

0706024/2&1 B.B.E.K.O

June 2024

SCIENCE 2&1

Essay & Objective

2 hours 10 minutes

2 & 1

Name.....

Index Number.....

BEST BRAIN EXAMINATIONS KONSORTIUM GHANA

Special Private Mock Examinations For BECE Candidates

June 2024

SCIENCE 2 & 1

2 hours 10 minutes

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. Paper 2 will last 1 hour 25 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.



GHANA
EDUCATION
SERVICE

ANLOGA DISTRICT COHBS MOCK

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(020-7732900 / 0249273049 / 0248726958)

0706024 Science 2 & 1 bbeko

[100 marks]

This paper is in **two** sections: **A** and **B**. Answer **Question 1** 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 expression and orderly presentation of material

SECTION A

[40 marks]

Answer **all** of Question 1

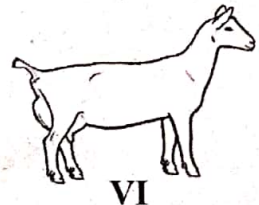
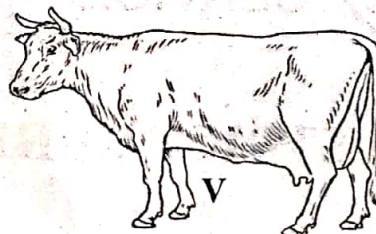
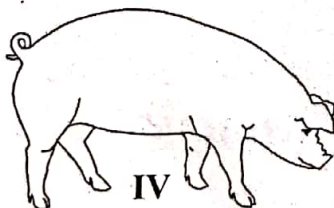
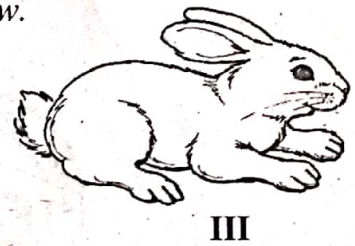
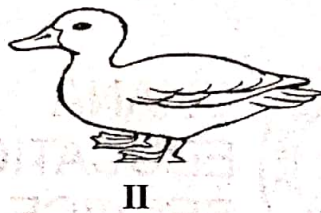
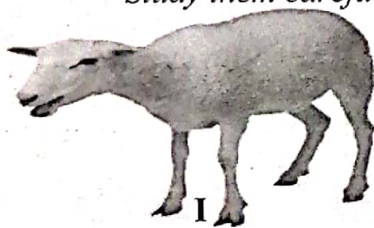
1. (a) Study the table below on atomic elements and answer the questions that follow.

Atomic Number	Element	Symbol	Electronic configuration	Valence electrons
1				
		C		
8				

- (i) Copy and complete the table above. [3 marks]
- (ii) Draw the electronic structures of element with atomic numbers 1 and 8 in the table above. [3 marks]
- (iii) If the elements with atomic numbers 1 and 8 lose and gain their outermost electrons respectively, give the symbols of the ions formed. [2 marks]
- (iv) A compound in everyday life is formed between 1 and 8. Write a word equation and a balanced chemical equation for the reaction. [2 marks]

- (b) The diagrams below are illustrations of some domestic animals.

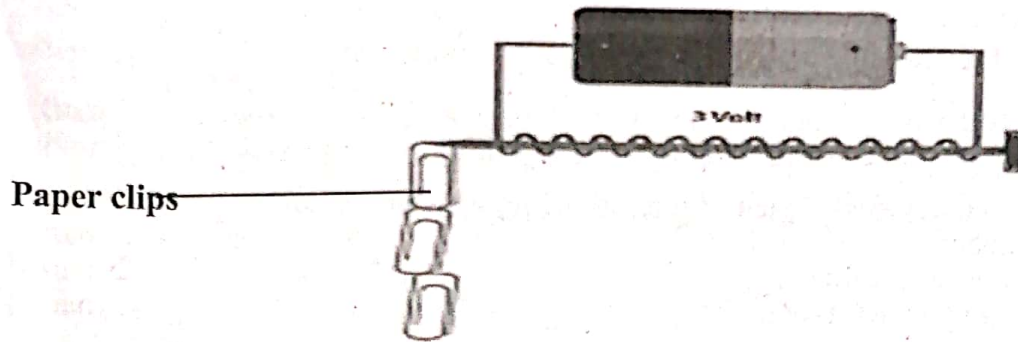
Study them carefully and answer the questions that follow.



- (i) Name the domestic animals above labelled I, II, III, IV, V and VI and give **one** example of the breeds of each. [3 marks]
- (ii) State **three** differences between I and VI. [3 marks]
- (iii) Give the difference between the digestive systems of IV and V. [2 marks]
- (iv) State **four** commercial uses of domestic animals. [2 marks]

- (c) The diagram below illustrates an experiment to show the relationship between magnetism and Newton's Second Law of Motion.

