

# MARKING SCHEME SEPTEMBER 2022 MOCK

## INTEGRATED SCIENCE 1

### OBJECTIVE TEST

### ANSWERS

- |     |   |   |     |   |  |
|-----|---|---|-----|---|--|
| 1.  | B | mercury                                       | 22. | A | deep litter system                       |
| 2.  | B | carbon dioxide                                | 23. | C | I and III only                           |
| 3.  | A | other people collect drinking water from them | 24. | C | entrepreneurship                         |
| 4.  | A | Iron and Carbon                               | 25. | A | enables cutting tools to be sharpened    |
| 5.  | D | pneumonia                                     | 26. | B | liver fluke                              |
| 6.  | B | evaporation                                   | 27. | D | velocity                                 |
| 7.  | D | craters                                       | 28. | B | electric current                         |
| 8.  | D | reduce the production of anti-bodies          | 29. | D | vacuole                                  |
| 9.  | D | Petrol  | 30. | D | I, II, III and IV                        |
| 10. | A | Calcium hydroxide                             | 31. | C | transpiration                            |
| 11. | B | camphor                                       | 32. | C | reproduction                             |
| 12. | B | Q   | 33. | B | clear away food particles from the teeth |
| 13. | A | P   | 34. | B | acts against motion                      |
| 14. | C | allow for expansion                           | 35. | D | Plasmodium                               |
| 15. | A | gill  | 36. | C | pinna                                    |
| 16. | A | bulbs   | 37. | C | prevent water loss                       |
| 17. | A | chlorophyll                                   | 38. | A | amino acids                              |
| 18. | C | lungs   | 39. | D | tuberculosis                             |
| 19. | B | lungs   | 40. | C | iris                                     |
| 20. | C | air is lost during boiling                    |     |   |  |
| 21. | A | kill germs                                    |     |   |  |

# INTEGRATED SCIENCE 2

## ESSAY

## ANSWERS

1. (a) (i) The aim of the experiment [2 marks]  
To determine the drainage ability / water-holding capacity of the soils
- (ii) Soil with the highest rate of drainage [1 mark]  
Soil K
- (iii) Soil with the highest water retention capacity [1 mark]  
Soil M
- (iv) The soil **most** likely to lose water and dry faster after rainfall [1 mark]  
Soil K
- (v) The soil **most** likely to be waterlogged after rainfall [1 mark]  
Soil M
- (vi) Which of the soil types would be suitable for maize cultivation? [1 mark]  
Soil L
- (b) (i) What **each** of the symbols labelled **I, II, III** and **IV** represent
- |     |   |                                       |
|-----|---|---------------------------------------|
| I   | - | Danger                                |
| II  | - | Corrosive                             |
| III | - | Highly inflammable / highly flammable |
| IV  | - | No naked flame                        |
- (ii) **One** substance **each** that is associated with:
- |     |             |  |
|-----|-------------|--|
| (α) | <b>I;</b>   | DDT, Hydrogen cyanide, Salicylic acid  |
| (β) | <b>II;</b>  | Concentrated Inorganic acids, such as HCl, H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> ,<br>Concentrated inorganic bases, such as NaOH, KOH, Ca(OH) <sub>2</sub><br>Household bleach |
| (γ) | <b>III.</b> | Petrol, Kerosene, LPG, Perfume, Insecticides, Alcohol  |
- [3 marks]
- (iii) A place where the hazard symbol labelled **IV** is often displayed [1 mark]  
Gas Filling stations, Storage places of combustible substances
- (iv) Symbol(s) found on chemical containers [3 marks]  
I, II and III
- (c) (i) General name for the devices. [1 mark]

