SUPER MOCK 2 2026
SCIENCE 2 & 1
Essay & Objective
2 hours: 15 minutes

2&1

Name: .....

Index Number: .....

FINALPREPS
EXAMINATIONS BUREAU

Special Private Mock Examinations for BECE Candidates

APRIL 2026

SCIENCE 2 & 1
(ESSAY AND OBJECTIVE TEST)

2 hours

INSTRUCTIONS

Do not open this booklet until you are told to do so. While you are waiting, read and observe the following instructions carefully. Write your name and index number in ink in the spaces provided above.

This booklet consists of two papers. Answer Paper 2 which comes first, in your answer booklet and Paper 1 on your Objective Test answer sheet provided. Paper 2 will last 75 minutes after which the answer booklet will be collected. Do not start Paper 1 until you are told to do so. Paper 1 will last 45 minutes.

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PAPER 2 **1hour: 25 minutes**

[100 marks]

This paper is in two *parts:* I and II. *Answer Question* 1 *in* ***Part* I** *and any other* ***three*** *questions in* ***Part* II**. *Answer* all *the questions in your answer booklet.* ***Credit*** *will be given for* ***clarity*** *of* ***expression*** *and* ***orderly*** *presentation of* ***materials.***

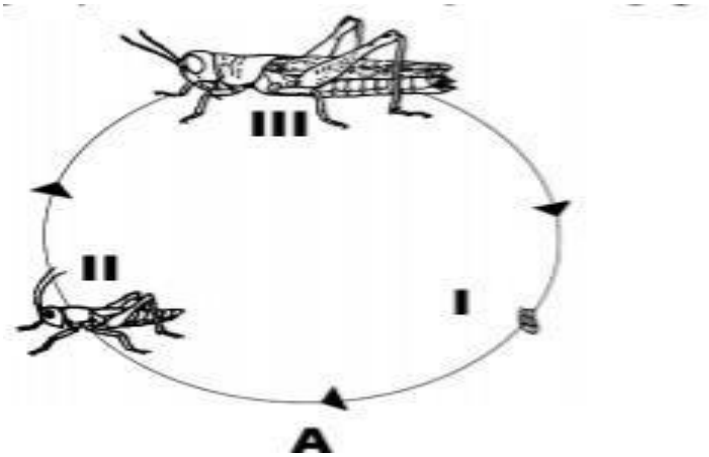
PART I

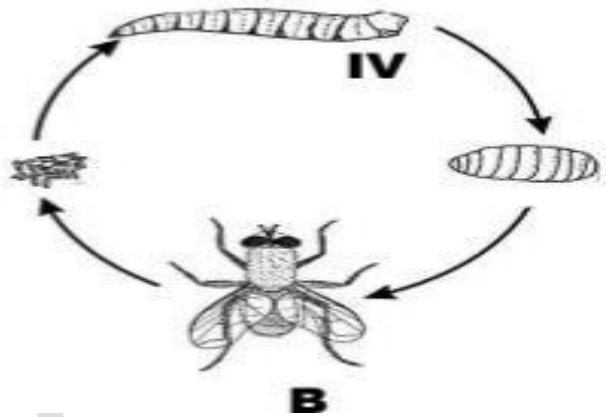
TEST OF PRACTICAL WORK

[40 marks]

Answer* all *Questions from this part.