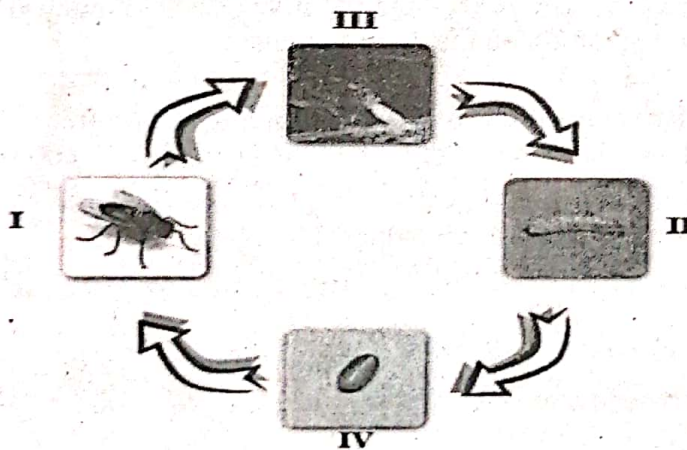
Study the diagram carefully and answer the questions that follow.



- (i) State Newton's Second Law of Motion and give the factors that affect how fast the paper clips accelerate towards the nail. [2 marks]
- (ii) What is the role of the battery in the circuit above? [2 marks]
- (iii) How does the distance between the nail and the paper clips affect the force acting on the paper clips? [2 marks]
- (iv) What happens if the paper clips are replaced with a coin twice the mass with the same coils around the nail and same voltage? [2 marks]
- (v) State the law of magnetism and give **two** industrial uses of magnets. [2 marks]

- (d) The diagram below is an illustration of the metamorphosis of a housefly.

Study the diagram carefully and answer the questions that follow



- (i) Explain why the metamorphosis above is *complete* or *incomplete*. [2 marks]
- (ii) Identify the stages labelled I, II, III and IV. [2 marks]
- (iii) Identify **four** breeding places of houseflies. [2 marks]
- (iv) List **four** diseases that are caused by the activities of the housefly. [2 marks]
- (v) Give **two** ways to control the effects of houseflies on humans. [2 marks]

Turn over

SECTION B

[60 marks]

Answer **three** questions **only** from this part

2. (a) (i) Differentiate between *hail* and *sleet*. [2 marks]
 (ii) Give **four** reasons why the water cycle is important in life. [2 marks]
- (b) (i) Describe what happens in the mouth during digestion of food. [3 marks]
 (ii) Name the **three** end products of food digestion and their sources. [3 marks]
- (c) State **two** characteristics of each of the following types of animals:
 (i) Ruminants; [2 marks]
 (ii) Monogastric animals; [2 marks]
 (iii) monogastric herbivores [2 marks]
- (d) An object situated at a height of 8m has a potential energy of 170J.
 (i) Find the mass of the body. [Take g to be 10m/s^2] [2 marks]
 (ii) If the object has a velocity of 9m/s, determine its kinetic energy. [2 marks]
3. (a) (i) Draw the waste management pyramid and explain **two** good waste management practices [4 marks]
 (ii) State **four** impacts of waste substances on the environment. [2 marks]
- (b) (i) Distinguish between *autotrophic* and *heterotrophic* nutrition. [2 marks]
 (ii) Explain *symbiosis* and describe the three main types of symbiotic relationships in an ecosystem [4 marks]
- (c) (i) What is *organic farming*? [2 marks]
 (ii) Give **two** differences between organic farming and conventional systems of farming. [2 marks]
- (d) (i) Explain the difference between *nuclear fusion* and *nuclear fission*. [2 marks]
 (ii) Give **two** ways to reduce the negative effects of nuclear electric power generation on the environment. [2 marks]
4. (a) (i) Give **two** adaptations of a woodpecker to life on trees. [2 marks]
 (ii) Give **four** adaptations of the fish for living in aquatic ecosystems. [4 marks]
- (b) (i) What are *isotopes*? [2 marks]
 (ii) Give **two** examples of isotopes. [2 marks]
- (c) Describe how each of the following agricultural tools are used.
 (i) Spade;
 (ii) Mattock; [2 marks]
- (d) (i) Give **two** advantages of using solar energy as an energy source. [4 marks]
 (ii) State **two** disadvantages of using solar energy as an energy source. [4 marks]
5. (a) (i) What are *electrovalent compounds*? [2 marks]
 (ii) Give **two** examples of electrovalent compounds. [2 marks]
- (b) Give **four** industrial uses of bacteria. [4 marks]
- (c) (i) Mention **two** natural causes of climate change. [2 marks]
 (ii) State **four** effects of global warming. [4 marks]
- (d) (i) Mention **three** warning signs of periodontal disease. [3 marks]
 (ii) Mention **three** ways of keeping the teeth clean. [3 marks]

END OF ESSAY TEST

DO NOT TURN OVER THIS PAGE 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**

SCIENCE 1
[40 marks]

45 minutes

Answer all the questions on your Objective Test answer sheet.

