

**FREE VIRTUAL MOCK EXAMINATION (3)**

APRIL 2020

**INTEGRATED SCIENCE**

**ESSAY and OBJECTIVE**

**2 HOURS**

**2&1**

Name: .....

Index Number.....

**GB ASSESSMENT TEST (GBAT)**

**FREE VIRTUAL MOCK EXAMINATION (3)**

**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.***

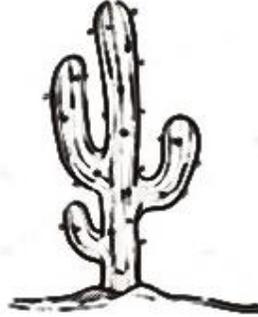
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## INTEGRATED SCIENCE 2

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

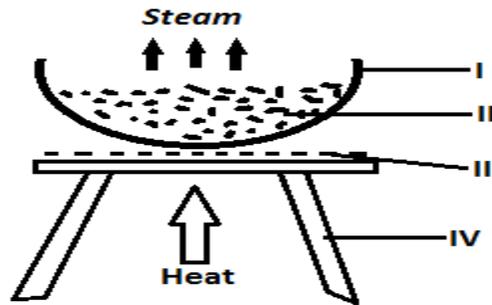
### PART I

1. (a) The illustration below shows an organism. Study it carefully and answer the questions that follow



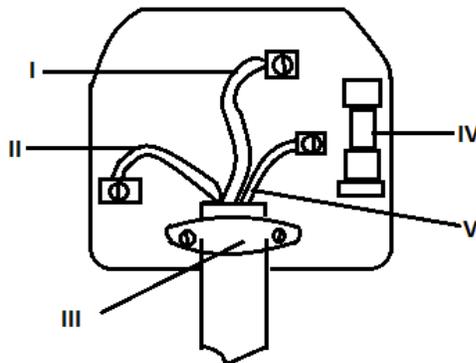
- i. Identify the organism in the image above. [2 marks]
- ii. Where can the organism be mostly located? [2 marks]
- iii. State three (3) adaptive features which will enable the organism adapt to (ii) above. [6 marks]

(b) A student wanted to demonstrate the presence of water in soil. Study the experiment below and answer the questions that follow.



- i. Identify the parts labelled I, II, III and IV. [4 marks]
- ii. Rearrange the steps in the correct order in which the experiment was carried out. [2 marks]
  - α. Half fill I with II.
  - β. Heat I and its content over a bunsen burner at a temperature of about 100°C.
  - μ. Take a sample of II from a depth of about 20cm.
  - ¥. Weigh I and its content and record.
- iii. Why was the part labelled I and its content heated at a temperature of about 100°C and not 70°C? [2 marks]
- iv. What observation was made from the experiment? [2 marks]

- (c) The illustration below shows the internal parts of a three –pin plug. Carefully study the illustration and answer the questions the follow.



- i. Identify the parts labelled I, II, III, IV and V [2.5 marks]
  - ii. State any two roles of the part labelled IV in the illustration. [3 marks]
  - iii. Name the colours of the parts labelled I, II, and V [1.5 marks]
  - iv. List any three chemical appliances that have the part labelled IV [3 marks]
- (d) Read the account of Kwame below carefully. Identify the activities and the energy transformation in each activity.

*Kwame wakes up very early in the morning to prepare for school because the church bell was tolled. He rubbed his palm together to feel warm because it was cold at dawn. He then turned on the electric iron to iron his uniform.*

*He gets to school to meet the headmaster using the new public address system to address morning assembly.*

*After school, he picked up a stone and threw it vertically up into the air but the stone fell back to the ground when he tried catching it.*

[10 marks]

## PART II

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

2. (a)
  - i. What is a chemical formula?
  - ii. Give the chemical formula of the compound added to food to give taste [4 marks]
- (b) Explain the following types of forces
  - i. Electrostatic force
  - ii. Force of Gravity
  - iii. Tensional force [6 marks]
- (c)
  - i. What is an enzyme?

