

BASIC EDUCATION MOCK EXAMINATION
December
SCIENCE 2 & 1
Essay and Objective
2 hours 10 minutes

Name:

Index Number:

2 & 1

ONE VISION EXAMINATIONS CENTRE (OVEC)

BASIC EDUCATION MOCK EXAMINATION

December

SCIENCE 2 & 1

2 hours 10 minutes

Essay and Objective

BASIC 9

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** parts. Answer Paper 2 which comes first in your answer booklet and Paper 1 on the Objective Test answer sheet. Paper 2 will last **1** hour **25** minutes after which answer booklet will be collected. Do **not** start Paper 1 until you are told to do so. Paper 1 will last **45** minutes.

PAPER 2
ESSAY
[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**.

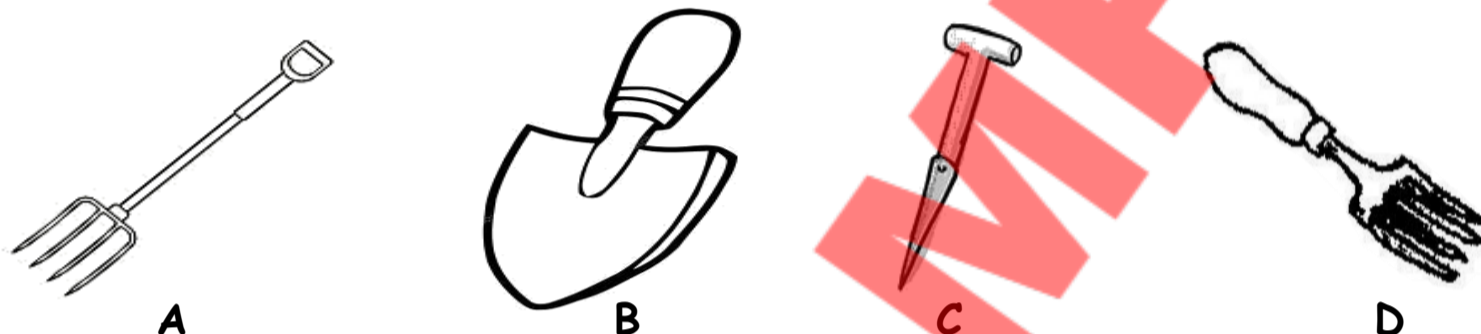
Answer **all** the questions in your answer booklet.

Credit will be given for clarity of expression and orderly presentation of material.

SECTION A
[40 marks]

Answer **all** questions in this section.

1. (a) Figure 1(a) is an illustration of agricultural tools used to carry out activities on the farm. Study the diagrams carefully and answer the questions that follow.



- What other name can be given to the devices illustrated?
- State two effects of the use of the device **D** on the soil.
- State one use of each of the tools labelled **B**, **C** and **D**.
- State three ways of prolonging the usefulness of the device labelled **A**.

(b) In an experiment, equal volumes and equal concentrations of dilute carbonic acid and dilute sodium hydroxide solutions were each placed in different test tubes.

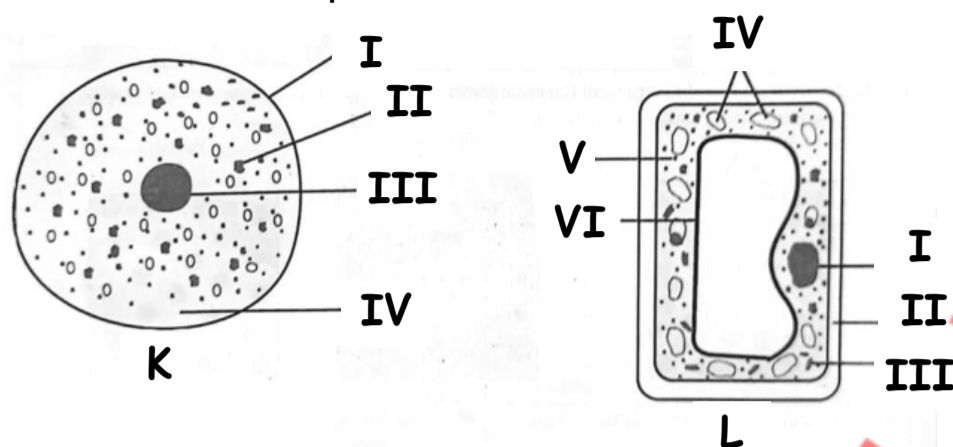
Read the following statements carefully

- Both red and blue litmus papers were dipped into each of the solutions in turn.
- Equal volumes of the solutions were mixed to obtain a third solution.
- Both red and blue litmus papers were dipped into the third solution.

