

220 J. H. S. C. E.  
MAY 2011  
GENERAL SCIENCE  
Objective and Essay Tests  
2 hours

1&2

Name:.....

Identification Number: .....

## THE WEST AFRICAN EXAMINATIONS COUNCIL

### Junior High School Certificate Examination

May 2011

GENERAL SCIENCE

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 **identification number** in the spaces provided above.

This paper consists of **two** part: Paper 1 and 2. Answer Paper 1 on your Objective Test answer sheet and Paper 2 in your answer booklet. **Paper 1** will last **1 hour** after which the answer sheet will be collected. Do **not** start **Paper 2** until you are told to do so. **Paper 2** will last **1 hour**.

### PAPER 1

#### OBJECTIVE TEST

[60 marks]

1 hour

1. Use **2B** pencil throughout.
2. On the objective answer sheet supplied, provide the following details **correctly**:
  - (a) Supply the information required in the spaces marked *CENTER NAME*, *CENTER No.*, *SCHOOL NAME* and *SCHOOL No.*.
  - (b) In the space marked *STUDENT'S NAME*, write your **surname** followed by your **other names**. Write your **identification number** in the space marked *STUDENT No.*
  - (c) In the spaces marked *SUBJECT* and *GRADE*, write GENERAL SCIENCE and 9TH in that order.
  - (d) In the box marked *IDENTIFICATION NUMBER*, provide your **identification number** vertically in the spaces on the left-hand side, and shade each numbered space in line with each digit. This identification number must be the same as the one indicated on your Admission Slip. Repeat the process with the correct information for the box marked *YEAR OF FIRST ENTRY*.
  - (e) In the box marked *Subject Code*, write the digits 220 vertically in the spaces on the left-hand side. **Shade** the corresponding numbered spaces as you did for your identification number.
3. An example is given below. This is for a female candidate whose *name* is Clara Amina WILLIAMS. Her *identification number* is 001011379, her first entry is in 2011 and she is offering *GENERAL SCIENCE*.

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PRINT IN BLOCK LETTERS	
TOM JONES HIGH SCHOOL CENTER NAME	981001 CENTER No.
JOE BLOE JNR HIGH SCHOOL SCHOOL NAME	001011 SCHOOL No.
WILLIAMS CLARA AMINA STUDENT NAME	210 STUDENT No.
GENERAL SCIENCE SUBJECT	9TH GRADE

IDENTIFICATION NUMBER									
0									
0									
1									
7									

YEAR OF FIRST ENTRY									
0									
1									

SUBJECT CODE									
2									
0									

For Supervisors only. If a candidate is absent <input type="checkbox"/> shade this space.		Shade the space marked M (for Male) or F (for Female) <input type="checkbox"/> <input checked="" type="checkbox"/> In this box	
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2  
**PAPER 1**  
**OBJECTIVE**  
**[40 marks]**

Answer **all** the questions.

1 hour

*Paper 1 contains **sixty** objective questions. Each question has **four** options lettered **A to D**. Choose the **correct** option 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.*

A cloud at ground level is called

- A. cumulonimbus.
- B. fog.
- C. stratocumulus.
- D. nimbostratus.

*The correct answer is fog, which is lettered **B** and, therefore answer space **B** would be shaded.*

[ A ]

[ ☒ ]

[ C ]

[ D ]

*Think carefully before you shade the answer spaces; erase completely any answers you wish to change.*

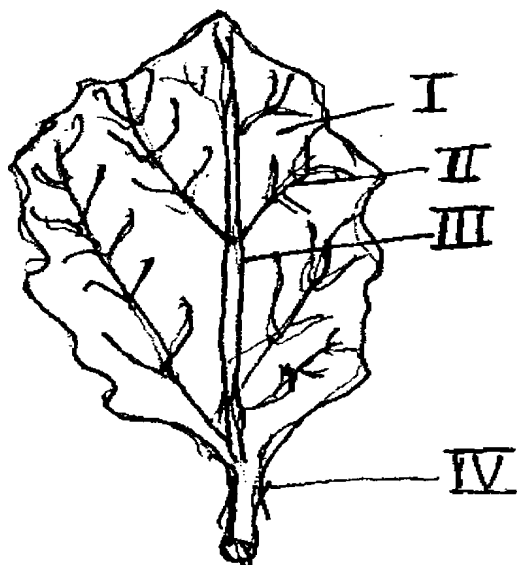
*Now answer **all** the following questions.*

