

SC51716  
 WASSCE 2023  
 INTEGRATED  
 SCIENCE 1  
 Objective Test  
 1 hour

1

THE WEST AFRICAN EXAMINATIONS COUNCIL

West African Senior School Certificate Examination  
 for School Candidates

SC 2023

INTEGRATED SCIENCE 1

1 hour

PAPER 1

[50 marks]

Do not open this booklet until you are told to do so. While you are waiting, read and observe the following instructions. Write your name and index number in the spaces provided above.

- Use 2B pencil throughout.
- On the pre-printed answer sheet, check that the following details are correctly printed:
  - In the space marked *Name*, check your **surname** followed by your **other names**.
  - In the spaces marked *Examination*, *Year*, *Subject* and *Paper*, check 'WASSCE', 'SC 2023', 'INTEGRATED SCIENCE', and '1' respectively.
  - In the box marked *Index Number*, your **index number** has been printed vertically in the spaces on the left-hand side, and each numbered space has been shaded in line with each digit. **Reshade** each of the shaded spaces.
  - In the box marked *Subject Code*, the digits 517113 are printed vertically in the spaces on the left-hand side. **Reshade** the corresponding numbered spaces as you did for your index number.
- An example is given below. This is for a male candidate whose *name* is James Koku AMADU. His *index number* is 7102143958 and he is offering *Integrated Science 1*.

THE WEST AFRICAN EXAMINATIONS COUNCIL

PRINT IN BLOCK LETTERS	
Name: AMADU JAMES KOKU	GHA
Examination: WASSCE	Year: SC2023
Subject: INTEGRATED SCIENCE	Paper: 1

**INSTRUCTIONS TO CANDIDATES**

- Use grade 2B pencil throughout.
- Answer each question by choosing one letter and shading it like this:  A  B  C  D  E
- Erase completely any answer you wish to change.
- Leave extra spaces blank if the answer spaces provided are more than you need.

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**For Supervisors only**

If candidate is absent shade this space

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 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 elements is a metal?

- A. Carbon
- B. Copper
- C. Helium
- D. Krypton

The correct answer is Copper, 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 answers you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

1. Which of the following symptoms is an indication of fungal infection in vegetable nursery?
  - A. Wilting of leaves
  - B. Swellings on stems
  - C. Rotting of stems
  - D. Curling of leaves
  
2. Which of the following statements about an atom is **correct**?
  - A. Protons out number electrons in a neutral atom
  - B. The L-shell is closest to the nucleus
  - C. Neutrons are found in the nucleus
  - D. The atomic number is greater than the mass number
  
3. A machine is rated 5.30 W. In how many seconds will it do 212.0 J of work?
  - A. 4.25 s
  - B. 0.03 s
  - C. 40.00 s
  - D. 25.00 s
  
4. Carbon (IV) oxide is used to extinguish fires because it
  - A. is fully oxidized.
  - B. occurs naturally.
  - C. is heavier than air.
  - D. is a reducing agent.

5. A deep litter house measuring 45.0 m by 2.2 m is stocked at the rate of one bird per 0.25 m<sup>2</sup>. Determine the number of birds stocked.
- A. 99 birds
  - B. 396 birds
  - C. 180 birds
  - D. 1584 birds
6. An athlete weighs 750 N. Determine the athlete's mass.  
[  $g = 10 \text{ m s}^{-2}$  ]
- A. 750 kg
  - B. 375 kg
  - C. 75 kg
  - D. 7500 kg
7. A child has a fever, runny nose, red sore eyes and a rash inside the mouth. Which of the following diseases is the child likely to be suffering from?
- A. Whooping cough
  - B. Measles
  - C. Malaria
  - D. Poliomyelitis
8. An example of a leafy vegetable is
- A. cabbage.
  - B. bean.
  - C. okro.
  - D. carrot.
9. It is compulsory to wear goggles when handling substances that
- A. are poisonous.
  - B. are corrosive.
  - C. are highly flammable.
  - D. emit sparks.
10. Excess amino acids in the body undergo the process of
- A. digestion.
  - B. detoxification.
  - C. deamination.
  - D. osmosis.
11. An electric heater rated 60 W is connected to 240 V mains. Determine the current in its filament.
- A. 0.25 A
  - B. 4.00 A
  - C. 1440.00 A
  - D. 60.00 A
12. Which of the following statements about sea breeze is/are **correct**? It
- I. occurs during the night.
  - II. occurs during the day.
  - III. blows toward the sea.
- A. II only
  - B. I and III only
  - C. I only
  - D. II and III only

