

THE WEST AFRICAN EXAMINATIONS COUNCIL
BASIC EDUCATION CERTIFICATE EXAMINATION FOR SCHOOL CANDIDATES,
2025

FINAL MARKING SCHEME
SCIENCE

Section A

[40 marks]

Rubrics: Answer all the questions in this section

Question 1

- (a) (i) A – Plants
B – Carbon dioxide in the atmosphere
C – Animals
D – Dead/decaying organisms/organic matter

4 marks

- (ii) P – Photosynthesis
S – Decay/decomposition
T – Combustion/burning

3 marks

- (iii) - Raising of livestock
- Growing of crops
- Burning of wood
- Burning of fossil fuels/coal/industrial pollution
- Reducing amount of forest cover/deforestation

Any 3 × 1 = 3 marks

- (b) (i) K – Land rotation (1)
L – Crop rotation (1)

- (ii) K – The farmer moves from one farmland to another (1)
L – The farmer moves /rotates the crops from one plot to another(1)

- (iii) - The soil regains its fertility / prevents soil exhaustion
- There is control in the build-up pests and diseases
- It helps to maintain good yield
- saves money

Any 2 x 1 = 2 marks

- (iv) - Time, energy and money is wasted in clearing new land each time land is abandoned.
 - System does not encourage large scale farming
 - There is rampant deforestation
 - Cultivated lands are generally small and scattered
 - Land is getting scarce / a growing population

Any 3 × 1 = 3 marks

(v) Leguminous crops (1)

- (c) (i) - Stair case
 - Ladder
 - Plank of wood at an angle
 - Hill
 - Ramps
 - etc *Screws*

Any 3 × 1 = 3 marks

(ii) (α) work output

$$L \times Ld /$$

$$= 100 \times 5$$

$$= 500 \text{ J} \quad (1)$$

(β) Work input

$$E \times Ed /$$

$$= 400 \times 10$$

$$= 4000 \text{ J} \quad (1)$$

(γ) Efficiency

$$\frac{\text{Work output} \times 100\%}{\text{Work input}} \quad (1)$$

$$\frac{500 \times 100\%}{4000} \quad (1)$$

$$= 12.5 \% \quad (1)$$

- (d) (i) Separation of mixtures (1)
- (ii) II - Cools the vaporized components of the mixture (1) back to liquid (1)
- VI - Bar magnet attracts the magnetic material of the components of a mixture (1) in order to separate it from the non-magnetic component (1)
- (iii) (α) III - ~~alcohol~~ ethanol and water / kerosene and diesel oil (2)
- VII - iron filings and powdered Sulphur (2)
- (iv) To ensure complete condensation of the vapour (1)

QUESTION 1 TOTAL = [40 MARKS]

SECTION B

Answer three (3) questions only from this section

Question 2

- (a) (i) - By ironing in bulk *gadgets*
- Switching off lights *when not in use*
- Switching off gadgets *when not in use*
- ~~Using energy efficient appliances~~
- ~~etc~~ *improving*
- *etc*

Any 3 x 1 = 3 marks

- (ii) $E = P \times t$ (1)
- 4000×12 (1)
- $= 4\text{kW} \times 12\text{ h}$ (1)
- $= 48\text{ k Wh}$ (1)

OR

$$\begin{aligned}
 E &= P \times t & (1) \\
 &= 4000 \times 12 \times 60 \times 60 & (2) \\
 &= 172800000 / 1.72 \times 10^8 \text{ joules / J} & (1)
 \end{aligned}$$

- (b) (i) - methyl orange
 - methyl red
 - phenolphthalein *or no colour change*
 - litmus
 - universal indicator

Any 2 x 1 = 2 marks

- (ii) Litmus - red
 Methyl orange - red / pink
 Methyl red - red/pink *or no colour change*
 Phenolphthalein - colourless
 Universal indicator - orange / yellow

Any 2 x 1 = 2 marks

- (c) (i) - Waste management / recycling / *re use*
 - Investing in renewable energy
 - Adapting to the effects of climate change
 - Prioritizing human health
 - Use resources more efficiently
 - Afforestation
 - Use of public transport / electric vehicle

Any 4 x 1 = 4 marks

- (ii) - carbon dioxide */ Carbon (IV) oxide*
 - methane
 - nitrous oxide / nitrogen (I) oxide

Any 2 x 1 = 2 marks

- (d) - Choose an area / compost bin / home made enclosure / dig a pit
 - Add green material / vegetable / scrap / fruit peels / grass / dry straw etc
 - Put materials in layers
 - Sprinkle water
 - Turn pile occasionally

Any 3 x 1 = 3 marks

QUESTION 2 TOTAL = [20 MARKS]

Question 3

- (a) (i) - Feather meal
 - Blood meal
 - Fish meal
 - Milk by-products
 - Meat meal
bone meal

Any 2 x 1 = 2 marks

- (ii)
- Sorghum
 - Millet
 - Maize
 - Wheat
 - Rice
 - Wheat bran

Any 2 x 1 = 2 marks

- (b) Water evaporates from water bodies into the atmosphere, (1) where it condenses into the Clouds (1), and falls back into the earth's surface as rain (precipitation) (1).