Use the information provided to answer the following questions.

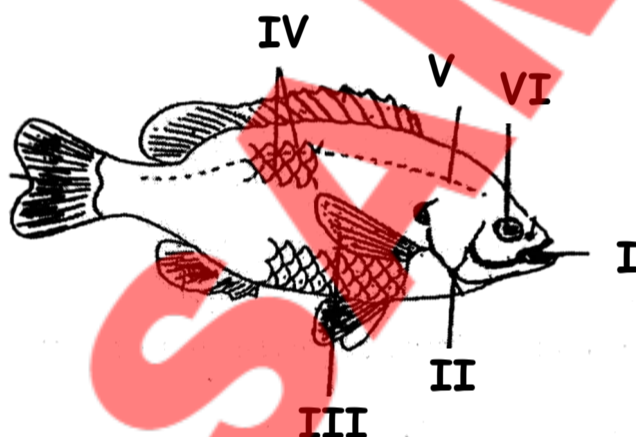
- State the type of reaction that occurred when the two solutions were mixed.
- What type of solution was formed when the reaction stated in (i) occurred?
- Explain briefly how you can identify each of the solutions:
 - Carbonic acid;
 - Sodium hydroxide.
- State the observation that would be made when both red and blue litmus papers were dipped into the third solution.
- Write a balanced chemical equation for the reaction between the two solutions to produce the third solution.

(c) The diagrams below are illustrations of two cells labelled **K** and **L**. Study them carefully and answer the questions that follow.



- Identify the diagrams labelled **K** and **L**.
- Name the parts labelled **I**, **II**, and **IV** in diagram **K**.
- Name the parts labelled **I**, **II**, and **VI** in diagram **L**.
- Give two differences between **K** and **L**.

(d) Figure 1(d) is an illustration of a fish. Study it carefully and answer the questions that follow.



- Identify the fish.
- State and explain the dwelling place of the organism.
- Name three body features and their usefulness to the organism in its habitat.
- Explain how the fish takes in oxygen.
- Outline two benefits of rearing fish.

SECTION B
[60 marks]

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

2. (a) Classify each of the following substances as an element, compound or mixture

- | | |
|----------------|------------|
| i. air; | ii. brass; |
| iii. chlorine; | iv. gold; |
| v. water. | |

(b) i. Write four properties of acids.

ii. What is an acid?

iii. Give two differences between an acid and a base, in terms of taste and feel.

(c) Copy and complete the table below:

Disease	Causative agent	Prevention/control
Cholera	Vibrio spp	Eating hot food
i	Plasmodium	ii.
Ringworm	iii.	iv.
v.	SARS-COV-2 VIRUS	vi.

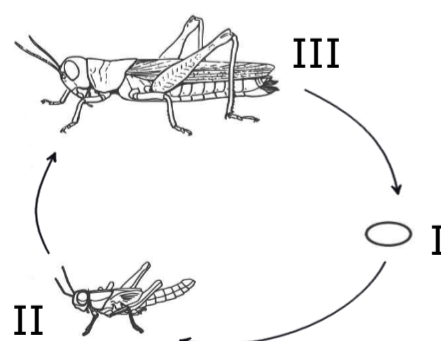
(d) An atom **W** has an atomic number of 17. It gains one valence electron in order to be stable.

- i. State the proton number of the atom before it gains electrons.
- ii. State the electron number of the atom,
 - (a) before it gains an electron
 - (β) after gaining an electron.
- iii. Name the type of ion formed by the atom when it gained one electron.

