THE WEST AFRICAN EXAMINATIONS COUNCIL, ACCRA.

25/10/22

WEST AFRICAN SENIOR SCHOOL CERTIFICATE EXAMINATION FOR SCHOOL CANDIDATES, 2022

INTEGRATED SCIENCE 2

FINAL MARKING SCHEME

HOUSE OF GENUINE QUESTIONS CONTACT TELEGRAM

THE WEST AFRICAN EXAMINATIONS COUNCIL, ACCRA

WASSCE (SC) 2022

DRAFT MARKING SCHEME

INTEGRATED SCIENCE 3

TELEGRAM

1. a(i) Reasons for the steps

I – to kill the leaf cells/to stop chemical reactions in the cells/

- to enable alcohol/iodine to penetrate the tissue.
- disrupt cell membrane/cuticle/cell wall.

Any 1 x 1 = 1 mark

II - for the alcohol to dissolve/remove the chlorophyll/green pigment.

1 mark

III - to soften leaf

- to remove the alcohol.

Any 1 x 1 = 1 mark

(ii) Observations

- The leaf would discolour/turn colourless/change its colour/green pigment would be removed.
- The alcohol would turn green/alcohol changes from colourless to green.
- Leaf would become brittle/hard/firm

Any 2 x 1 = 2 marks

(iii) Precautions

- Avoid heating the alcohol over naked flame/Heat the alcohol in boiling water/water bath.
- Use forceps to place the leaf into the boiling water/Avoid using hand to place the leaf in the boiling water.
- Wear eye safety goggles/goggles
- Wear hand gloves
- Wash hands after the experiment
- Leaf should be exposed to sunlight for at least 3 hours
- Wear boot
- Wear lab coat

Any 2 x 1 = 2 marks

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(iv) Reasons for Precautions

Precautions must tally with the reason

- Alcohol is highly flammable/inflammable
- To avoid hurting/burning oneself
- To protect the eyes
- To avoid injury to the hands
- To remove traces of plants sap/traces of chemicals from the hands.
- To ensure that photosynthesis has taken place/starch has been formed
- To protect the feet from stepping on hot water/alcohol
- To protect the body from hot water/alcohol

2 x 1 = 2 marks

b.(i) Observations

- colour changed from blue (1) /brick red (1) yellow / orange / green

2 marks

(ii) Inference

- Presence of reducing sugar / maltose

1 mark

(iii) Explanation

enzyme in the saliva

- Salivary amylase/ptyalin; converts starch/carbohydrate (in the bread) into maltose.

1 mark

Total= 13 marks

2.(a) Type of farm animal

Bull/male cattle **1 mark**

(b) Breeds of farm animal

Correct Spelling to Score

i. Humped

– White Fulani	- Guzerat
- Sokoto Gudali	- Borana
- Brahman	- Africander/Afrikaner
- Nelore	- Tuli etc.

Any 1 x 1 = 1 mark

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ii. Humpless

N'dama

-Muturu

-Kuri

-Mayombe

-Lagune

-West African dwarf

-West African Shorthorn

-Friesian

-Angone etc.

Correct spelling to score

Any 1 x 1 = 1 mark

(c) Name of labelled parts

I - Ear/Pinna

II - Horn

III - Tail

IV - Testes/Scrotum/Testicles/Gonad **4 marks**

(d) Importance of part labelled

III Tail

- Use to drive away flies/~~reduce irritation~~/fly swatter
- Courtship/Communication
- Navigation/Balancing during movement
- ~~Marking territory~~ To protect the anus.
- For cooling the body

Reduce irritation

Any 1 x 1 = 1 marks

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II Horn

- For defence/fighting
- Scratching body parts
- Protect head from injury
- Aid movement / Swimming
- Social hieralchy/Add beauty to the animal
- For cooling/thermoregulation/temperature regulation/~~To clear obstacles~~
- For clearing path in the bush during movement / to clear obstacles
- ~~to clear obstacles~~