## Simple machines

- (ii) Identification of **each** of the devices labelled **A, B, C** and **D**. [4 marks]
- A - Wheel barrow  
B - Inclined plane  
C - Pulley  
D - Gear
- (iii) The parts labelled **I, II** and **III** of device **A** when it is considered as a lever. [3 marks]
- I - Effort  
II - Load  
III - Pivot
- (iv) What the arrow represents in the device labelled **B** [1 mark]  
Direction of effort / effort distance
- (v) The type of work done with **each** of the devices labelled:
- ( $\alpha$ ) **C**; Lifting objects  
( $\beta$ ) **D**; moving a vehicle or parts of an engine efficiently [2 marks]
- (d) (i) Names of the parts labelled **I, II, III, IV** and **V** [5 marks]
- I - Stomach  
II - Small intestines  
III - Large intestines  
IV - Rectum  
V - Oesophagus / gullet
- (ii) The part(s) of the digestive system where  
( $\alpha$ ) digestion of food substances occur  
I and II  
( $\beta$ ) digested food is absorbed into the bloodstream [3 marks]  
II
- (iii) The end-products of the digestion that is absorbed into the bloodstream [3 marks]  
Amino acids, glucose, fatty acids and glycerol

2. (a) (i) What is *germination of seed*?

The process by which a viable seed grows/develops into a seedling. 1

(ii) State **two** conditions necessary for the germination of seed.

- Presence of air
- Presence of water
- Viable seed
- Optimum temperature

(b) State **four** methods used in identifying farm animals

Tagging, tattooing, branding, tonging, ear notching 4

(c) Explain why it is easier to cut a piece of yam with a sharp knife than with a blunt knife

3 The cutting edge of a sharp knife has very small surface area so requires smaller force to yield the pressure needed to cut the yam - making cutting easy, but the cutting edge of a blunt knife has a relatively larger surface area so it needs a larger force to yield the pressure needed to cut the yam.

(d) State **three** differences between a *metal* and a *non-metal*.

Metals	Non-metals
Have high melting point	Have low melting point
Are lustrous	Are not lustrous
Are malleable	Are not malleable
Have high density	Have low density
Are ductile	Are brittle
Are good conductors of heat and electric current	Are poor conductors of heat and electric current

3

3. (a) (i) What is *technology*?

The use of scientific knowledge to solve problems in everyday life

Or

The application of scientific knowledge and methods to make life / work easier, faster and more comfortable

Or

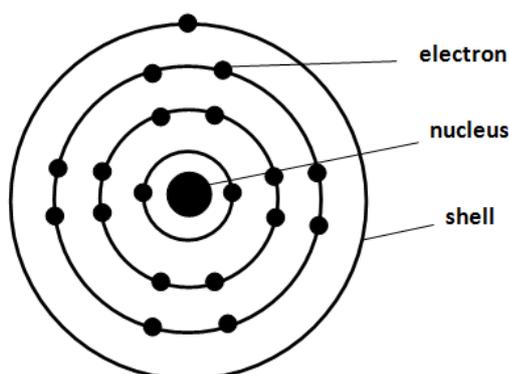
The study, development, and application of devices, machines, and techniques for manufacturing and productive processes

2

- (ii) State **two** differences between *science* and *technology*. [4 marks]

SCIENCE	TECHNOLOGY
Aims at gaining knowledge about nature	Aims at applying scientific knowledge to solve problems
Focuses more on experimentation and analysis	Focuses more on synthesis of design
Mainly theory based	Mainly practical based
Generally cannot be used to solve everyday problems	Are generally used to solve everyday problems

- (b) Draw potassium atom and show the distribution of electrons in its shells. [K = 19] [4 marks]

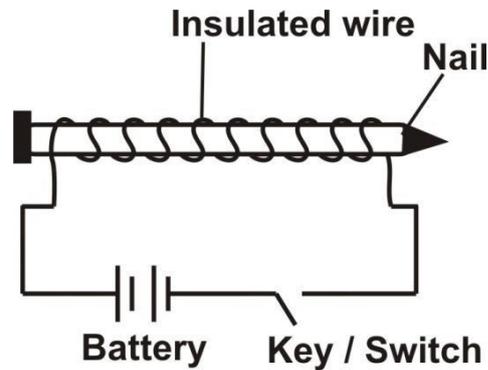


- (c) What energy transformations take place in **each** of the following activities?
- (i) Using a flashlight battery to produce light in a bulb.  
 Chemical energy → Electrical energy → Light energy and heat
- (ii) Using a microphone to address a gathering. [4 marks]  
 Electrical energy → Sound energy
- (d) List **three** components of soil. [3 marks]
- Mineral matter / rock particles,
  - organic matter/humus,
  - water,
  - air,
  - micro-organisms