3. (a)
 - i. Mention four benefits of rearing farm animals in Ghana.
 - ii. State three ways the government of Ghana can promote agriculture.
 - iii. Give three importance of feed in farm animals.
- (b)
 - i. Explain the term waste management.
 - ii. Mention two benefits of recycling waste in the environment.
 - iii. Outline four human activities that constantly pollute the environment.
- (c)
 - i. Explain the term leaching.
 - ii. State two effects of leaching on the nitrogen cycle.
 - iii. List two importance of the nitrogen cycle to the environment.
- (d)
 - i. Differentiate between climate and climate change
 - ii. Outline four factors that determine the climatic condition of a place.
 - iii. State four effects of climate change on the environment.

4. (a)
 - i. What is meant by specialized cells?
 - ii. Mention three examples each of specialized cells in
 - a. Animals
 - β. Plants
 - iii. State two differences between the cell membrane and the cell wall.

(b) Figure 4 (b) illustrates the life cycle of an organism. Study it carefully and answer the questions that follow:



- i. Name the organism that undergoes the life cycle above.
- ii. State and explain the type of metamorphosis it undergoes.

- iii. Mention three activities of the organism that are beneficial to humans.
 - iv. Identify the stages labelled I, II and III.
- (c) i. What is a satellite?
ii. State two differences between a natural satellite and an artificial satellite.
iii. State two uses of an artificial satellite.
- (d) i. Define the term machine.
ii. A simple machine moves a load of 20N through a distance of 2m. If it uses an effort of 25N, which moves through a distance of 4m. Calculate the:
 a. Work input;
 β. Work output,
 δ. Efficiency of the machine.
5. (a) i. Name the two elements that combine to form ammonia gas.
 ii. Write a balanced chemical equation for the formation of ammonia from the elements named in 5(i) above.
- (b) i. What is reflection of light?
 ii. Sketch a diagram to show the path of a light ray when it travels from air to glass.
 iii. State two uses of a plane mirror in our daily life activities
- (c) Briefly explain the following:
i. α. Science;
 β. Technology;
 δ. Innovation.
ii. State three harmful effects of science and technology on society.
iii. State four careers one can pursue after studying science.
- (d) Explain briefly how each of the following farming systems is practised:
i. Ecological farming;
ii. Monoculture;
iii. Mono-cropping.

END OF ESSAY TEST

BASIC 9

SCIENCE

**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.**

Answer **all** questions in this section.

Each question is followed by **four** options lettered A to D. Find 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. An example is given below

Which of the following substances is not an element?

- A. Aluminium
- B. Ammonia
- C. Oxygen
- D. Sodium

The correct answer is 'Ammonia' 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 question paper. Now answer the following questions

1. A force of 10N is exerted on a piece of yam using a knife of cross-sectional area $1 \times 10^{-3} \text{m}^2$. Determine the pressure exerted.
 - A. 1000Pa
 - B. 10000Pa
 - C. 100Pa
 - D. 0.100Pa
2. Which of the following mixtures can be separated by filtration?
 - A. Salt in water
 - B. Sugar in water
 - C. Omo in water
 - D. Sand in water
3. Which of the following statements about the negative use of science and Technology is correct? It
 - A. promotes easy communication
 - B. creates things that are dangerous to the environment
 - C. promotes good health
 - D. enables humans to use less energy at work
4. Gases are more compressible than solids because
 - A. the molecules of gases are randomly arranged
 - B. the particles of the solid are regularly arranged
 - C. solids have harder surfaces
 - D. there are wider spaces between gas molecules
5. The most productive soil in agriculture is
 - A. clayey soil
 - B. sandy soil
 - C. loamy soil
 - D. humus
6. An example of a vegetable crop is
 - A. cocoa
 - B. cotton
 - C. potato
 - D. tomato
7. Which of the following methods best controls bacterial diseases?
 - A. Vaccination
 - B. Purification of water
 - C. Proper disposal of sewage
 - D. Disinfection
8. In humans, urine moves from the kidneys to the urinary bladder through the
 - A. renal vein
 - B. collecting duct
 - C. ureter
 - D. urethra
9. The following are cultural practices in crop production except.
 - A. mulching
 - B. pest control
 - C. weeding
 - D. nursing
10. A patient who coughs and spits out blood may be suffering from
 - A. asthma
 - B. pneumonia
 - C. influenza
 - D. tuberculosis