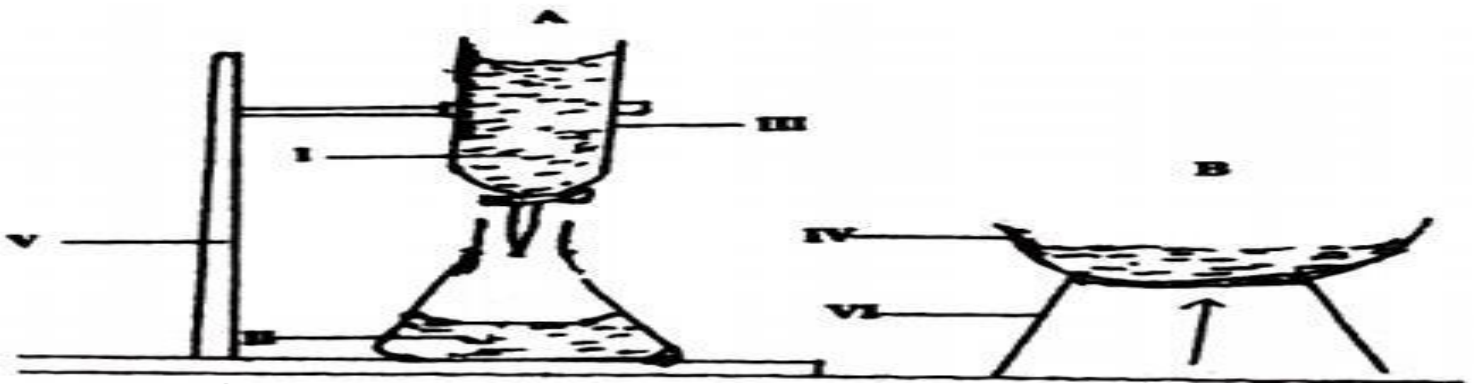
1(a) The diagrams below illustrate the life cycles of organisms A and B. Study the diagrams carefully and answer the following questions.





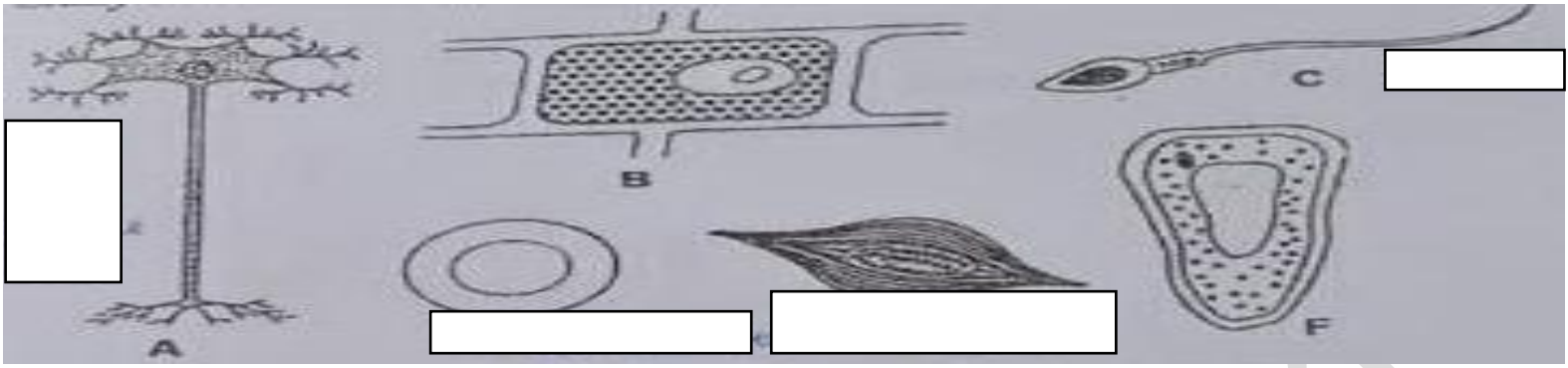
(i) Identify the life cycle labeled A and B above. [2 marks]
(ii) Name each stage labeled I, II, III and IV. [4 marks]
(iii) Provide the main difference between cycle A and B from the development of insects in your community.
(iv) The stage labeled III belongs to which insect order? [2 marks]

(b) The diagram below is a set- up for preparation of common salt in the laboratory. Study the diagram carefully and answer the questions that follow.