- ii. State any three (3) characteristics of enzymes. [3.5 marks]
- (d) In what three (3) ways does afforestation differ from deforestation? [1.5 marks]
3. (a) Describe how you will determine the area of a pawpaw leaf. [3 marks]
- (b) Define the following terms [3 marks]
- i. Atomic number
  - ii. Neutrons
  - iii. Electronic configuration
- (c) i. What is tissue respiration? [3 marks]
- ii. Write a balanced chemical equation that summarises tissue respiration in humans [2 mark]
- (d) Gershon bought a land from Cosky to grow tomatoes. A specialist notified Gershon that the soil has a pH of 3. The specialist advised Gershon to mix the soil with ash. The advice seemed very weird to him.
- i. Explain to Gershon the usefulness of the ash [2 marks]
  - ii. What nutrients will the ash provide? [2 marks]
4. (a) i. What is dentition? [2 marks]
- ii. State one function of the parts of the mammalian tooth [2 marks]
- ( $\alpha$ ) Enamel
  - ( $\beta$ ) Dentine
- (b) i. What is an alloy? [1 mark]
- ii. State four (4) properties of an alloy. [4 marks]
- (c) i. What is p-n junction? [1 mark]
- ii. Briefly explain the following terms as used in the study of p-n junctions [2 marks]
- $\alpha$ . Forward-bias
  - $\beta$ . Reverse-bias
- (d) i. Mention four (4) characteristics of a fertile soil. [2 marks]
- ii. List two (2) nutrients needed by plants in very small amount for their proper functioning. [1 mark]
5. (a) i. How is an image formed? [2 marks]
- ii. State any two (2) differences between real and virtual images. [2 marks]
- (b) i. List two (2) benefits of habitats to organisms. [2 marks]
- ii. Below is the pattern of food chain. Identify I and II [2 marks]
- Producer  $\rightarrow$  I  $\rightarrow$  II  $\rightarrow$  Tertiary consumers
- (c) Differentiate between the following: [2 marks]
- i. Solute and solvent
  - ii. Emulsion and Solution

- (d) i. Mention four (4) constituents of the soil. [2 marks]  
ii. State three (3) physical differences between clayey soil and sandy soil. [3 marks]
6. (a) i. Describe how water can be purified by the following methods [3 marks]  
( $\alpha$ ) Distillation  
( $\beta$ ) Addition of alum  
( $\gamma$ ) Filtration  
ii. State any three (3) uses of water in agriculture [1.5 marks]
- (b) i. Briefly explain why electrical circuit in our homes are connected in parallel [1.5 marks]  
ii. If a loudspeaker has a resistance of 20 ohms and a current of 4.8A flows through it, calculate the voltage that passes through the loudspeaker. [2 marks]
- (c) i. Distinguish between; [3 marks]  
( $\alpha$ ) Pulmonary artery and Pulmonary vein  
( $\beta$ ) Pulmonary circulation and systematic circulation  
( $\gamma$ ) Oxygenated blood and deoxygenated blood  
ii. State three (3) reasons why blood is important in human body. [1.5 marks]
- (d) i. What is milling? [1 mark]  
ii. Give three (3) reasons for controlling diseases in crop production. [1.5 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. The sky appears blue because
  - A. that is its original colour
  - B. the earth's atmosphere emits blue light
  - C. the air away from the sun cools down and turns blue
  - D. the earth's atmosphere scatters more blue light than red
2. Which of the following is true of methane gas?
  - A. It has a fixed volume and shape
  - B. It has a fixed volume but no fixed shape
  - C. It has no fixed volume but fixed shape
  - D. It has neither a fixed volume nor a fixed shape
3. The shoot system of a flowering plant include the following except
  - A. stem
  - B. buds
  - C. fruits
  - D. roots
4. Which of this farming system is predominant in the rural areas of Ghana?
  - A. Shifting cultivation
  - B. Mixed cropping
  - C. Crop rotation
  - D. Fish farming
5. What important activity takes place in the lungs?
  - A. Food is digested
  - B. Liquid waste is filtered
  - C. Oxygen is exchanged for carbon dioxide
  - D. The trachea is exchanged for the larynx
6. The amount of oil that may become available for use is called
  - A. reserves
  - B. resides
  - C. oil field
  - D. traps
7. Which of the following pair cannot represent matter?
  - A. Book and pen
  - B. Car and box
  - C. Light and sound
  - D. Mobile phone and chip
8. Cerebrospinal meningitis is caused by a
  - A. virus
  - B. bacteria
  - C. fungus
  - D. plasmodium
9. The scientific method involves
  - A. formulation of hypothesis
  - B. testing of hypothesis
  - C. analysis of data and drawing conclusions
  - D. all of the above
10. The Pascal (pa) unit of pressure is written as
  - A. mg/ml
  - B. MmHg
  - C. Kgm<sup>2</sup>
  - D. Nm<sup>-2</sup>
11. The greater the mass of an object.....
  - A. the more matter it contains
  - B. the less matter it contains
  - C. its matter remains constant
  - D. its matter is not affected
12. Oxygen moves from the lungs into the bloodstream through....
  - A. nerve fibres
  - B. large artery in the heart
  - C. small blood vessels in the lungs
  - D. a tube in the lungs called jugular vein
13. An atom with 5 protons, 6 neutrons, and a charge of 3+ has an atomic number of
  - A. 5
  - B. 6
  - C. 8
  - D. 11