13. Nutrient required in large quantities by leafy vegetables is
- nitrogen.
  - calcium.
  - potassium.
  - phosphorus.
14. The **most** effective way of controlling lice on fowls is by
- spraying.
  - dipping.
  - dusting.
  - drenching.
15. In the vacuum flask, the vacuum between the polished walls minimizes heat transfer by
- conduction.
  - radiation.
  - convection.

Which of the statements above are **correct**?

- I and III only
  - II and III only
  - I and II only
  - I, II and III
16. Which of the following blood groups in humans does **not** contain antigen?
- A
  - O
  - B
  - AB
17. Which of the following diseases is caused by vitamin deficiency?
- Night blindness
  - Hypertension
  - Tuberculosis
  - Dysentery
18. The normal period for a human pregnancy is
- 52 weeks.
  - 32 weeks.
  - 28 weeks.
  - 40 weeks.
19. Which of the following pairs of crops is grown for their roots?
- Cocoyam and onion
  - Cassava and carrot
  - Carrot and shallot
  - Cocoyam and shallot
20. The presence of methane and carbon (IV) oxide in the air is the **main** cause of
- global warming.
  - high and low tides.
  - movement of air masses.
  - thunder storm.

21. Sickle-cell anaemia is an example of
- sex-linkage.
  - blood grouping.
  - multiple alleles.
  - partial dominance.
22. Which of the following statements are **correct** about semiconductors? They
- are used to make transistors.
  - do not obey Ohm's law.
  - are group (IV) elements.
- I, II and III
  - I and III only
  - I and II only
  - II and III only
23. An example of a simple machine is
- sewing machine.
  - bicycle.
  - wheel and axle.
  - car.
24. During digestion, rennin in the stomach
- provides acidic medium.
  - emulsifies fat.
  - coagulates milk protein.
  - digests carbohydrates.
25. It is **more** advantageous to use solar energy than fossil fuel energy because
- fossil fuel energy is renewable.
  - solar energy causes pollution.
  - fossil fuel produces carbon (IV) oxide.
  - solar energy is renewable.
26. The protoplasm of a cell is made up of
- cytoplasm and vacuole.
  - nucleus and vacuole.
  - cytoplasm and nucleus.
  - mitochondria and cell membrane.
27. Which of the following deductions **cannot** be made from the symbol  $^{12}_6\text{C}$ ?
- Mass number of the element
  - Atomic number of the element
  - Number of neutrons in the nucleus
  - Relative atomic mass of the element
28. The size of the pupil of the eye is controlled by the
- iris.
  - conjunctiva.
  - cornea.
  - lens.

29. Which of the following conditions could cause aflatoxin in groundnuts?
- A. Growing groundnut in poor soils
  - B. Infection of groundnut plants by rosette disease
  - C. Excessive treatment of harvested pods with chemicals
  - D. Storage of pods of groundnut in humid conditions
30. Crop residue left on farms to conserve soil moisture are referred to as
- A. waste materials.
  - B. stable mulch.
  - C. hay.
  - D. silage.
31. A body is more stable when its centre of gravity is
- A. at the centre.
  - B. at its top.
  - C. outside the body.
  - D. close to the ground.
32. Ash from burnt plants is widely used in Ghana
- A. as bleaching powder.
  - B. for preparing soap.
  - C. for preparing salt.
  - D. for improving soil texture.
33. The principle of flotation states that
- A. a floating body displaces its own weight of fluid in which it floats.
  - B. a floating body experiences an upward force equal to its weight.
  - C. a body immersed in a fluid does not displace the fluid.
  - D. the upthrust on a floating body exceeds the body's weight.
34. Which of the following materials is magnetic?
- A. Platinum
  - B. Brass
  - C. Cobalt
  - D. Aluminium
35. Biogas is produced from
- A. anaerobic fermentation of organic waste.
  - B. aerobic fermentation of organic waste.
  - C. aerobic fermentation of inorganic waste.
  - D. anaerobic fermentation of inorganic waste.
36. The practice whereby shade is gradually removed from seedlings before transplanting is referred to as
- A. rogueing.
  - B. hardening off.
  - C. thinning.
  - D. shading off.