1. Use **2B** pencil throughout
2. On the pre-printed answer sheet, check that the following details are **correctly** printed:
Your **surname** followed by your **other names**, the *Subject Name*, your *Index Number*,
Centre Number and the *Paper Code*.
3. In the boxes marked Candidate Number, Centre Number and Paper Code, **reshade** each of the shaded spaces.
4. An example is given below. This is for a candidate whose name is Seyram BABANAWO.
Her index number is 772384188 and she is writing the examination at Centre Number 77234.

BEST BRAIN EXAMINATION KONSORTIUM SPECIAL PRIVATE MOCK FOR BECE CANDIDATES OBJECTIVE ANSWER SHEET.

CANDIDATE NAME: SEYRAM BABANAWO	SUBJECT: SCIENCE 1
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1. Use HB Pencil Press firmly 2. Answer each question by choosing one letter and then, shade through the letter chosen like this [A] [B] [C] [D] [E] 3. If you want to change an answer, rul out your	First mark completely 4. If only four alternative answers are given for each question, ignore the letter E 5. Your question paper may have fewer than 60 Questions.
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CANDIDATE NUMBER									
7	7	2	3	8	1	8	8		
[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]		
[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]		
[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]		
[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]		
[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]		
[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]		
[6]	[6]	[6]	[6]	[6]	[6]	[6]	[6]		
[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]		
[8]	[8]	[8]	[8]	[8]	[8]	[8]	[8]		
[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]		

CENTRE NUMBER				
7	7	2	3	4
[0]	[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]	[9]

PAPER CODE			
4	5		0
[0]	[0]		[0]
[1]	[1]		[1]
[2]	[2]		[2]
[3]	[3]		[3]
[4]	[4]		[4]
[5]	[5]		[5]
[6]	[6]		[6]
[7]	[7]		[7]
[8]	[8]		[8]
[9]	[9]		[9]

For Supervisors Only.

If candidate is absent shade this space

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Answer **all** the 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** ☐

☒ **B** ☐

☐ **C** ☐

☐ **D** ☐

Think carefully before you shade the answer spaces. Erase completely any answer you wish to change.

Do all rough work on this paper.

Now answer the following questions.

1. Which planet is known as Earth's "twin" due to its similar size and composition?
 - A. Mars
 - B. Venus
 - C. Neptune
 - D. Mercury
2. Which of the following actions can help reduce your carbon footprint?
 - A. Driving more often
 - B. Using single-use plastics
 - C. Planting trees
 - D. Leaving lights on
3. Which of the following best describes biodiversity?
 - A. Number of individual organisms
 - B. Variety of different species in an area
 - C. Number of ecosystems worldwide
 - D. Genetic similarity within a species.
4. Which part of the ear is responsible for converting sound vibrations into neural signals?
 - A. Ear drum
 - B. Cochlea
 - C. Ear canal
 - D. Outer ear.
5. Sodium hydroxide is a key ingredient in soap making because it .
 - A. helps to convert fats and oils into soap by breaking down fat molecules.
 - B. is responsible for the lathering property of soaps.
 - C. converts fats molecules into oils to make the soap soft enough for molding
 - D. reacts with fats and oils to produce acids that make the soap to lather.
6. How does elevation affect climate?
 - A. Higher elevations are typically warmer
 - B. Higher elevations are typically cooler.
 - C. Elevation has no effect on climate.
 - D. Only coastal elevations affect climate.
7. Which breed of cattle is primarily raised for milk production?
 - A. Angus
 - B. Hereford
 - C. Holstein
 - D. Brahman.

