

1ST ASSIGNMENT
MARCH, 2020
INTEGRATED SCIENCE 2 & 1
Essay and Objective
2hours

2 & 1

Name

.....

Index Number

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ADDITROM SCHOOL

Basic Education Certificate Examination

March, 2020

INTEGRATED SCIENCE 2 & 1

2 hours

*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 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.*

Paper 2
Essay

1 hour

*This paper consists of **two** parts: I and II. Answer Question 1 in Part I and any other **four** questions in Part II.*

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

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

PART I
[40marks]

*Answer **all** of Question 1.*

1(a) With the aid of a well labeled diagram describe an experiment to demonstrate the process of osmosis in living tissue. Your diagram must indicate the beginning and the end of the experiment.

- i. List all the materials needed to conduct the experiment
- ii. List the factors necessary for osmosis to occur
- iii. List two application of osmosis in everyday life

(b) A ray of light strikes the surface of glass cube and makes an angle of 30° with the surface. The light ray then passes through the glass and comes out of it.

- i. Make a well labeled diagram to illustrate the information.
- ii. State what happens to the direction of the light ray as it moves from air to glass cube. Explain your answer.

(c) You are provided with sand mixed with table salt. With the aid of a well labeled diagram describe how to obtain the crystals of the salt from the mixture.

List all the materials needed for the activity.

(d) You are provided with garden soil, muslin bags, thin thread, 2 conical flask, cork stoppers, beaker, tripod stand, wire gauze, Bunsen burner and lime water (calcium hydroxide).

With the aid of a well labeled diagram describe an activity to demonstrate that the soil consists of living organisms.

PART II

[60marks]

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

2. (a) i. What is magnetic field? (2marks)
ii. State two properties of a magnet. (2marks)
- (b) i. List two health benefits of water to humans. (2marks)
ii. State two differences between an atom and an ion. (2marks)
- (c) i. What is a living cell? (2mark)
ii. State one function of the cell membrane of the animal cell. (1mark)
- (d) i. Outline two agricultural uses of soil. (2marks)
ii. What is a fertilizer? (2marks)
3. (a) i. What is a compound? (2marks)
ii. State two differences between mixtures and compounds. (2marks)
- (b) i. List two importance of fertilization of plants. (2marks)
ii. List the conditions necessary for germination of seed. (2marks)
- (c) i. List two factors that affect vegetable crop production (1mark)
ii. Briefly explain why each of the following cultural practices is important in vegetable crop production.
α. Mulching
β. Weeding (2marks)
- (d) i. Distinguish between renewable and non renewable sources of energy. (2marks)
ii. List two sources of renewable sources of energy. (2marks)
4. (a) i Give two benefits of energy conservation is important in Ghana. (2marks)
ii. Describe two ways of conservation energy in our homes. (2marks)
- (b) i. Distinguish between mixed cropping and land rotation. (2marks)
ii. State two advantages of organic farming. (2marks)
- (c) i. Explain why the atom is electrically neutral. (2marks)
ii. Draw the sulphur atom and show the distribution of electrons in its shells. (2marks)
- (d) i. Distinguish between aerobic respiration and anaerobic respiration. (1mark)
ii. List four organs of the human respiratory system. (2marks)
5. (a) i. What is refraction of light? (2marks)
ii. State two differences between solar eclipse and lunar eclipse. (2marks)
- (b) i. List two examples of air pollutants. (2marks)
ii. State two possible harmful effects of air pollution. (2marks)
- (c) i. State three differences between osmosis and diffusion. (2mark)

- ii. State one way by which osmosis is similar to diffusion. (1marks)
- (d) i. State two differences between ecosystem and habitat. (2marks)
ii. What is adaptation? (2marks)
6. (a) i. State one function of a diode in an electronic circuit (2marks)
ii. Describe one application of charging and discharging action of a capacitor. (1marks)
iii State one function of a resistor in an electrical circuit. (1marks)
- (b) i Balance the following chemical equations
 $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$
 $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$
 $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$ (3marks)
- ii. How will you separate mixtures of common salt and sand? (2marks)
- (c) i. State one benefit of photosynthesis to plants and animals. (1marks)
ii. List the factors necessary for photosynthesis. (2marks)
- (d) i. State three benefits of vegetables to humans. (3mark)

END OF ESSAY TEST

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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.**

**PAPER 1
OBJECTIVE TEST**

1Hour

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 a candidate whose name is Ben Kobby ISSAH.
His *index number* is 772384188 and he is writing the examination at *Centre Number* 77234.