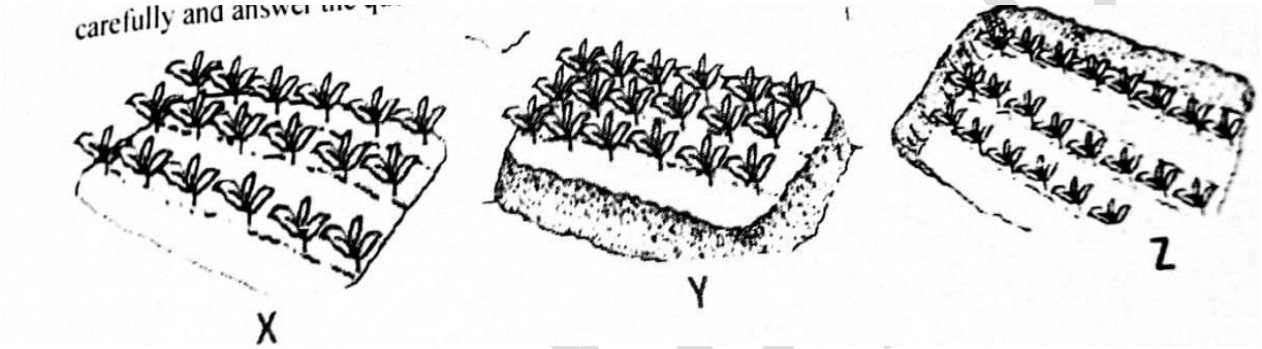
(i)Name each of the parts labeled IV, V and VI. [3 marks]
(ii) Name two possible solutions that can react to produce salt. [2 marks]
(iii) Name the process that takes place when the two solutions named in (c) (ii) react.
(iv) Name the process that takes place in the set-up B. [1 mark]
(v) Write a chemical equation for the reaction between solutions named in c (ii).

(c) The diagrams below are illustrations of some specialized cells in plants and animals. Study them carefully and use them to answer the question that follows.



(i) Identify the specimen labelled A,B,C,D,E and F respectively (3marks)
(ii) Name any two (2) adaptive features of specimen A and C (2 marks)
(iii) Classify the specimens under specialized cells in plants and animals (2marks)
(iv) State the functions of specimen A,B,C,D,E and F respectively (3marks)

(c) The diagrams below are illustrations of different seed beds used in crop production. Study them carefully and use them to answer the questions that follows.



i. Identify each of the seed bed X, Y and Z {3marks}
ii. Explain the conditions under which each seed bed is necessary in crop production. {3marks}
iii. List any four crops that can be raised in the seed bed labelled Y {4 marks}

PART II
THEORY (60 MARKS)
Answer* four *questions* only *from this part

2. (a) i. Explain why the grasshopper is said to undergo incomplete metamorphosis [4 marks]
ii. Mention two (2) actions of the female grasshopper that ensures the survival of her nymphs [2 marks]
(b) i. Outline four (4) behaviours that are typical of each of the stages [3 marks]
ii. Why is a sperm cell is described as being specialized?
(c) i. State two (2) meristems in plants and provide the main functions of each [3marks]

ii. Differentiate between mitosis and meiosis

i. Name the male and female gametes each in plants and animals [2 marks]
(d) i. Give three (3) specialized cells that function to make plants producers [½ mark]

ii. State two (2) major atmospheric components that is involved in nitrogen fixation. [3 marks]
]
3. a. List three (3) dicotyledonous plants of agricultural importance [3 marks]

b. i. What is a mixture? [3marks]

ii. State three (3) reasons why air is a mixture? [2 marks]

c. i. What is a chemical symbol?

ii. Name any two (2) parts of the human circulatory system. [2 marks]

d. i. Tabulate four (4) differences between positive and negative charges of an atom [2 marks]

ii. What are decomposers? [3 marks]

4. a. i. Why are decomposers important in the carbon cycle? [3 marks]
ii. Define the term "green -house gas? [2marks]

b. i. State two (2) carbon – containing green- house gas [3 marks]

ii. Name two (2) processes that adds carbon into the environment [2 marks]

(c) State the importance of a land site [3 marks]

d. Give two (2) disadvantages of the chemical method used in controlling mosquitoes

[2 marks]