- |   |  |
|---|--|
| <p>1. A graduated cylinder is calibrated in</p> <ul style="list-style-type: none"><li>A. centimeter.</li><li>B. milliliter.</li><li>C. cubic centimeter.</li><li>D. milligram.</li></ul> <p>2. Which of the following instruments is used to measure temperature?</p> <ul style="list-style-type: none"><li>A. Beaker</li><li>B. Celsius thermometer</li><li>C. Cylinder</li><li>D. Tube</li></ul> <p>3. The <b>two</b> liquids <b>most</b> commonly used in the thermometer are</p> <ul style="list-style-type: none"><li>A. water and mercury.</li><li>B. mercury and alcohol.</li><li>C. alcohol and water.</li><li>D. gasoline.</li></ul> <p>4. The freezing point of water is</p> <ul style="list-style-type: none"><li>A. 0.5°C</li><li>B. 0 °C</li><li>C. 100 °C</li><li>D. 200 °C</li></ul> <p>5. In which of the following is calcium found?</p> <ul style="list-style-type: none"><li>A. Bones and teeth</li><li>B. Urine</li><li>C. Nails</li><li>D. Ear</li></ul> | <p>6. Pure table salt contains</p> <ul style="list-style-type: none"><li>A. calcium and chloride.</li><li>B. calcium and phosphorous.</li><li>C. sodium and chloride.</li><li>D. only sodium.</li></ul> <p>7. Respiration and digestion are examples of</p> <ul style="list-style-type: none"><li>A. physical change.</li><li>B. chemical change.</li><li>C. condensation.</li><li>D. mechanical change.</li></ul> <p>8. Animals with jointed legs and hard covering called exoskeleton are known as</p> <ul style="list-style-type: none"><li>A. arthropods.</li><li>B. arachnids.</li><li>C. insects.</li><li>D. flatworms.</li></ul> <p>9. The skeletal system that is associated with animals that contain soft bodies can be termed</p> <ul style="list-style-type: none"><li>A. hydrostatic skeleton.</li><li>B. endoskeleton.</li><li>C. exoskeleton.</li><li>D. hydraulic skeleton.</li></ul> <p>10. Set of changes that occurs in an organism as it develops into an adult is called</p> <ul style="list-style-type: none"><li>A. metamorphosis.</li><li>B. incomplete metamorphosis.</li><li>C. molting.</li><li>D. skin changing.</li></ul> |
|---|--|

11. Sweat produced by the sweat gland helps
  - A. maintain body temperature.
  - B. make a person feel warm.
  - C. make a person unhealthy.
  - D. reduce blood level.
12. Which of the following name the **two** layers of the skin?
  - A. Germs and endodermis
  - B. Epidermis and dermis
  - C. Endodermis and epidermis
  - D. Dermis and endodermis
13. Which of the following is **not** an herbivore?
  - A. Deer
  - B. Cow
  - C. Elephant
  - D. Tiger
14. Animals that live in both water and on land are called
  - A. mammals.
  - B. amphibians.
  - C. reptiles.
  - D. birds.
15. The **negatively** charged particles in an atom are called
  - A. neutron.
  - B. proton.
  - C. electron.
  - D. ion.
16. Which of the following processes is **not** a physical change?
  - A. Boiling of water
  - B. Burning of wood
  - C. Dissolving salt in water
  - D. Melting of ice
17. The key organ of excretion in human is the
  - A. lungs.
  - B. heart.
  - C. skin.
  - D. kidney.
18. The process through which steam is changed into liquid is called
  - A. condensation.
  - B. evaporation.
  - C. melting.
  - D. sublimation.
19. Elements on the periodic table are arranged according to their
  - A. atomic numbers.
  - B. atomic mass.
  - C. chemical formula.
  - D. symbol.
20. What is the volume of an object which has a density of  $0.5\text{g/cm}^3$  and a mass of 25g?
  - A.  $0.5\text{cm}^3$
  - B.  $5.0\text{cm}^3$
  - C.  $25\text{cm}^3$
  - D.  $50\text{cm}^3$
21. Which of the following is the **best** conductor of electricity?
  - A. Iron
  - B. Lead
  - C. Copper
  - D. Tin
22. The chemical symbol of potassium is
  - A. Pt.
  - B. K.
  - C. Po.
  - D. Ps.
23. How many meters are there in 25 centimeters?
  - A. 0.0025m
  - B. 0.025m
  - C. 0.25m
  - D. 2.5m
24. Electrical energy is measured in
  - A. amperes.
  - B. coulombs.
  - C. watts.
  - D. watt-hours.
25. Convert  $75^\circ\text{C}$  to  $^\circ\text{F}$ .
  - A.  $129^\circ\text{F}$
  - B.  $135^\circ\text{F}$
  - C.  $167^\circ\text{F}$
  - D.  $189^\circ\text{F}$
26. Plants lose water from their leaves through the process called
  - A. evaporation.
  - B. transpiration.
  - C. photosynthesis.
  - D. osmosis.

