

**FREE** VIRTUAL MOCK EXAMINATION (2)  
APRIL 2020  
INTEGRATED SCIENCE  
ESSAY and OBJECTIVE  
2 HOURS

**2 & 1**

Name: .....

Index Number.....

## **GB ASSESSMENT TEST (GBAT)**

**FREE** VIRTUAL MOCK EXAMINATION (2)

**April 2020**

**INTEGRATED SCIENCE 2 & 1**

**2 hours**

*All answers must be provided on clean sheet of papers (Answer booklet).*

Write your name and index number on the sheets.

This examination 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 for 1 hour 15 minutes and is in two parts; **I & II**. Answer all questions in part I and any other **four** questions in part II.

Answer all questions in your answer booklet.

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

***DESIST FROM REFERING TO BOOKS BEFORE PROVIDING ANSWERS***

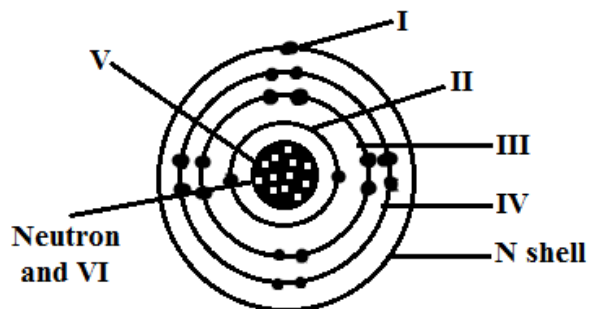
***#COVID-19. STAY HOME. STAY SAFE.***

## INTEGRATED SCIENCE 2

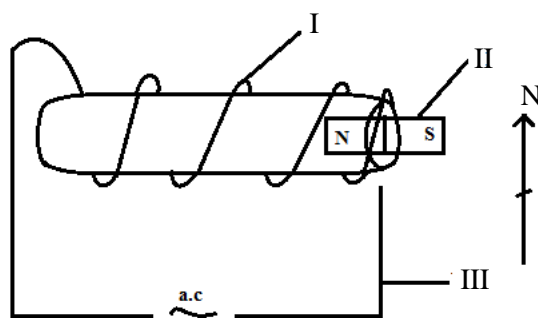
This paper is in two parts; **I & II**. Answer all questions in part I and any other **four** questions in part II.

### PART I

1. (a) The diagram below shows the structure of an atom. Study it carefully and answer the questions that follow.



- Identify the parts labelled I, II, III, IV, V and VI. [3 marks]
  - What maximum number of the part labelled I can the N shell take? [1 mark]
  - If the mass number of the atom above is 39. Find:
    - the number of protons present in the atom.
    - the atomic number of the atom.
    - the number of neutrons present in the atom.
    - the name of the element and its chemical symbol. [4 marks]
  - Explain why atoms are electrically neutral. [2 marks]
- (b) The diagram below shows how to demagnetize a magnet by electrical method using an alternative current (a.c). Study it carefully and answer the questions that follow