5. . a. Explain why a sperm cell contains mitochondria [2marks]

b. i. Mention two (2) methods of making a magnet [2 marks]

ii. Explain the series of processes a morsel of kenkey goes through within the alimentary canal. [2 marks]

c. i. Outline any two (2) reasons why weeds should be controlled in your vegetable farm [good
ii. Mention two (2) industrial activities that emit carbon into the atmosphere

d. i. Explain the term water cycle [2 marks]
ii. Name two (2) processes involved in the hydrological cycle within your environment. [3marks]

6. a. i. How does a homodont dentition differ from a heterodont dentition? [2marks]
ii. List any four (4) examples of prokaryotes [4 marks]

b. Mention the four (4) differences between prokaryotes and eukaryotes.

[2 marks]

c. i. Name the four (4) special characteristics of planet Mercury [2 marks]

ii. Give three (3) differences between the sun and the stars [3 marks]

d. Write one use each of the following artificial satellites

(i) communication satellites (ii) Military satellites [2 marks]

END OF PAPER 2

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UNTIL YOU ARE TOLD TO DO SO
YOU WILL BE PENALIZED SEVERELY IF YOU ARE FOUND LOOKING AT THE NEXT PAGE BEFORE YOU ARE TOLD TO DO SO

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SECTION A

Answer all the following questions.
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 space which bears the same letter as the option you have chosen. Give only* one *answer to each question. An example is given below.*

The element with the chemical symbol Si is

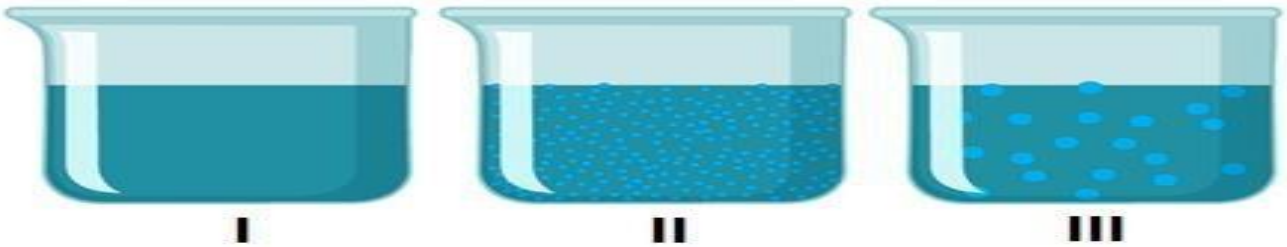
A. Silver
B. Silicon
C. Selenium
D. Sodium

The correct answer is Silicon*, which is lettered* B *and therefore answer space* B *would be shaded*

A	■	C	D

Think carefully before you shade the answer space. Erase completely any answer you wish to change.
Do all rough work on this paper. Now answer the following questions.

1. Which of the following illustrations best describe a colloid?



A. III only
B. II only
C. I only
D. II and III

2. The unique behaviours and properties exhibited by particles that arise from the interactions between the dispersed particles and the surrounding medium is known as

A. colloidal effect.
B. emulsion effect.
C. suspension effect.
D. Tyndall effect.

3. During science class, a student of Ampekrom JHS discovers that an atom consists of neutrons, electrons, and protons. He then drew the structure of the atom as shown below in Diagram X. Which of the following best describes the location of particles in the part labelled IV?

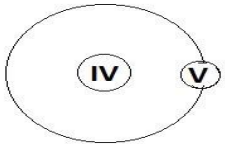


Diagram X

A. Protons and electrons are located in IV.
B. Protons and neutrons are located in IV.
C. Neutrons and electrons are located in IV.
D. Protons and neutrons are located in IV.

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4. JHS three students were asked to classify the organisms in Diagram W as prokaryotes and eukaryotes.

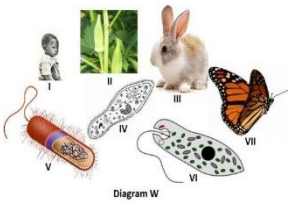


Diagram W

Which of the following is correct about their classification?