11. Which of the following diseases is not a deficiency disease?
 A. Scurvy
 B. Cholera
 C. Beriberi
 D. Goiter
12. An atom has 20 nucleons and 9 protons. What is its neutron number?
 A. 9
 B. 10
 C. 11
 D. 12
13. An organelle of an animal cell that is responsible for the formation of spindle fibres during cell division is called
 A. centrioles
 B. lysosome
 C. vacuole
 D. mitochondrion
14. The third stage of the life cycle of a housefly is
 A. egg
 B. adult
 C. larva
 D. pupa
15. An example of a poultry is
 A. pig
 B. cattle
 C. turkey
 D. grasshopper
16. Digestion of protein takes place in the
 A. mouth
 B. stomach
 C. duodenum
 D. liver
17. The use of prokaryotes to remove pollutants from the environment is termed
 A. recycling
 B. biotechnology
 C. bioremediation
 D. waste management
18. Fuel made from plant or animal matter is called
 A. chemical energy
 B. tidal
 C. biomass
 D. nuclear energy
19. The element with the chemical symbol S is
 A. Silicon
 B. Sodium
 C. Sulphur
 D. Silver
20. In electrical circuits, the component that protects appliances against very high current is the
 A. fuse
 B. capacitor
 C. resistor
 D. switch
21. Foot rot disease in animals is caused by
 A. bacteria
 B. protozoa
 C. fungi
 D. viruses
22. An example of a third-class lever is
 A. wheelbarrow
 B. crowbar
 C. pair of scissors
 D. sugar tongs
23. Which of the following liquids would turn blue litmus paper red?
 A. Water
 B. Ammonia solution
 C. Vinegar
 D. Bicarbonate solution
24. A body of mass 6kg moves with an acceleration of 10ms^{-2} . Calculate the force of the body.
 A. 0.60N
 B. 600N
 C. 1.6N
 D. 60N
25. All the following are symptoms of food poisoning except
 A. vomiting
 B. chills
 C. abdominal pains
 D. sore throat
26. The ability of water to pass through soil is called
 A. soil capillarity
 B. soil porosity
 C. soil permeability
 D. soil texture

27. Which of the following controls the opening and closing of the stomata in a green leaf?

- A. Guard cells
- B. Root hair cells
- C. Epidermal cells
- D. Cambium

28. The practice of starting a new organisation in response to identified opportunities is termed

- A. agribusiness
- B. entrepreneurship
- C. business enterprise
- D. management

29. The scientist who discovered penicillin is called

- A. Charles Darwin
- B. Stephen Hawking
- C. Alexander Fleming
- D. Albert Einstein

A machine lifts a load of 100N through a vertical distance of 2m in 10s.

Use the information to answer questions 30 and 31.

30. What is the work done by the machine?

- A. 50J
- B. 100J
- C. 200J
- D. 400J

31. What is the power of the machine?

- A. 50W
- B. 20W
- C. 10W
- D. 2W

32. Which of the following is the best method of preventing skin disease?

- A. The use of perfume on the skin
- B. The use of bleaching cream on the skin
- C. Avoiding contact with a diseased person
- D. Keeping the skin clean by washing regularly

33. The effect of illegal connection of electricity is, it can

- A. lead to frequent power supply
- B. increase the flow of current in the supply chain
- C. lead to frequent power cut-offs
- D. prolong the life span of the electrical appliance

34. The feed with a high proportion of easily digestible carbohydrates is

- A. basal feeds
- B. Concentrates
- C. roughages
- D. supplements

35. The sixth planet from the sun in the solar system is the

- A. Mercury
- B. Jupiter
- C. Neptune
- D. Saturn

36. The ability of birds to fly depends on their

- A. hollow bones only
- B. flight feather only
- C. feathers cover their bodies
- D. hollow bones and flight feathers

37. Which of the following substances is a compound?

- A. Oxygen
- B. Water
- C. Magnesium
- D. Sodium

38. The function of the white blood cells in humans is to

- A. produce haemoglobin
- B. ensure blood clotting during an injury
- C. produce antibodies to engulf the disease-causing organism
- D. produce digestive enzymes

39. The period left for a land to regain its fertility is called

- A. fallowing
- B. erosion
- C. fallow period
- D. leaching

40. Which of the following cells transport dissolved food around the plant?

- A. Xylem cell
- B. Epidermal cell
- C. Stomata
- D. Phloem cell