37. The substance formed when carbon (IV) oxide is bubbled through lime water for a long time is
- $\text{Ca}(\text{HCO}_3)_2$
  - $\text{Na}_2\text{CO}_3$
  - $\text{NaHCO}_3$
  - $\text{CaCO}_3$
38. One advantage of weaning lambs early is that the
- rams are not able to mate with the ewes easily.
  - ewes come on heat within a short period.
  - lambs become sexually matured easily.
  - mothers grow faster.
39. The manufacture of plastics involves the scientific process known as
- crystallization.
  - fermentation.
  - vulcanization.
  - polymerization.
40. A solution contains 5.3 g of sodium trioxocarbonate (IV) per  $\text{dm}^3$ . Determine its molarity.  
[  $\text{Na}_2\text{CO}_3 = 106$  ]
- $0.020 \text{ mol dm}^{-3}$
  - $0.050 \text{ mol dm}^{-3}$
  - $0.030 \text{ mol dm}^{-3}$
  - $0.040 \text{ mol dm}^{-3}$
41. The energy output of a system is 40 J and the efficiency is 60 %. Determine the energy input of the system.
- 50.0 J
  - 66.7 J
  - 24.0 J
  - 75.4 J
42. Which of the following factors contribute to tidal waves experienced on the sea? The
- gravitational force of the sun and moon on the sea
  - centripetal force created by the rotation of the earth around its axis
  - occurrence of cyclones
- I and II only
  - I and III only
  - I, II and III
  - II and III only
43. Myopia is an eye defect that makes a sufferer to
- feel dizzy continuously.
  - view far away objects but not near objects.
  - view normally.
  - view near objects but not far away objects.

Turn over

44. A quantity of NaCl was dissolved in  $100 \text{ cm}^3$  of solution to obtain  $0.50 \text{ mol dm}^{-3}$  NaCl solution. Determine the mass of NaCl used.  
[ NaCl = 58.5 ]
- A. 2.54 g  
B. 25.40 g  
C. 2.93 g  
D. 29.35 g
45. The weather on earth is determined by changes in temperature, pressure and winds that take place in the
- A. thermosphere.  
B. stratosphere.  
C. mesosphere.  
D. troposphere.
46. A farmer planted 2400 cuttings of cassava of which 85 % survived grasscutter invasion. Determine the number of cassava plants that was destroyed.
- A. 360  
B. 155  
C. 150  
D. 204
47. Which of the following statements about wind are correct?
- I. It is an air mass  
II. It moves from an area of high pressure to an area of low pressure.  
III. It moves from an area of low pressure to an area of high pressure
- A. I, II and III  
B. II and III only  
C. I and III only  
D. I and II only
48. Given that the Avogadro's constant is  $6.02 \times 10^{23}$ , determine the number of atoms in 0.001 mol of aluminium metal.
- A.  $6.02 \times 10^{26}$   
B.  $6.02 \times 10^{20}$   
C.  $3.01 \times 10^{20}$   
D.  $12.30 \times 10^{23}$
49. Which of the following combinations of elements do **all** carbohydrates contain?
- A. Sulphur, carbon, hydrogen and oxygen  
B. Carbon, phosphorus, oxygen and hydrogen  
C. Carbon, hydrogen and nitrogen  
D. Carbon, hydrogen and oxygen
50. Setts are planting materials used for the cultivation of
- A. ginger.  
B. pineapple.  
C. radish.  
D. yam.

**END OF PAPER**