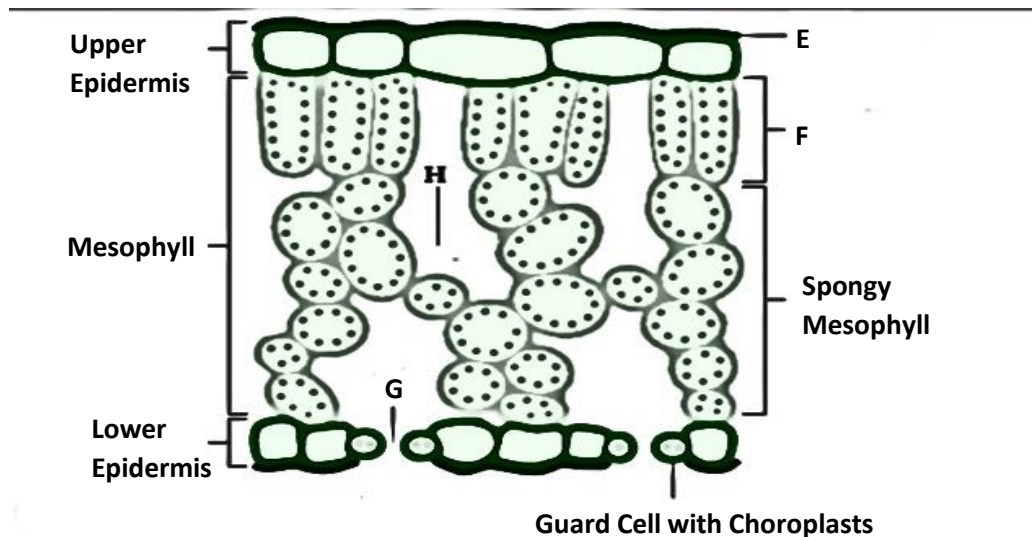


- Give the names of the parts of the circuit labelled I, II, and III, [3 marks]
- Rearrange the steps below to give the correct procedure in which the experiment was carried.
  - Switch on A.C supply
  - Place the part labelled II inside the part labelled I.
  - Connect the part labelled I to an alternative current supply.

4. Slowly withdraw the part labelled II in East-West direction until it is some distance away from the part labelled I while a.c current is still on. [4 marks]

iii. List two other methods which can be used to demagnetize a magnet. [3 marks]

(c) The diagram shows a section through a leaf. Carefully study the figure and answer the questions that follow.



i. In which structure does photosynthesis take place? [2 mark]

ii. Name the substance in chloroplasts which absorbs light. [2 mark]

iii. Through which structure does carbon dioxide enter the diagram? [3 mark]

iv. What role does sunlight play in photosynthesis? [3 marks]

(d) Your science class embarked on a field trip to Mr. Nimo's vegetable crops farm. Study the images below carefully and use them to answer the questions.



A



B

i. Identify images A and B above. [2 marks]

ii. Which image is Mr. Nimo likely to stake? [2 marks]

iii. What will necessitate the action in (ii) above? [2 marks]

iv. State four (4) cultural practices Mr. Nimo will undertake in future on his vegetable farm. [4 marks]

## PART II

Answer only **four (4)** questions from this part

2. (a) i. What is force?  
ii. Would an elephant standing on one leg exert a higher force on a scale than an elephant standing on four legs. Why? [4 marks]
- (b) Explain each of the following terms as used in ecology:  
i. Adaptation of living things.  
ii. Endangered species. [4 marks]
- (c) i. What is a metal?  
ii. State two (2) examples of non-metal.  
iii. Complete the chemical equation;  $\text{Na} + \text{H}_2\text{SO}_4 \rightarrow$  [3 marks]
- (d) Name one animal which is attacked by the following diseases.  
i. New castle      ii. Anthrax      iii. Avian flu      iv. Foot rot [4 marks]
3. (a) i. What is doping?  
ii. What happens when silicon atom is doped with aluminum atom? [4 marks]
- (b) i. What is a transistor?  
ii. Give two (2) uses of a transistor.  
iii. Is force of gravity constant over the entire earth surface. Why? [4 marks]
- (c) i. Explain how the process of fertilization takes place in animals.  
ii. Name the two (2) systems in a growing plant. [3 marks]
- (d) i. Define camouflage as a protective measure of some animals as preys.  
ii. Mention any two (2) animals that use camouflage. [4 marks]
4. (a) i. A rectangular surface which measures 4m by 3m has a mass of 144kg. What will be the pressure acting on the surface? [take  $g=10\text{m/s}^2$ ]  
ii. Does a metal rubbed through the hair attract pieces of paper. Why? [4 marks]
- (b) i. Why do we balance chemical equations?  
ii. Aluminum chloride and bubbles of hydrogen gas are produced when metallic aluminum is placed in dilute hydrochloric acid, write a balanced chemical equation. [3 marks]
- (c) i. What is a disease?  
ii. Distinguish between infectious diseases and non-infectious diseases.  
iii. Mention four (4) disorders of our digestive system. [5 marks]
- (d) i. Mention any two (2) host organisms of tick.  
ii. State three (3) ways of controlling pests and parasites. [3 marks]