**THE WEST AFRICAN EXAMINATIONS COUNCIL, GHANA
BASIC EDUCATION CERTIFICATE EXAMINATION
OBJECTIVE ANSWER SHEET**

CANDIDATE NAME:	SUBJECT NAME:																																																																																																																																																																																																																																						
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, rub out 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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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. An example is given below.

Which of the following substances is not an element?

- A. Aluminum
- 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. Which of the following statements about the p-n junction is false?

- A. It permits current to flow in one direction only
- B. It permits current to flow into two directions
- C. When an external voltage is applied to the p-n junction, it acts as a rectifier
- D. The p-n junction is also called a diode

2. In the Biuret test, a violet coloration indicates the presence of

- A. fat
- B. starch
- C. protein
- D. sugar

3. The quantity of feed consumed by a farm animal within a day is termed

- A. ration
- B. mash
- C. unbalanced diet
- D. balanced diet

4. The main product of photosynthesis is

- A. water
- B. oxygen
- C. glucose
- D. carbon (iv) oxide

5. Which of the following structures transports water in the plant to enable photosynthesis to occur?

- A. Xylem
- B. Phloem
- C. Cambium
- D. Pith

6. A bipolar transistor is said to operate in cut off region when

- A. the base-emitter is forward bias and collector-base is reversed bias
- B. the base-emitter is forward bias and collector-base forward bias
- C. the base-emitter reversed bias and collector-base is forward bias
- D. the base-emitter is reversed and collector-base is reversed bias

7. The cardiovascular system consists of

- A. the heart and lungs
- B. the heart and plasma

C. the heart and the blood vessels

D. the lymph and blood vessels

8. Which of the following substances is not carried by the blood?

- A. Nutrients
- B. Oxygen
- C. Carbon (iv) oxide
- D. Urine

9. Which of the following organs oxygenates the blood?

- A. Kidney
- B. Lung
- C. Heart
- D. Spleen

10. One important function of cover crops is to

- A. conserve soil moisture
- B. provide feed for livestock
- C. check the soil temperature
- D. protect the soil from erosion

11. When diffusion occurs, it finally results in a homogenous distribution. This means that

- A. the diffusion process is not complete
- B. there is a higher concentration gradient
- C. concentration gradient no longer exist
- D. the diffusion material is still spreading

12. When the p-n junction is reversed-bias

- A. current flows from the p-type to n-type
- B. no current flows from the p-type to the n-type
- C. current flows from the n-type to the p-type
- D. conduction of current occurs

13. Which of the following features of parents would not be inherited by children?

- A. Colour of eye
- B. Shape of nose
- C. Height
- D. Scar

14. 50 cm^3 of water was poured on a soil sample in a funnel placed over measuring cylinder. If the amount of water that drained into the cylinder was 20 cm^3 , determine the percentage of water retained in the soil

- A. 40%

- B. 50%
- C. 60%
- D. 70%

15. Which of the following structures produces hormones in the female reproductive system?

- A. Vagina
- B. Uterus
- C. Ovary
- D. Cervix

16. The physical arrangement of soil particles into natural aggregates is called

- A. soil porosity
- B. soil profile
- C. soil texture
- D. soil structure

17. Which of the following pairs of climatic factors influence agriculture?

- A. Rainfall and topography
- B. Vegetation and temperature
- C. Rainfall and temperature
- D. Topography and temperature