14. The colour of the soil presented for laboratory work was light brown. Which horizon of the soil was presented?
- A. A horizon
  - B. B horizon
  - C. C horizon
  - D. D horizon
15. The image formed by a plane mirror is always
- A. real and erect
  - B. virtual and erect
  - C. real and inverted
  - D. virtual and inverted
16. The organ in the female reproductive system similar to men's penis is
- A. vagina
  - B. clitoris
  - C. cervix
  - D. vulva
17. Which of the following is a weak base?
- A. NaOH
  - B. KOH
  - C.  $\text{NH}_4\text{OH}$
  - D.  $\text{Ca}(\text{OH})_2$
18. The main indicator of soil erosion is
- A. deforestation
  - B. afforestation
  - C. ozone layer
  - D. grazing of animals
19. The energy produced due to the splitting up of the nucleus of an atom is called
- A. sound energy
  - B. nuclear energy
  - C. thermal energy
  - D. chemical energy
20. Gametes are
- A. normal cells like muscle and brain cells
  - B. sex cells, sperm or eggs (ova)
  - C. another name for chromosomes
  - D. part of a strand of DNA.
21. What is the respiratory organ for earthworm?
- A. Lungs
  - B. Buccal cavity
  - C. Trachea
  - D. Skin
22.  $\text{NO}_2$  is the formula for
- A. nitrogen (I) oxygen
  - B. nitrogen (II) oxygen
  - C. nitrogen (III) oxygen
  - D. nitrogen (IV) oxygen
23. The part of soil profile that contains most nutrients is...
- A. the bedrock
  - B. the topsoil
  - C. the subsoil
  - D. weathered rock
24. Which method of farming system places strong emphasis of protecting the environment and as such depends on pesticides and fertilizers derived from plants and animal waste?
- A. Ecological farming
  - B. Organic farming
  - C. Monoculture
  - D. Mixed farming
25. The ability for living organisms to respond to a stimulus is referred to as
- A. production
  - B. irritability
  - C. growth
  - D. respiration
26. Dissolved minerals in water makes water
- A. soft
  - B. hard
  - C. pure
  - D. drinkable
27. A mirage is produced because
- A. warm air has a higher index of refraction than cool air
  - B. water from oceans and lakes is highly reflective

- C. images of water are reflected from the sky  
 D. light travels faster through air than through water.
28. The black pod disease which affects cocoa is caused by  
 A. virus  
 B. bacteria  
 C. fungus  
 D. protozoan
29. The part of the cell which contains the structure responsible for the carrying of genetic information of the cell is called  
 A. mitochondria  
 B. nucleus  
 C. cytoplasm  
 D. vacuole
30. When water contains more  $H^+$  ions than  $OH^-$  ions, in this case the water is  
 A. neutral  
 B. basic  
 C. acidic  
 D. salty
31. A trait in an offspring is influenced by  
 A. DNA of mother gamete  
 B. DNA of father gamete  
 C. both DNA of father and mother gamete  
 D. neither DNA of mother or father gamete
32. The farming system practiced when a particular crop is in high demand is  
 A. mixed cropping  
 B. crop rotation  
 C. mono cropping  
 D. monoculture
33. Which of the following electronic components is used to control the flow of electric current in the circuit?  
 A. Resistor  
 B. Capacitor  
 C. Wire  
 D. LED
34. Which element is a liquid at room temperature?  
 A. K  
 B. Hg  
 C. Mg  
 D. Kr
35. Which of the following mineral salts is needed for the formation of chlorophyll?  
 A. Argon.  
 B. Potassium  
 C. Phosphorus  
 D. Nitrogen
36. Which of the following is not an element of weather and climate?  
 A. Atmospheric pressure  
 B. Temperature  
 C. Humidity  
 D. Altitude
37. The work done in moving a unit of positive charge across two points in an electric circuit is a measure of  
 A. current  
 B. potential difference  
 C. resistance  
 D. power
38. What do plants contribute to the carbon cycle?  
 A. Plants add humus to the soil  
 B. Legumes fix nitrogen in the soil  
 C. Plants consume carbon dioxide from the atmosphere and convert it to glucose  
 D. Plants trap sunlight for later use
39. The part of a seed responsible for protecting the embryo from any damage is  
 A. plumule  
 B. cotyledon  
 C. stalk  
 D. testa
40. The absence of phosphorus in plants results in  
 A. development of slender stems by grass plants  
 B. yellow margins of plant leaves  
 C. less production of amino acid  
 D. inefficiency of chlorophyll