5. (a) i. What is friction?  
 ii. Give four (4) reasons why friction is important in everyday life.  
 iii. Yaw has fallen through the ice of a frozen lake, can he be rescued by his friend Kofi when Kofi crawls across the ice on his stomach rather than walking? Explain [6 marks]
- (b) Explain the following terms  
 i. Menstruation  
 ii. Ejaculation  
 iii. Fertilization [3 marks]
- (c) i. Define a base  
 ii. How different is a base from an acid in terms of taste? [2 marks]
- (d) i. List four (4) ways by which soil fertility can be lost.  
 ii. State four (4) ways of maintaining soil fertility. [4 marks]
6. (a) i. What happens to the speed of light when a light moves from a less dense medium to an optically denser medium?  
 ii. What will be the relationship between the angle of incidence and angle of refraction in (i) above  
 iii. How do the wide tyres of tractors help them to drive out of muddy fields? [4 marks]
- (b) i. What is a radical?  
 ii. List the ions of the following:  
 α. Ammonium  
 β. Nitrate  
 μ. Sulphate  
 ¥. Permanganate [5 marks]
- (c) i. Complete the table below
- | Organism     | Respiratory Organ |
|--------------|-------------------|
| Bluefin Tuna |                   |
| Scorpion     |                   |
| Louse        |                   |
| Horse        |                   |
- ii. Mention any two (2) functions of the energy used by living organisms during the process of respiration
- (d) i. What is a compost?  
 ii. State two (2) advantages of using organic fertilizers. [3 marks]

**END OF ESSAY**

Answer **all** the questions.

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 space which bears the same letter as the option you have chosen. Give only **one** answer to each question.

1. When a fuse is rated 8A, it means
  - A. it will not work if the current is less 8A
  - B. it has a resistance of  $8\Omega$
  - C. it will work if only current is 8A
  - D. it will melt if current exceeds 8A
2. A substance that ionizes completely into hydrogen ions is known as
  - A. strong acid
  - B. alkaline
  - C. weak base
  - D. strong base
3. The dodder on milk bush is an example of
  - A. a plant parasite on an animal host
  - B. an animal parasite on an animal host
  - C. a plant parasite on a plant host
  - D. an animal parasite on a plant host
4. From which elements are sand materials found?
  - A. sodium and potassium
  - B. silicon and oxygen
  - C. hydrogen and oxygen
  - D. calcium and aluminium
5. The potential energy of a mobile phone with mass 5kg is 150J. Calculate the height of the phone above the ground. If gravity is  $10\text{m/s}^2$ 
  - A. 3m
  - B. 30m
  - C. 300m
  - D. 3000m
6. The main constituent of steel is.....
  - A. copper and tin
  - B. iron and chromium
  - C. iron and carbon
  - D. copper and zinc
7. Identify the possible link 'A' in the food chain below  
Plant → Insect → frog → A → Eagle
  - A. Cobra
  - B. Grass
  - C. Rabbit
  - D. Wolf
8. Yam is to potatoes, as onion is to
  - A. cocoyam
  - B. canna lily
  - C. ginger
  - D. garlic
9. 2.6km is equivalent to
  - A. 26m
  - B. 260m
  - C. 2600m
  - D. 26000m
10. Metals that are usually used to make ornaments have low
  - A. reactivity
  - B. ductility
  - C. conductivity
  - D. malleability
11. Which one of the following metals react rigorously with oxygen and water?
  - A. Sodium
  - B. Aluminium
  - C. Calcium
  - D. Magnesium
12. Which of the following farm tools looks like a large scissors?
  - A. Sickle
  - B. Dibber
  - C. Shears
  - D. Pruning saw
13. The resistors  $2\Omega$ ,  $3\Omega$  and  $4\Omega$  are connected so that the equivalent resistance is  $9\Omega$ . The resistors are connected in
  - A. all in series
  - B. all in parallel
  - C.  $2\Omega$  and  $3\Omega$  in parallel and the combination in series with  $4\Omega$
  - D.  $2\Omega$  and  $3\Omega$  in series and the combination in parallel to  $4\Omega$