A. I, II, III and VII are prokaryotes
B. I, II, III, and IV are prokaryotes
C. I, II, IV, and VII are eukaryotes
D. I, II, IV, and V are eukaryotes

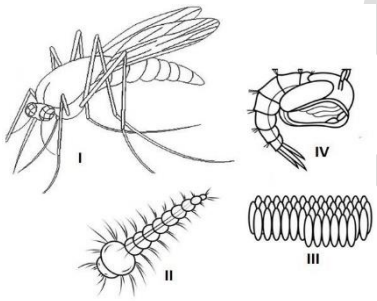
5. A mixture in which one substance is uniformly dispersed in another substance is known as

A. suspension
B. Colloid
C. Solution
D. Solution

6. An example of a homogeneous mixture is

A. sand and water.
B. oil and vinegar.
C. salt and pepper.
D. sugar and water.

7. The illustrations in Diagram **D** below show the stages of development of an organism.



Re-arrange the stages labeled I, II, III, and IV to show the correct stages of the life cycle of the organism.

A. I, III, II and IV
B. II, III, and IV
C. III, IV, II, and I
D. IV, III, II, and I

8. You have been given the following pictures that relate to energy sources used in everyday life. Which of the picture(s) highlights more on the non-renewable energy sources?


W


X


Y


Z

A. **W** and **Z**

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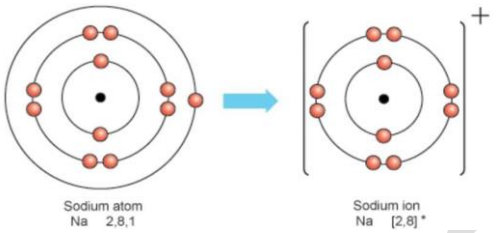
B. **W** and **X**
C. **Z** only
D. **Y** only

9. The impacts of climate change are widespread and affecting the environment and social aspects of life; rising temperatures, changing weather patterns. These continue to have dropping effects on ecosystem function and services. The following measures can help reduce the effects of climate except

A. improving energy efficiency in buildings
B. improving greenhouse gas emission
C. improving sustainable agriculture practices
D. transitioning to renewable energy sources.

10. Sodium (Na) loses one electron to form a Sodium ion (Na+). What is the difference in charge between a Sodium atom and a Sodium ion?



A.+1 B. -1 C. 0 D. 1

11. The human teeth play a vital role in the process of mastication and contribute to the overall oral health of humans. The diagram below shows the types of teeth in humans.

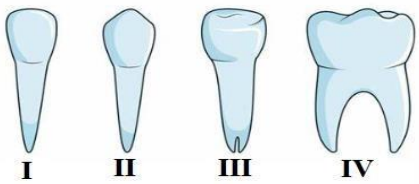


Diagram G

Which of the following best describe the function of the tooth labelled I?

A. Tearing and grasping.
B. Grinding, and chewing.
C. Cutting and biting.
D. Crushing and grinding.

12. Akosua wanted to see whether a solid substance is an acid or a base. In what order should she arrange the following steps?

I. Test with blue litmus paper.
II. Dissolve the substance in water
III. Look at any changes in colour of the litmus paper
IV. Grind some of the substance to make a powder

A. I, IV, II, III
B. II, I, III, IV
C. III, II, I, IV
D. IV, II, I, III

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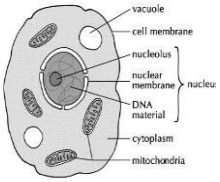
Use the drawing of a typical animal cell below to answer question 13



13. The plant cell survives with the release of energy through
    A. Cell membrane
    B. Cytoplasm
    C. DNA material
    D. Mitochondria

14. A P-N junction diode allows current to flow in one direction only. In a circuit, how would a diode be positioned to allow current to flow through an LED?
    A. the positive side of the diode will be connected to the positive side of the LED.
    B. With the negative side of the diode connected to the positive side of the LED.
    C. The direction of the diode doesn't matter for LED operation.
    D. Diodes cannot be used in circuits with LEDs.