4. (a) (i) Electromagnetism  
 Magnetism produced by an electric current  
 or:  
 The process of making a magnet using an electric current

2

- (ii) Diagram showing how nail can be magnetized



3/2

(b) **Symptoms of malaria**

- fever
- body pains
- feeling cold or hot
- headache
- nausea
- lack of appetite

[any three]

1/2

(c) **Ways of keeping the environment clean**

- Clearing choked gutters
- Clearing weedy areas
- Burying empty cans
- Covering rubbish bins
- Sweeping dirty areas
- Scrubbing toilets and bathrooms

2

(D) **New Substance Formed**

- (i) **Ammonia (NH<sub>3</sub>) and dilute hydrochloric acid (HCl);**  
 NEW SUBSTANCE: Ammonium chloride (NH<sub>4</sub>Cl)
- (ii) Sodium hydroxide (NaOH) and dilute hydrochloric acid (HCl);  
 NEW SUBSTANCE: Sodium chloride (NaCl) and water (H<sub>2</sub>O)
- (iii) Calcium carbonate (CaCO<sub>3</sub>) and dilute hydrochloric acid (HCl).  
 NEW SUBSTANCE: Calcium chloride (CaCl<sub>2</sub>), Carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O)

2

2

2

5. (a) (i) An **opaque** object does not allow light to pass through, whereas  
A **translucent** object allows some amount of light to pass through diffusely.

(ii) **Opaque** - wooden or metallic materials, mirror, the earth, mammals, etc  
**Translucent** - fabric, lightly-coloured water, oily spot on paper, frosted glass, etc

(b) (i) **Importance of seed dispersal**

- Enables plants to grow in other areas;
- Prevents the over-crowding of plants in one area
- Helps to reduce the rapid spread of plant diseases
- Prevents competition for soil nutrients among plants

(ii) **FRUIT** **MODE OF DISPERSAL**

Tridax, silk cotton,	-	Wind
Cowpea, Crotalaria, Balsam	-	Explosive Mechanism
Coconut,	-	Water
Orange, Guava, Tomatoes, Maize	-	Animals (man and others)

(c) (i) **Recycling** - The process of converting waste materials into new useful products

(ii) **Advantages of recycling**

- Employment / income generation for people
- Pollution of the environment by waste materials is reduced
- Reduction of resources for production
- Saving of money that would have been used for controlling waste
- Generation of energy for increased production [any two]

(iii) **Recycled products in Ghana**

Paper, biogas, polythene materials, rubber, particle boards, iron rods, etc. [any three]

6. (a) (i) What is *weather*?

The atmospheric condition of a place at a particular time.

or

The state of the atmosphere at a particular place and time

or

The condition of the atmosphere of a place over a short period of time

2

(ii) State **two** differences between *weather* and *season*

[4 marks]

WEATHER	SEASON
Atmospheric condition of a place over a short period of time	The average atmospheric condition of a place over a longer period of time within a year
Changes relatively quickly (lasts for a short time, usually about a day)	Changes relatively slowly (lasts for a longer time, usually 3 or more months)
It is less predictable	It is more predictable

2

(b) State the composition of **each** of the following alloys;

(i) steel;

iron and carbon

(ii) stainless steel

iron, carbon and chromium

[3 marks]

(c) List **four** benefits of vegetables to humans

[4 marks]

Provide mineral salts, which supports metabolic activities for proper functioning of the body

Provide vitamins for protection against diseases

Provide dietary fibre for easy bowel movement

Provide antioxidants, which fights stress and strengthen immune system

Makes our food tastier / more enjoyable

(d) Name **each** of the stages labelled **I, II, III** and **IV**

[4 marks]

I. - Pollination

II. - Fertilization

III. - Dispersion / dispersal

IV. - Germination