Any 1 x 1 = 1 mark

I Ear

- Use to drive away flies
- Use for hearing/listening

Any 1 x 1 = 1 mark

3 marks

(e) Management practice of part labelled

(i) IV /Scrotum/ TesTes

- castration

(ii) II/Horn

- Dehorning/Tipping

2 x1 = 2 marks

(f) Reasons for performing management practice

IV/Testes /Scrotum

- to promote growth/to fatten the animal
- improves market value
- to prevent indiscriminate crossing/mating
- to make animal docile/easy to handle
- to prevent spread of venereal diseases

Any 1 x 1 = 1 mark

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(f) Correct axes (A) $2 \times \frac{1}{2} = 1$ mark

Choice of scale (s) $= 2 \times \frac{1}{2} = 1$ mark

Precision/4 points clearly plotted (P) $= 4 \times \frac{1}{2} = 2$ marks

Line of best fit - **1 mark**

(g) Line of best fit

Must pass through at least two correctly plotted points with at least one of the remaining three points at each side of the line.

Slope (S)

Score the slope if triangle is drawn/dy/dx is indicated.

$S = dy/dx \ / \ \underline{B-C} \ /$ drawn triangle — 1 mark
$\quad\quad\quad

II/Horn

- to prevent injury to farmer/other animals
- to prevent animal from being entangled in the bush/fence
- to increase space (for feeding, movement, addition of more animals)
- easy to handle/Transport

Any 1x 1 = mark

Total = 14 marks

3.(a) Name of labelled parts

I - round bottomed flask/round bottom flask
II - thistle funnel
III - gas jar
IV - trough
V - beehive shelf

5 x 1 = 5 marks

(b) Suitable chemical

Zinc, Calcium, Iron, Aluminium, Magnesium
Hydrochloric acid/Sulphuric acid/Nitric acid
Chemical symbols not accepted

2 marks

Accept IUPAC Name
Accept any one of metal or two acids eg. sulphuric acid, nitric acid

(c) Balanced chemical reaction

$Zn + 2\,HCl \rightarrow ZnCl_2 + H_2$

$Zn + 2HNO_3 \rightarrow Zn(NO_3)_2 + H_2$

$Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

$2Al + 6\,HCl\,(aq) \rightarrow 2AlCl_3\,(aq) + 3H_2\,(g)$

- Correct Reactant (CR) – ½ mark
- Correct Balancing (CB) – 1 mark
- Correct Product (CP) – ½ mark

Accept any of Mg, Ca, Fe, Al

2 marks

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(d) (i) Mode of collection

Downward displacement of water/upward delivery/(of hydrogen gas)

1 mark

(ii) Reason

Hydrogen gas is (almost) insoluble in water/less dense than water

1 mark

(e) Function of part labelled V/Beehive shelf

- It holds /supports the gas jar in position.
- Direct the delivery tube into the gas jar.

Any 1 x 1 = 1 mark

(f) Test for the gas lighted

Introduce a glowing splint (1) into the gas jar; (1)
a pop sound is heard/squeaky pop (1)

15 marks

3 marks

4

4.(e)

Raw work done w/cm	w1 2.3	w2 3.6	w3 4.6	w4 5.6	w5 7.0	± 0.2
Actual work done W/J	W1 23	W2 36	W3 46	W4 56	W5 70	± 0.2
Raw distances d/cm	d1 1.4	d2 2.1	d3 2.8	d4 3.4	d5 4.0	± 0.2
Actual distances D/cm	D1 7.0	D2 10.5	D3. 14.0	D4 17.0	D5 20	± 0.2 ±0.1

Margin of error = ± 0.2

20 x ½ = 10 marks

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(f) Correct axes (A) 2 x ½ = 1 mark

Choice of scale (s) = 2 x ½ = 1 mark

Precision/4 points clearly plotted (P) = 4 x ½ = 2 marks

Line of best fit/straight - **1 mark**

~~(g) Line of best fit~~

Must pass through at least two correctly plotted points with at least one of the remaining three points at each side of the line.

(g) Slope (S)

Score the slope if triangle is drawn/dy/dx is indicated. ΔN/ΔD

S = dy/dx / $\frac{B-C}{C-A}$ / drawn triangle 1 mark Substitution with or without answer score 2

= $\frac{60-20}{18-5.4} = \frac{40}{12.6}$ = 3.17 N (± 0.2) 1 mark Substitution ½ # Correct ans.