15. How does energy conservation differ from energy conversion in terms of energy use?

    A. Energy conservation aims to generate new energy, while energy conversion helps maintain existing energy levels.
    B. Energy conservation involves transforming energy from one form to another, while energy conversion aims to reduce energy consumption.
    C. Energy conversion focuses on improving energy sources, while energy conservation aims to minimize energy wastage.
    D. Energy conversion is about saving energy in a physical system, whereas energy conservation involves behavioral changes to reduce energy use.

16. Which material is commonly used in making simple agricultural tools like hoes and shovels?

    A. Aluminum
    B. Plastic
    C. Steel
    D. Wood

17. Which of the following chemical compounds is commonly used in the production of fertilizers.
    A. H_2CO_3
    B. Na_2O_2
    C. NH_4Cl
    D. NH_4NO_3

18. Most birds sit on their eggs until they hatch. Which of these is the most important reason why birds sit on their eggs?

    A. to keep the eggs inside the nest
    B. to keep the eggs warm
    C. to protect the eggs from the wind
    D. to protect the eggs from the rain.

19. Why is the life cycle of a grasshopper described as incomplete metamorphosis compared to the housefly and mosquito?

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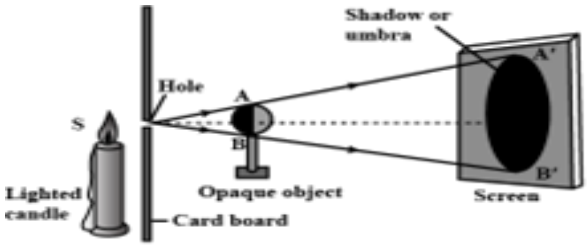
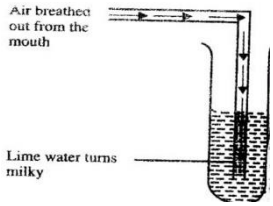
A. Grasshoppers do not undergo distinct stages of development.
B. Grasshoppers have fewer molting stages.
C. Grasshoppers have simpler larval forms.
D. Grasshoppers lack a pupal stage in their life cycle.

20. How do umbra and penumbra differ in the situation of shadow formation as shown in the diagram?



A. Umbra consists of the faintest shadow, penumbra is the most defined shadow.
B. Umbra forms closer to the light source, penumbra is further away from the object.
C. Umbra is the darkest part of the shadow, while penumbra is the partial shadow.
D. Umbra represents direct sunlight, while penumbra is indirect sunlight.



21. Asibi breathed air through a delivery tube into a test tube containing lime water as shown in the diagram below. The lime water turns milky. Identify the milky substance in the test tube.

A. Calcium carbonate
B. Calcium chloride
C. Calcium hydroxide
D. Calcium nitrate

22. Atoms can gain or lose electrons to become ions. The following statements about cations and anions are correct except

A. Cations have more protons, anions have fewer protons.
B. Cations are positive ions, while anions are negative ions.
C. Metals form cations, whilst non-metals form anions
D. There is no difference between them, they are the same.

23. Which of the following statements accurately compares ruminant, monogastric, and poultry feed characteristics?

A. Monogastrics have complex stomachs with multiple compartments for fermentation, unlike ruminants and poultry.
B. Poultry feed typically contains high levels of cellulose to support efficient nutrient absorption, differing from ruminants and Monogastrics.
C. Ruminants require high-fiber feed for proper digestion, while Monogastrics rely on grain-based diets for energy.
D. Ruminants, monogastrics, and poultry all have similar digestive systems and nutrient requirements.