8. A major reservoir of carbon in the carbon cycle is
 - A. nitrogen gas.
 - B. soil.
 - C. ocean.
 - D. rocks.
9. When groundnut paste is mixed with water, the mixture formed is
 - A. a solution.
 - B. a colloid.
 - C. a suspension.
 - D. an emulsion.
10. A common breed of pig known for its rapid growth and good meat quality is
 - A. Yorkshire.
 - B. Merino.
 - C. Nubian.
 - D. Jersey.
11. In the water cycle, precipitation refers to
 - A. formation of clouds.
 - B. falling of water from the atmosphere.
 - C. conversion of water to vapor.
 - D. absorption of water by plants.
12. The primary diet of housefly larvae is
 - A. fresh fruits.
 - B. decaying organic matter.
 - C. leaves.
 - D. wood.
13. The fish species which is widely farmed in freshwater aquaculture is
 - A. salmon.
 - B. tuna.
 - C. tilapia.
 - D. mackerel.
14. The nymph of a grasshopper
 - I. is smaller than the adult.
 - II. do not feed on anything.
 - III. molts several times into adulthood.
 - IV. do not have fully developed wings.
 - A. I, II and III only.
 - B. II, III and IV only.
 - C. I, III and IV only.
 - D. I, II and IV only.
15. In a closed system, the total amount of energy
 - A. increases over time.
 - B. decreases over time.
 - C. remains constant.
 - D. varies randomly.
16. The most vital nutrient in poultry feed is
 - A. fibre.
 - B. protein.
 - C. carbohydrate.
 - D. fat.
17. The planet mercury
 - I. is largest planet in our solar system.
 - II. is the closest planet to the Sun.
 - III. has no moons or rings.
 - IV. is covered in a layer of dust.
 - A. I, II and III only.
 - B. II, III and IV only.
 - C. I, III and IV only.
 - D. I, II and IV only.
18. The primary consideration when selecting feed for a dairy cow is
 - A. high protein content.
 - B. low carbohydrate content.
 - C. high water content.
 - D. low fiber content.
19. If more resistors are added in series in a circuit, the total resistance
 - A. decreases.
 - B. increases.
 - C. remains the same.
 - D. fluctuates.
20. The role of minerals in animal feed is to
 - A. provide energy.
 - B. support bone development.
 - C. increase water intake.
 - D. supply fiber.
21. The mechanical advantage of a pulley system is determined by the
 - A. length of the rope.
 - B. number of pulleys.
 - C. weight of the load.
 - D. distance moved.
22. Which color of light has the longest wavelength?
 - A. Red
 - B. Blue
 - C. Green
 - D. Violet.
23. The pitch of a sound is determined by its
 - A. amplitude.
 - B. wavelength.
 - C. frequency.
 - D. speed.
24. The unit of measurement for the loudness of sound is
 - A. Hertz.
 - B. Decibel.
 - C. Joule.
 - D. Meter.

Turn over

25. High biodiversity typically indicates
 A. a stable and healthy ecosystem.
 B. a declining ecosystem.
 C. low genetic variation.
 D. high pollution levels.
26. Which of the following human activities is a major threat to biodiversity?
 A. Conservation efforts
 B. Habitat destruction
 C. Sustainable farming
 D. Ecotourism.
27. The process that powers the sun is called
 A. nuclear fission.
 B. chemical reaction.
 C. combustion.
 D. nuclear fusion.
28. Which type of climate is typically found at high altitudes?
 A. Tropical
 B. Desert
 C. Polar
 D. Alpine.
29. The sperm cell is a specialized cell that
 I. is covered by a cap-like structure.
 II. has a nucleus that contains genetic material.
 III. It has a long whip-like tail.
 IV. is small and streamlined.
 A. I, II and III only.
 B. II, III and IV only.
 C. I, III and IV only.
 D. I, II, III and IV.
30. One characteristic of a well-prepared seed bed is
 A. compacted soil.
 B. loose and fine soil texture.
 C. large clumps of soil.
 D. uneven surface.
31. When an object is in forward bias in an electronic circuit,
 A. it conducts electricity.
 B. it blocks the flow of current.
 C. it stores electrical charge.
 D. it emits light.
32. Which digestive organ produces insulin?
 A. Liver
 B. Stomach
 C. Pancreas
 D. Small intestine
33. Which planet has a day longer than its year?
 A. Mercury
 B. Venus
 C. Earth
 D. Mars.
34. Which of the following is a form of potential energy?
 A. Sound
 B. Electrical
 C. Chemical
 D. Light.
35. A wedge is used to
 A. lift heavy loads.
 B. hold materials together.
 C. separate materials.
 D. increase speed.
36. Sound energy travels fastest through
 A. air.
 B. water.
 C. vacuum.
 D. solid.
37. Kinetic energy depends on
 A. mass and height.
 B. speed and distance.
 C. mass and speed.
 D. height and speed.
38. Which inner planet has no atmosphere?
 A. Mercury
 B. Venus
 C. Earth
 D. Mars.
39. The layer of the sun that we can see is the
 A. core.
 B. corona.
 C. photosphere.
 D. chromosphere.
40. According to Newton's Third Law.
 I. every action has an effect.
 II. for every effect there is a cause.
 III. there is no action without a corresponding reaction.
 A. I and III only.
 B. III only.
 C. II and III only.
 D. I, II and III.

END OF PAPER