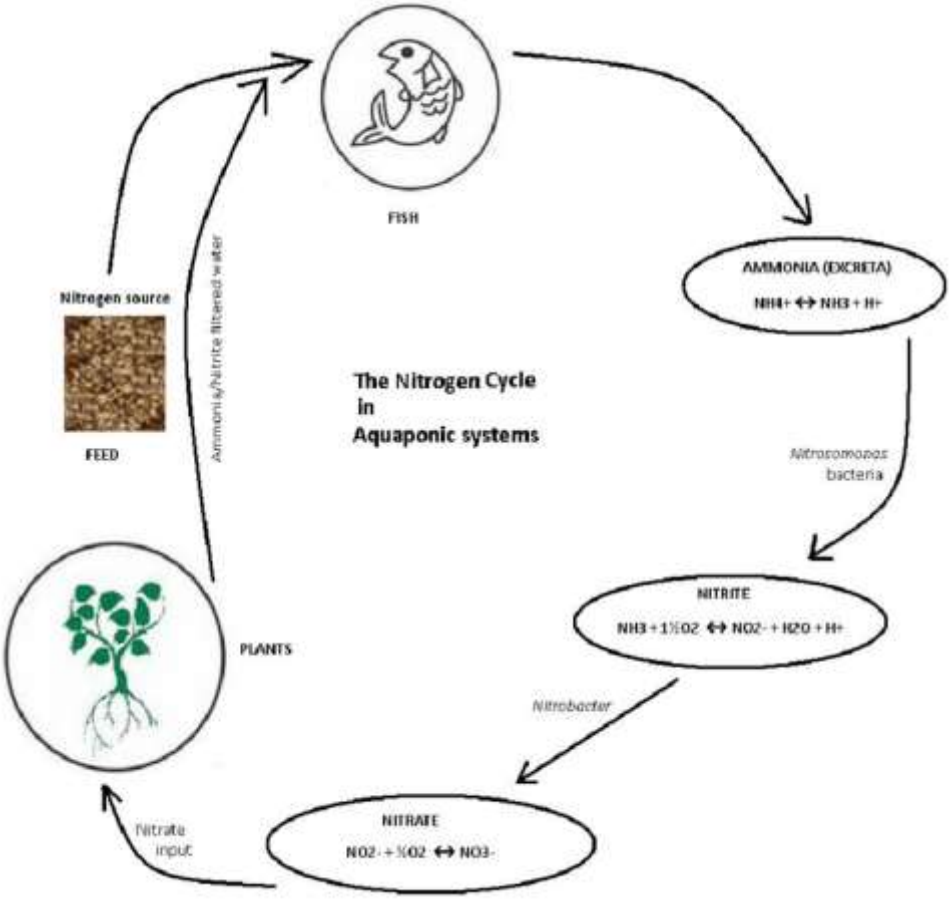
(i) State **one** function **each** of the parts labelled **I, V** and **VI.** [3 marks]

(ii) Explain **briefly** how air gets into **II.** [2 marks]

(iii) Name **two** diseases that can affect the parts labelled **II.** [2 marks]

(iv) Outline the path taken by atmospheric air before it reaches **II.** [3 marks]

(b) The diagram below is an illustration of the Nitrogen Cycle in Aquaponic Systems. *Study it carefully and answer the questions that follow.*

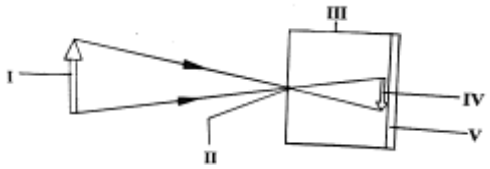


(i) Identify **two** types of bacteria involved in the nitrogen cycle shown the diagram and state their functions. [4 marks]

(ii) Why is it important for ammonia to be converted into nitrates in the aquaponic system? [2 marks]

(iii) State **four** activities that can interrupt the nitrogen cycle. [4 marks]

(c) The diagram below illustrates how images are formed by pinhole camera. *Study it carefully and answer the questions that follow.*



(i) Identify the parts labelled **I, II, III, IV** and **V.** [5 marks]

(ii) State the observation that could be made in the image if the:

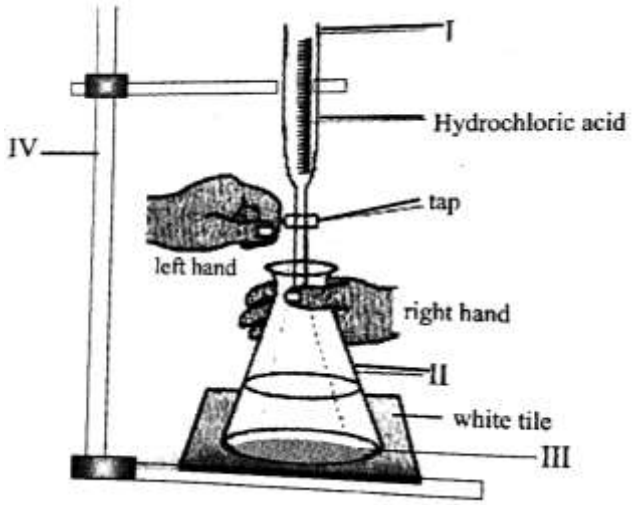
(α) image distance and object distance are equal; [1 mark]

(β) pinhole is made smaller; [1 mark]

(γ) pinhole is enlarged. [1 mark]

(iii) State **two** characteristics of the image formed in the pinhole camera. [2 marks]

(d) Below illustrates an experiment in which a learner added some quantities of hydrochloric acid to some quantity of sodium hydroxide solution of the same concentration.



(i) State **one** function each of the parts labelled **I, II, III** and **IV.** [4 marks]

(ii) Mention **one** instrument that could be used to transfer the solution into **II**. [2 marks]

(iii) What is the name of the reaction that occurred between dilute hydrochloric acid and sodium hydroxide solution? [2 marks]

(iv) What is the name of the compound that would be left in an evaporating dish if the liquid mixture **III** is heated? [2 marks]

SECTION B

[60 MARKS]

*Answer **three** questions **only** from this section.*

2. (a) Describe **briefly** the structure of the heart of a mammal. [3 marks]

(b) (i) Why was N_2O named laughing gas? [3 marks]

(ii) Explain the following statements:

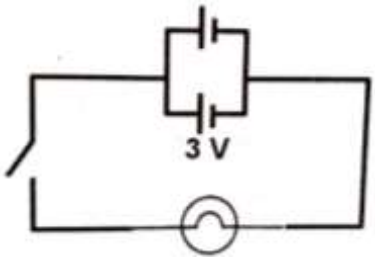
(α) Potassium hydroxide (KOH) is used to clean grease;

(β) Calcium oxide (CaO) is applied to acidic soil. [6 marks]

(c) (i) What is the nitrogen cycle? [2 marks]

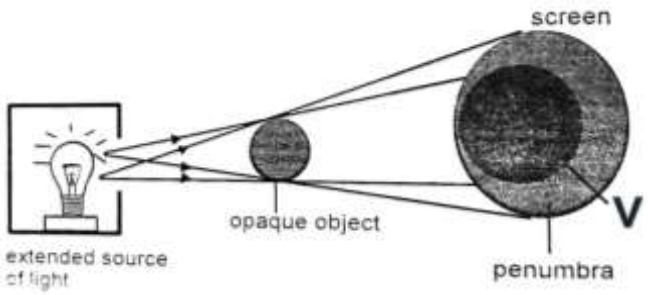
(ii) State **three** uses of nitrogen to plants. [3 marks]

(d) **The figure below** illustrates two 3.0 voltage cells are connected in parallel to a bulb in a circuit. *Study it and answer the questions that follow* .



When the circuit is closed, a current of 2.0 A is produced. Calculate the resistance of the cells. [3 marks]

3. (a) (i) State **two** differences each between weak acid and strong base. [2 marks]
(ii) Explain briefly why hydrogen (H_2) is a molecule. [4 marks]
(b) (i) What is meant by the term circulatory system? [2 marks]
(ii) Name **three** substances that are transported in the body. [3 marks]
(c) Briefly explain how legumes are able to add nitrogen to the soil. [4 marks]
(d) **Below** is an illustration of a natural phenomenon. *Study the diagram and answer the questions that follow.*