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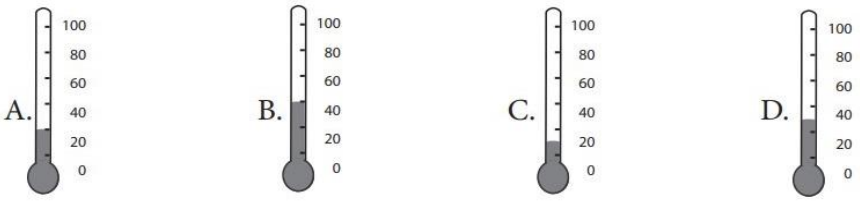
24. Four different thermometers were used to measure the temperature of water in four different beakers. Which thermometer reading shows the hottest water?

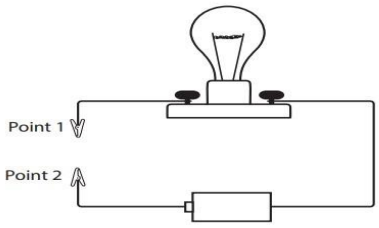


25. A hammer was used to drive a nail unto the wood as seen in the diagram. How is the hammer and the nail related in term of pressure, area, and force from the diagram.



A. application of area over a small force
B. application of force over a small area, high pressure at the point of contact.
C. high pressure does not allow the nail to penetrate the wood
D. no high pressure at the point of contact.

26. The following picture shows a lightbulb connected to a battery in an electrical circuit. Which of the following objects connected to Points 1 and 2 will allow the bulb to glow?



A. iron nail
B. plastic spoon
C. rubber band
D. wooden stick

27. The word equation that represents the reaction between NaOH and HCl is
A. Sodium hydroxide + hydrochloric acid → ammonia
B. Sodium hydroxide + hydrochloric acid → hydrogen and water
C. Sodium hydroxide + hydrochloric acid → salt and water
D. Sodium hydroxide + hydrochloric acid → water and gas

28. Plants grow best in soils that are rich in … A. grains of sand
B. lumps of clay
C. layers of gravel
D. decaying plants and animals

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29. The food producer within the plant cell uses energy from the sun and converts carbon dioxide and water into sugars. This sub-cellular structure is called
A. chloroplast
B. mitochondria
C. nucleus
D. vacuole

30. Water vapour from lakes, rivers and oceans rises into the atmosphere due to the sun heating the earth's surface. As the water vapour cools, it condenses into tiny droplets, forming clouds. When these droplets combine and grow heavy enough they fall back to the earth's surface as rain. What is the technical name for the last process of the water cycle the describes?
A. condensation
B. evaporation
C. precipitation
D. Transpiration

31. Which of the options below shows the stages of the house fly life cycle after hatching:
A. adult, larva, egg, pupa
B. egg, adult, pupa, larva
C. larva, pupa, adult, egg
D. pupa, egg, larva, adult

The table below shows an incomplete arrangement of food substances, their sources, functions and deficiency. Complete the table by selecting the appropriate option for each food substance. **Use this table to answer questions 32, 33 and 34.**

Food substance	Source	Function	Deficiency
Protein	fish	formation of nails	marasmus
Calcium (Ca)	…….	…….	……..
Iron (Fe)	……	……..	……..
Ascorbic acid	……..	……	……

32. A. Calcium: snail, protein synthesis, dry skin formation B. Calcium: seafood, thyroid gland function, mouth sores
C. Calcium: sea salt, cell membrane functioning, eczema
D. Calcium: cheese, skeleton framework formation, rickets

33. A. Iron: crab, protein synthesis, dry skin and hair
B. Iron: glycogen, repair of body tissues, stroke
C. Iron: lean meat, building haemoglobin, anaemia
D. Iron: vegetables, cell membrane function, yellow hair

34.
A. Ascorbic acid: animals, provides energy, mouth sores
B. Ascorbic acid: cellulose, protects vital organs, hair loss
C. Ascorbic acid: fresh fruits, resistance to infection, scurvy
D. Ascorbic acid: groundnuts, blood formation, diabetes