This then flows into water bodies (1) and taken up by plants (1) which transpire to give water vapour (1)

6 marks

- (c) (i) Vinegar - ethanoic acid (1) and water (1)
Air - nitrogen (1) and oxygen (1)

2 marks
2 marks

- (ii) Vinegar \Rightarrow water is the solvent (1)
Air \Rightarrow nitrogen is the solvent (1)

- (d) (i)
- Extreme / cold temperatures
 - No oxygen
 - No water
 - Far away from the sun
 - absence of solid surface
 - toxic radiations / gases
 - strong magnetic field

Any 2 x 1 = 2 marks

- (ii)
- Saturn
 - Uranus
 - Neptune

Any 2 x 1 = 2 marks

QUESTION 3 TOTAL = [20 MARKS]

Question 4

- (a) (i)
- by sharpening the knife, the cutting edge reduces in surface area
 - the pressure then increases
 - hence it cuts easily with the same force

3 x 1 = 3 marks

(ii)
$$P = \frac{F}{A} \quad (1) = \frac{10}{1 \times 10^{-3}} \quad (1) = 10 \times 10^3$$

$$= 10,000 \text{ Pa} \quad (1)$$

- (b) - Collect the soil sample (1)
 - Add distilled water and shake gently, and allow to settle (1)
 - Add few drops of universal indicator / pH meter (1)
 - Match the resulting colour with the standard colour chart (1)
 - Estimate / read the pH of the soil sample from the chart (1)
NB: Correct sequence to score 6 marks

- (c) (i) It means the blood pressure of the patient when the heart beats is 150 mmHg (systolic pressure) (1) and the pressure of the patient when the heart rests is 90 mmHg (diastolic pressure) (1)
- (ii) - Exercising regularly
 - Eating healthy diets
 - Reducing salt intake
 - Easing stress
 - Ensuring regular check-ups
 - Etc *avoid / reduce alcohol intake*
- Any 3 x 1 = 3 marks**

- (d) - Has high palatability to animals
 - Has laxative ability
 - Has high nutrient content
 - Easily digestible
 - Long shelf-life
 - Etc
- Any 3 x 1 = 3 marks**

QUESTION 4 TOTAL = [20 MARKS]

Question 5

- a) (i) Organic farming
 By using plant and animal based materials (1) in the farming process, without use of agrochemicals / using organic fertilizers / biological pesticides (1)
2 marks
- (ii) Mixed farming
 By growing of crops and raising of animals on the same farm / plot (1)
 at the same time / season (1)
2 marks
- (iii) Mixed cropping
 By growing of two or more arable crops on the same piece of land, (1)
 (without any sequence or arrangement) at the same time (1)
2 marks

- (b) (i) Oil and water - Heterogeneous (1)
 (ii) Salt and water - Homogeneous (1)
 (iii) Ethanol and water - Homogeneous (1)

- (c) (i) - Energy from the sun is continuous / constantly replenished (1)
 - Energy from the sun does not get exhausted / inexhaustible within a human time scale / non-depletable (1)

(ii)

Heat	Temperature
- Form of energy	Measure of / Degree of hotness of a body
- Measured in joules	Measured in Kelvin / °C
- Measured using a calorimeter	Measured using a thermometer
- Flows from hot body to cold body	Rises when heated and falls when cooled

Any 3 x 1 = 3 marks

(d) (i) Leaching

- During heavy rainfall, nitrates in the soil are washed out of the root zone of plants (1)
- and cannot be taken in by animals, (1) preventing the return of the nitrogen into the soil as nitrites (1)

3 marks

(ii) Removal of leguminous plants

- this results in the removal of nitrogen-fixing bacteria (1)
- thereby preventing the conversion of atmospheric nitrogen to ammonia (1)
- eventually denying the soil of nitrates and subsequently interrupting the Cycle (1)

3 marks

QUESTION 5 TOTAL = [20 MARKS]