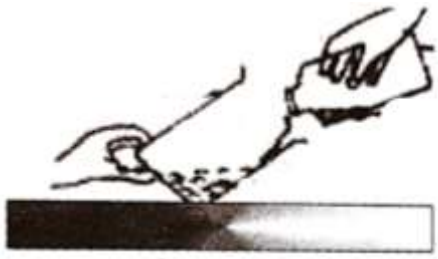
i. Name the natural phenomenon illustrated in the diagram. [2 marks]
ii. What will be experienced by a person standing in the part labelled **v** in the diagram? [3 marks]

4. (a) (i) Give the names of the form of nitrogen absorbed by plants. [2 marks]
(ii) Which of the forms stated in **d(i)** is easily leached from the soil? [2 marks]
(b) (i) Copy and complete the table below:

Compound	Constituent elements	Chemical formula
Ammonia		NH_3
Water	H and O	
Table salt		

[4 marks]
(ii) Give **two** differences between solar eclipse and lunar eclipse. [2 marks]
(c) State the function of each of the following parts of mammalian circulatory system;
(α) heart;
(β) capillary. [4 marks]
(d) Explain why **each** of the following strategies conserve energy:
(α) *Exchanging of old refrigerators for new ones;*
(β) *Creating large windows and doors in the direction of the prevailing winds.* [6 marks]

5. (a) (i) What is eutrophication? [2 marks]
(ii) How does nitrogen cycle contribute to eutrophication? [3 marks]
(b) The illustration below is the way a student diluted concentrated sulphuric acid in the laboratory. *Study the diagram carefully and answer the questions that follow.*



(i) Explain briefly why it is important to dilute the concentrated sulphuric acid in this manner. [1 mark]
(ii) State and explain **one** precaution that must be taken in the procedure illustrated in the diagram. [3 marks]
(iii) How can it be confirmed that the diluted solution is acidic? [3 marks]
(c) (i) Explain why the grasshopper is said to undergo incomplete metamorphosis. [3 marks]
(ii) State the **two** active stages in the life cycle of a grasshopper. [2 marks]
(d) An electric iron of resistance 8Ω uses 10 A of an electric current in 2 hours. Calculate the power rating of the electric iron. [3 marks]

PAPER 1

OBJECTIVE TEST

Each question is followed by four options lettered A to D. Find out the correct option for each question and shade in pencil on your answer sheet the answer space which bears the same letter as the option you have chosen. Give only one answer to each question

1. Which of these is a property of salt?
A. Turns red litmus paper blue.
B. Tastes sour.
C. Formed by the reaction between an acid and a base.
D. Releases hydrogen ions in solution.

2. How can you save energy while using electronic devices?
A. Leaving devices on standby mode.
B. Using energy-consuming appliances.
C. Turning off appliances when not in use.
D. Running appliances throughout the day.

3. What is the role of the pulmonary circulation?
A. Transporting blood to the liver.
B. Transporting oxygen-rich blood to the body.
C. Carrying deoxygenated blood to the lungs for oxygenation.
D. Circulating lymph fluid.

4. What does a base do, when added to an acid?
A. Neutralizes it.
B. Decreases the pH.
C. Turns red litmus paper green.
D. Increases the pH.

5. How can one conserve energy in water usage?
A. Taking shorter showers.
B. Keeping taps running constantly.
C. Running the dishwasher half-full.
D. Letting the water run while brushing teeth.

6. How do the respiratory and circulatory systems work together?
A. Regulating body temperature.
B. Digesting food.
C. Transporting oxygen and nutrients. throughout the body.
D. Protecting the body from pathogens.

7. What is the name of the nitrogen-fixing bacteria commonly found in the soil?
A. Denitrifying bacteria
B. Rhizobia
C. Ammonifying bacteria
D. Nitrifying bacteria

8. Hydrochloric acid is an example of a binary compound, consisting of which elements?
A. Hydrogen and chlorine
B. Hydrogen and carbon
C. Hydrogen and oxygen
D. Hydrogen and nitrogen

9. Which of these gases is released during respiration?
A. Hydrogen
B. Carbon dioxide
C. Oxygen
D. Nitrogen

10. What is the primary function of the respiratory system?
A. Transport nutrients.
B. Maintain body temperature
C. Produce energy.
D. Obtain oxygen and eliminate carbon dioxide.

11. Which activity helps conserve energy in transportation?
A. Carpooling with friends.
B. Frequent solo driving.
C. Regular engine idling.
D. Using larger vehicles for fewer people.