18. Which of the following vegetation zones is least suitable for cattle rearing?

- A. Coastal thicket
- B. Guinea savanna
- C. Sudan savanna
- D. Tropical rainforest

19. A simple way of maintaining the efficiency of a machine is by

- A. oil its parts
- B. fitting new parts on the machine
- C. making sure it is always working
- D. making sure it works at low speed

20. Provision of footbath at the entrance of farmhouse prevents the spread of

- A. ectoparasites
- B. endoparasites
- C. plant parasites
- D. alternate host

21. The viscosity of a fluid increases when

- A. the temperature increases
- B. the temperature decreases
- C. the volume of the water increases

D. there is a sudden drop in temperature

22. Spitting in public is a bad social habit because it

- A. it makes the environment humid
- B. reduces the amount of water in the body
- C. reduces the amount of air in the body
- D. releases disease-causing organisms into the environment

23. An increase in the average temperature of the atmosphere and landmasses of the earth is called

- A. climate change
- B. global warming
- C. heating phenomenon
- D. deforestation

24. Which of the following about chemical salt is true?

- A. They have relatively low melting point
- B. They conduct electricity in solid state
- C. They have a crystalline structure in the solid state
- D. They have properties of semi-conductors

25. Chlorine gas is passed through water during water purification to

- A. kill germs
- B. soften the water
- C. give taste to water
- D. cause suspended particles to settle

26. Temporary hardness of water can be removed by

- A. boiling
- B. filtering
- C. sedimentation
- D. aeration

27. In a crop rotation course, which of the following crop should follow maize?

- A. Millet
- B. Rice
- C. Sorghum
- D. Soya bean

28. If a bar magnet is divided between its poles, it forms

- A. two smaller, demagnetized magnets
- B. two smaller, incomplete magnets
- C. two smaller, complete magnets
- D. two smaller, electromagnets

29. Hammering in Blacksmithing involves which of the following scientific concepts?

- A. Force and Pressure
- B. Heat energy
- C. Combustion
- D. Fermentation

30. Smoke is an example of a mixture of

- A. gases
- B. liquids in gases
- C. solids in gases
- D. solids in liquids

31. Which of the following processes is a physical action in digestions?

- A. Breakdown of cooked starch in the mouth
- B. Breakdown of protein in the stomach
- C. Emulsification of fat in the intestines
- D. Coagulation of milk by rennin

32. A compound that consists of the combination of two different elements termed

- A. a ternary compound
- B. a binary compound
- C. an organic compound
- D. a weak compound

33. The end product of digestion of fats and oils are

- A. amino acids and glucose
- B. amino acids and glycerol fatty acid
- C. fatty acids and glycerol
- D. fatty acids and amino acids

34. The chemical formula of a compound describes the

- A. ratio in which the elements combine
- B. the nature of the bonding in the compound
- C. number of molecules in the compound
- D. state of matter of the compound

35. Saponification is a scientific concept which underlines which of the following industries?

- A. Blacksmithing
- B. Gari processing
- C. Vegetable production
- D. Soap making

36. One similarity between an atom and an ion is that

- A. both are electrically neutral
- B. both are particles of matter
- C. both move in aqueous solution
- D. both contain the same number of electrons

37. Transplanting of young seedlings is usually done in the evening because

- A. pest attack is minimal
- B. transpiration is minimal
- C. seedlings require less nutrients
- D. darkness promote rapid growth

38. Which of the following is not is a raw material for the production of soap?

- A. Palm oil
- B. Hydrochloric acid
- C. Brine
- D. Sodium hydroxide

39. Which of the following cultural practices is not performed after transplanting tomato seedlings?

- A. Weeding
- B. Watering
- C. Pruning
- D. Thinning

40. Which of the following gases are responsible for acid rain?

- A. Sulphur dioxide and carbon monoxide
- B. Sulphur dioxide and nitrogen dioxide
- C. Nitrogen dioxide and carbon monoxide
- D. Carbon monoxide and carbon dioxide

END OF PAPER