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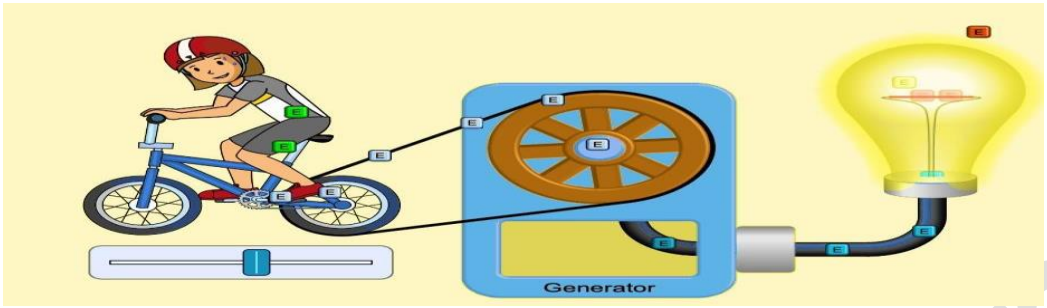
The diagrams below for questions **35** and **36** shows how energy (E) can be transformed. Study the activities taking place in each of the diagrams below and select from the given options, the energy changes that take place.



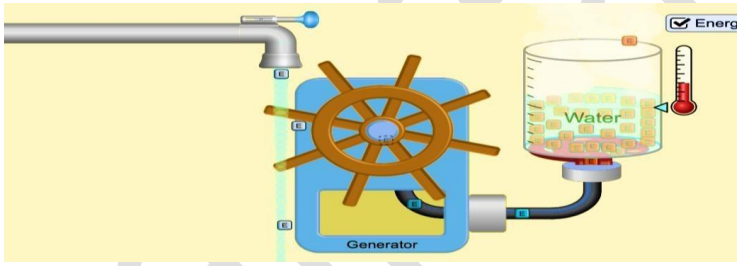
35..

A. $chemical\ energy \rightarrow kinetic\ energy \rightarrow mechanical\ energy \rightarrow electrical\ energy \rightarrow light\ energy + heat\ energy$

B. $Chemical\ energy \rightarrow kinetic\ energy \rightarrow sound\ energy \rightarrow electrical\ energy \rightarrow light\ energy + heat\ energy$

C. $potential\ energy \rightarrow chemical\ energy \rightarrow kinetic\ energy \rightarrow mechanical\ energy \rightarrow light\ energy + heat\ energy$

D. $potential\ energy \rightarrow kinetic\ energy \rightarrow electrical\ energy \rightarrow light\ energy + heat\ energy + sound\ energy$



36.

A. $kinetic\ energy \rightarrow mechanical\ energy \rightarrow electrical\ energy \rightarrow heat\ energy$

B. $potential\ energy \rightarrow kinetic\ energy \rightarrow electrical\ energy \rightarrow heat\ energy$

C. $sound\ energy \rightarrow mechanical\ energy \rightarrow electrical\ energy \rightarrow heat\ energy$

D. $chemical\ energy \rightarrow mechanical\ energy \rightarrow electrical\ energy \rightarrow heat\ energy$

37. What happens to the particles of a solid when it is heated to its melting point? A. They break free from their fixed positions.
B. They disperse in the air as individual particles.
C. They stop moving altogether.
D. They vibrate faster but remain in fixed positions.

38. Consider the structure of ice and water. How do the particles in these two states of matter differ in terms of arrangement and movement?
A. Ice particles are more tightly packed and vibrate less than water particles.

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B. Ice particles are loosely arranged and move freely compared to water particles.
C. Ice particles have more kinetic energy than water particles.
D. There is no difference in the arrangement and movement of particles between ice and water.

39. What property of liquids allows them to take the shape of their container but maintain a constant volume?
A. strong forces of attraction between particles
B. ability of particles to move past each other
C. random motion of particles at high speeds
D. fixed positions of particles within the liquid

40. How does the arrangement of particles differ in solids, liquids, and gases?
A. Solids have the most organized particles, followed by liquids and gases.
B. Gases have the most organized particles, followed by liquids and solids.
C. Liquids have the most organized particles, followed by solids and gases.
D. The level of organization is the same in all three states of matter.

END OF PAPER 1

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