14. The property of biological membranes that allow only certain substances to pass through them is
  - A. osmosis
  - B. diffusion
  - C. selective permeability
  - D. facilitated diffusion
15. The methods of separating mixtures which combines evaporation and condensation is known as
  - A. simple distillation
  - B. filtration
  - C. sublimation
  - D. decanting
16. Shifting cultivation is phasing-out in Ghana due to.....
  - A. increase in death role
  - B. low productivity
  - C. increase in population growth.
  - D. high demand for technology
17. Francis needs to split a log. What simple machine would help him?
  - A. A pulley
  - B. A lever
  - C. Wedge
  - D. Fulcrum
18. The second stage in the life cycle of a mosquito is
  - A. pupae
  - B. larvae
  - C. eggs
  - D. adult
19. Which of the following can best be compared to soldiers?
  - A. Lung
  - B. Capillary
  - C. Red blood cell
  - D. White blood cell
20. Sheet erosion is caused by
  - A. fast running rivers
  - B. wind
  - C. heavy rain
  - D. glaciers
21. Which of the following structure carries sperm to the penis during ejaculation?
  - A. Epididymis
  - B. Vas deference
  - C. Cowpers gland
  - D. Erectile tissues
22. The mixture of specimen (*sperm*) and accessory fluid is called
  - A. fertilization
  - B. coitus
  - C. ejaculation
  - D. semen
23. Which structure is considered the female reproductive part of a flowering plant?
  - A. Stamen
  - B. Petal
  - C. Carpel
  - D. Sepal
24. The period between the process in which the blastocyst embeds itself in the endometrium of the uterus and childbirth is
  - A. implantation
  - B. gestation period
  - C. copulation
  - D. pregnancy
25. Temperatures on the mountains are generally much lower than at the sea level because
  - A. temperature decreases with decreasing elevation
  - B. temperature increases with decreasing elevation
  - C. temperature decreases with increasing elevation
  - D. temperature increases with increasing elevation
26. Where does the partly digested food in liquid form go after it leaves the stomach?
  - A. Gullet
  - B. Appendix
  - C. Small intestine
  - D. Large intestine
27. Examples of diffusion include all the following except
  - A. movement of oxygen and carbon dioxide in and out of the leaf
  - B. movement of solute food molecules through the intestinal wall into the bloodstream

- C. movement of carbon dioxide from the body cells in the bloodstream and oxygen from the bloodstream into body cell
- D. movement of water in and out of guard cells resulting in the opening and closure of stomata
28. The diffusion of a solvent through a semi permeable membrane from a region of low solute concentration to a region of high solute concentration is called
- diffusion
  - osmosis
  - permeability
  - transportation
29. Oxygenated blood leave the human heart through the
- pulmonary vein
  - pulmonary artery
  - vena cava
  - aorta
30. Which of the following nutrients should be recommended as a supplement to the diet for a child with growth retardation, inability to walk and bruises all over her body?
- Milk
  - Egg yolk
  - Citrus fruit
  - Pulses
31. The mass of a body is measured in kilogram, and is a scalar quantity. This means that mass has
- magnitude (size) and does not act in any direction
  - magnitude (size) and acts in a particular direction
  - no magnitude and does not act in any direction
  - no magnitude but acts in a particular direction
32. Which of the following is a usual host of capsids?
- Cocoa
  - Cassava
  - Sheep
  - Milk bush
33. Which of the following is not matter?
- Petrol.
  - Dust.
  - Air.
  - Sound.
34. Substances which are bitter in taste feel soapy on touching are known as
- acids
  - bases
  - indicators
  - neutral solutions
35. When water changes into steam, there is an/a
- decrease in mass
  - increase in volume
  - decrease in volume
  - increase in mass
36. Young bush develop pale greenish-yellow discoloration between the veins, when plants lack
- molybdenum
  - calcium
  - potassium
  - manganese
37. Fertilization of the ova in human takes place in
- ovary
  - vagina
  - fallopian tube
  - uterus
38. Which of the following is not correctly matched?
- Calcium - Ca
  - Silver - Ag
  - Gold - Au
  - Copper - Co
39. The warning sign below represents
- 
- oxidising
  - toxic
  - dangerous voltage
  - radioactivity
40. All are local vegetables except
- okro
  - cucumber
  - garden eggs
  - cocoyam leaves