12. What is a key characteristic of specialized cells?
A. Lack of specific functions.
B. Perform specific tasks in the body.
C. High reproduction rate.
D. Randomly distributed in tissues.

13. What does H_2O_2 represent?
A. Sodium hydroxide
B. Hydrochloric acid
C. Hydrogen peroxide
D. Nitric acid
E.

14. . What is the typical diet of grasshoppers?
A. Carnivorous
B. Herbivorous
C. Omnivorous
D. Detritivores

15. How does lightning contribute to the nitrogen cycle? It
A. decomposes organic matter.
B. fixes atmospheric nitrogen into nitrates.
C. releases nitrogen gas into the atmosphere.
D. converts nitrates back into nitrogen gas.

16. Sodium carbonate is a binary compound used in
A. fertilizers.
B. glass manufacturing.
C. antiseptics.
D. batteries.

17. What is the pH of a strong acid?
A. 1 B. 7
C. 14 D. Less than 3

18. What is the chemical formula for carbon dioxide?
A. CO_3 $B. CO_2$
.C. CO D. C_2O

19. Which gas makes up the majority of earth's atmosphere?
A. Nitrogen B. Oxygen
.C. Carbon dioxide D. Hydrogen

20. Calcium oxide is used primarily in
A. cement production. B. perfume making.
.C. food coloring. D. batteries.

21. Which part of the circulatory system is responsible for carrying oxygenated blood away from the heart?
A. Veins
B. Capillaries
C. Red blood cells
D. Arteries

22. Which of the following is an example of a binary chemical compound?
A. Water
B. Sodium chloride
C. Vinegar
D. Hydrogen peroxide

23. If a device consumes 500 watts and is used for 5 hours, how much energy is consumed?
A. 1000 Wh B. 5000 Wh
.C. 2500 Wh D. 2000 Wh

24. How does the size of a shadow change with a larger light source?
A. Shadow becomes smaller.
B. Shadow becomes larger.
C. Shadow becomes fainter.
D. Shadow remains the same size.

25. What unit is used to measure energy consumption over time?
A. Watts
B. Volts
C. Amps
D. Watt-hours

26. What is formed when light is completely blocked by an object? A
A. rainbow.
B. shadow.
C. reflection.
D. mirage.

27. Which of the following is a significant use of ammonia?
A. Food coloring
B. Fertilizer production
C. Bleaching agent
D. Teeth whitening

28. Which part of the heart is responsible for pumping oxygenated blood to the body?
A. Right atrium
B. Left atrium
C. Right ventricle
D. Left ventricle

29. If a device has a power of 100W and is used for 10 hours, what is the total energy consumed?
A. 10 Wh B. 100 Wh
.C. 10000 Wh D. 1000 Wh

30. What is a primary impact of grasshoppers on agriculture?
A. Increase crop yield.
B. Enhance soil fertility.
C. Crop damage and loss.
D. Reduce water consumption.

31. Which type of light creates clearer shadows?
A. Dim light
B. Direct light
C. Flickering light
D. Scattered light

32. What does the **kWh** unit represent?
A. Kilowatt-hours
B. Energy consumption over time
C. Kilowatts per hour
D. Kilowatt resistance

33. What causes the formation of shadows?
A. Reflection of light.
B. Absorption of light.
C. Blocking of light by an object.
D. Dispersion of light.

34. Which acid is found in citrus fruits like lemons and oranges?
A. Acetic acid
B. Citric acid
C. Hydrochloric acid
D. Sulfuric acid

35. What process in the nitrogen cycle involves bacteria converting nitrogen gas into ammonia?
A. Nitrogen fixation
B. Nitrification
C. Denitrification
D. Decomposition

36. In what direction does a shadow form in relation to a light source?
A. Behind
B. Next to
C. Opposite
D. In front of

37. During incomplete metamorphosis, how many stages does a grasshopper undergo?
A. Two B. Four
.C. Five D. Three

38. Which component of the blood is primarily responsible for clotting?
A. Red blood cells
B. White blood cells
C. Plasma
D. Platelets

39. What is the first step of the nitrogen cycle?
A. Denitrification
B. Nitrification
C. Nitrogen fixation
D. Ammonification

40. What is the relationship between power, energy, and time?
A. Energy = Power × Time
B. Power = Energy × Time
C. Time = Energy × Power
D. Energy = Power ÷ Time