27. A **primary** source of continuous current is  
 A. battery.  
 B. dynamo.  
 C. cell.  
 D. generator.
28. The part of the plant that is meant for reproduction is the  
 A. leaf.  
 B. stem.  
 C. root.  
 D. flower.
29. How many atoms are in the formula  $\text{HNO}_3$ ?  
 A. 3  
 B. 4  
 C. 5  
 D. 6
30. The **smallest** part of an element is called  
 A. compound.  
 B. mixture.  
 C. atom.  
 D. molecule.
31. The seasons are caused by the  
 A. rotation of the earth.  
 B. shape of the earth.  
 C. rotation of the moon.  
 D. earth's distance from the sun.

Use the diagram below to answer questions 32 to 34



32. The **three** main parts of the leaf are the  
 A. leaf base, lamina and petiole.  
 B. midrib, petiole and vein.  
 C. blade, vein and midrib.  
 D. petiole, lamina and vein.
33. The part of the leaf that contains **vascular** bundles for the transport of food and **raw** materials is labeled  
 A. I  
 B. II  
 C. III  
 D. IV
34. Which of the following is marked **I**?  
 A. Main vein  
 B. Lamella  
 C. Petiole  
 D. Blade
35. Which of the following is **not** a function of the leaf?  
 A. It carries out photosynthesis.  
 B. It carries out respiration.  
 C. It gets rid of water.  
 D. It supports the plant.
36. A flower with both stamen and carpals is called  
 A. an incomplete flower.  
 B. a complete flower.  
 C. a regular flower.  
 D. a hermaphrodite.
37. Which of the following is **true** about a second order lever?  
 A. The load is between the effort and the pivot.  
 B. The pivot is between the load and the pivot.  
 C. The load is on the pivot.  
 D. There is no effort.
38. The loudness and lowness of sound is determined by  
 A. intensity.  
 B. electricity.  
 C. heat.  
 D. wave.
39. Sound travels faster in materials that are  
 A. elastic.  
 B. dense.  
 C. liquid.  
 D. luminous.

40. The path along which light travels is called  
 A. prism.  
 B. intensity.  
 C. energy.  
 D. ray.
41. When light changes speed it bends. This process is called  
 A. absorption.  
 B. contraction.  
 C. reflection.  
 D. refraction.
42. The vitamin that is needed for good vision, healthy skin and hair is called  
 A. vitamin C.  
 B. vitamin A.  
 C. vitamin D.  
 D. vitamin E.
43. The chemical formula for glucose is  
 A.  $C_{11}H_{11}O_{11}$   
 B.  $C_6H_{12}O_{11}$   
 C.  $C_6H_{12}O_6$   
 D.  $C_6H_{11}O_6$
44. The flow of electrons through a conductor **best** describes  
 A. electricity.  
 B. electric current.  
 C. voltage.  
 D. induction.
45. The following are sources of electricity **except**  
 A. television.  
 B. solar panel.  
 C. generator.  
 D. battery cells.
46. Materials that do **not** allow electricity to pass through are  
 A. insulators.  
 B. conductors.  
 C. electric power.  
 D. solar panel.
47. The chemical formula for sodium carbonate is  
 A.  $NaCO_3$   
 B.  $SACO_3$   
 C.  $Na_2CO_3$   
 D.  $Sa_2CO_3$
48. A pure substance that **cannot** be broken down in simpler substances by ordinary chemical means is called  
 A. compound.  
 B. mixture.  
 C. element.  
 D. solution.
49. The property of matter that does **not** have a definite shape or volume is called  
 A. liquid.  
 B. plasma.  
 C. solid.  
 D. gas.
50. **One** of the means by which a mixture can be separated is called  
 A. filtration.  
 B. expulsion.  
 C. condensation.  
 D. friction.
51. An example of a solution is  
 A. sea water.  
 B. crude oil.  
 C. carbon dioxide.  
 D. hydrogen.
52. The chemical name for caustic soda is  
 A. calcium carbonate.  
 B. calcium hydroxide.  
 C. sodium chloride.  
 D. sodium hydroxide.
53. The brakes on a bicycle is an example of  
 A. inertia.  
 B. fluid friction.  
 C. rolling friction.  
 D. sliding friction.
54. The boiling point of water on the Celsius scale is  
 A.  $10^{\circ}C$   
 B.  $37^{\circ}C$   
 C.  $98.6^{\circ}C$   
 D.  $100^{\circ}C$
55. What is the work done when a force of 2.5N moves through a distance of 4m?  
 A. 1.5j  
 B. 1.6j  
 C. 6.5j  
 D. 10.0j