No unit ½ mark

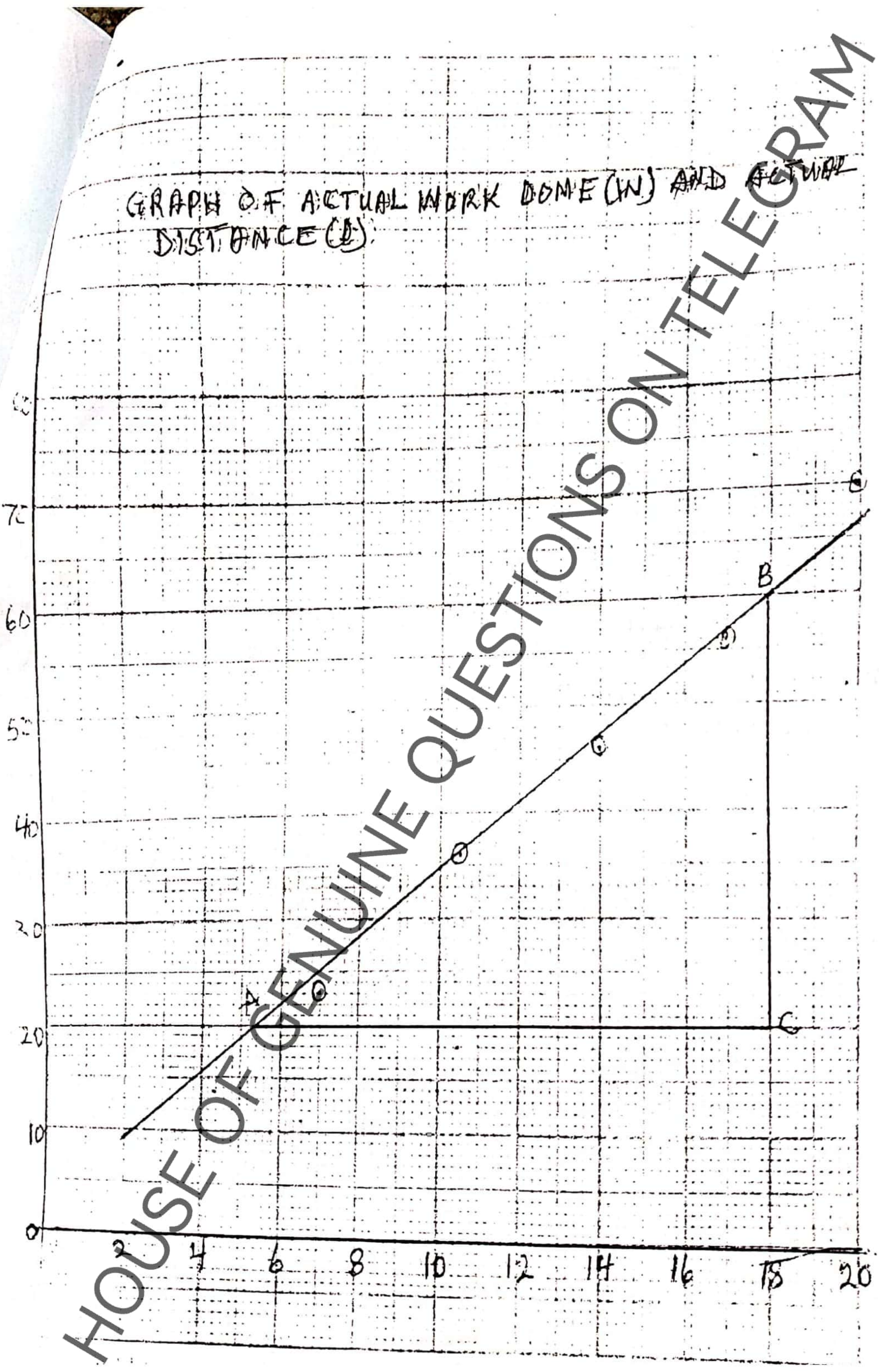
(h) Constant force/force applied to the body / force 1 mrk

Total = 18 marks

GENUINE QUESTIONS ON TELEGRAM HOUSE OF

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GRAPH OF ACTUAL WORK DONE (W) AND ACTUAL DISTANCE (d)



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