56. Which of the following does vitamin D control?
- A. How the body uses light
  - B. How the body uses calcium
  - C. How the eyes control light
  - D. How light is dissolved
57. Moisture that falls to the earth after being mixed with wastes from burned fossil fuels is called
- A. haze.
  - B. sleet.
  - C. fog.
  - D. acid rain.
58. Which of the following is a *natural renewable* resource?
- A. Oxygen
  - B. Hydrogen
  - C. Helium
  - D. Potassium
59. A renewable resource that gets energy from garbage is called
- A. fossil fuel.
  - B. smog.
  - C. biomass.
  - D. coal.
60. Water on the summit of Mount Everest will boil at 70°C. What is the value in degree Fahrenheit?
- A. 22°F
  - B. 32°F
  - C. 100°F
  - D. 158°F

**END OF OBJECTIVE PAPER**

**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 2**  
**ESSAY**  
**[60 marks]**

**1 hour**

*Paper 2 consists of ten essay questions divided into three sections; A, B, and C. You are to answer five questions in all; two questions each from sections A and B and one question from section C.*

**SECTION A**

*Answer two questions only from this section.*

1.    (a)    Make a simplified labeled diagram of the *water cycle*.  
       (b)    Define precipitation and name **four** types  
       (c)    Name and describe **three** kinds of clouds.
  
2.    (a)    What is the original source of energy in an ecosystem?  
       (b)    What is the relationship between a **food chain** and a **food web**?  
       (c)    Choose a meat product you eat to construct a food chain that includes yourself as the final consumer.
  
3.    (a)    How are angiosperms and gymnosperms alike? How are they different?  
       (b)    List **three** plants that are  
           (i)    angiosperms; and  
           (ii)    gymnosperms.  
       (c)    Explain what characteristics helped you determine b (i) and (ii) above.
  
4.    (a)    What is a *natural resource*?  
       (b)    What is the difference between *renewable* and non *renewable* energy sources?  
       (c)    State **three** differences between **fossil fuels** and **biomass**?

**SECTION B**

*Answer two questions only from this section.*

5.    (a)    Draw a large labeled diagram of a dry cell.  
       (b)    Describe the path electrons take in a close circuit.  
       (c)    In a tabular form, list and describe **four** different forms energy takes.
  
6.    (a)    What is an *atom*?  
       (b)    Briefly explain **three** properties of elements.  
       (c)    In a tabular form, list the following elements under the heading **metals** and **non metals**: copper, iodine, carbon, gold, silver, hydrogen, phosphorus, aluminum, sodium, iron and chlorine.



7. State the contributions of any **two** of the following individuals to the field of science:

- (a) Dmitri Mendeleyev;
- (b) Robert Hooke;
- (c) John Dalton; and
- (d) Aristotle.

8. (a) Give two examples each of the following:

- (i) Opaque;
  - (ii) Transparent; and
  - (iii) Translucent materials.
- (b) Describe what happens when light passes through a prism.
- (c) Why are lenses curved?

### SECTION C

*Answer **one** question **only** from this section.*

9. Find the weight on the moon of an object whose mass is 2 kg but moves with an acceleration of  $10\text{m/s}^2$ .
10. How much current will flow in a flashlight that has a 6-volt battery and a bulb with 3-ohms of resistance?

**END OF PAPER**