GB ASSESSMENT TEST

VIRTUAL MOCK EXAMINATION (3)

INTERGRATED SCIENCE, APRIL, 2020.

FINAL MARKING SCHEME

OBJECTIVE TEST

1 D	6 A	11 A	16 B	21 D	26 B	31 C	36 D
2 D	7 C	12 C	17 C	22 D	27 A	32 D	37 B
3 D	8 B	13 A	18 A	23 B	28 C	33 A	38 C
4 B	9 D	14 B	19 B	24 A	29 B	34 B	39 D
5 C	10 D	15 B	20 B	25 B	30 C	35 D	40 A

NB: The theory section (part 1 and 11) is 100 marks; please convert to 60 marks before adding the 40 marks from section A (objective test).

PRACTICAL QUESTIONS [40 MARKS]

1 **(a)** i. Cacti/Cactus **[2 marks]**

ii. Desert **[2 marks]**

iii. -The cacti's stem is also thick and fleshy allowing it to store a lot of water
-They also have spines (the prickly thorn-like things) in which replace leaves which helps in the reduction of loss of water.
-The stem also has a waxy waterproof kind of coating to help retain more water.
[any 3points x 2marks each= 6 marks]

SUB-TOTAL = 10 MARKS

(b) i. I Evaporating dish
II Garden Soil
III Wire Gauze
IV Tripod Stand [*** correct spelling to score 4x 1 =4 marks]**

ii. μ Take a sample of II from a depth of about 20cm.
α Half fill I with II.
ɣ Weigh I and its content and record.
β Heat I and its content over a Bunsen burner at a temperature of about 100°c.
[**4x ½ =2 marks**]

iii. At 100°c (and at standard pressure), the water will change state from a liquid to a gas. It is said to boil [**2 marks]**

iv. Observation
1. Steam came out of the garden soil when it was heated.
2. The weight of the evaporating dish and the garden soil reduced after it was heated
[2 marks]

SUB-TOTAL = 10 MARKS

(c) i. I- Earth wire
II- Neutral wire
III- Cable clamp
IV- Fuse
V- Live wire [*** correct spelling to score 5x1.5=2.5 marks]**

ii. - It prevent fires which can easily occur
- To prevent harm to those using the electrical appliance
- To prevent damage to the electrical appliance **[2 x 1.5 mark = 3 marks]**

iii Colours I- Green and Yellow
II- Blue
III- Brown **[3 x 1.5 marks = 1.5 marks]**

iv. a Hamps, radios, television, refrigerator, printer, laptop, mobile phone
[Any 3 x 1 = 3 marks]

(d) i The church bell was tolled = kinetic energy→sound energy + heat

ii. He rubbed his palm together = chemical energy→kinetic energy→heat energy

iii. Turned on electric iron = electrical energy→heat energy

iv. Headmaster using new PA system = electrical energy→ sound energy

v. Throwing of stone vertically up and falling back to the ground = chemical energy→potential energy→kinetic energy→sound energy + heat

[1 mark each for identification of activity = 5 marks]
[1 mark each for listing the energy transformations in each activity correctly = 5 marks] Total = 10 marks

PART 11

THEORY [60 MARKS]

QUESTION 2 [15 MARKS]

2. (a) i. A chemical formula is a combination of symbols that represents a molecule of an element or a compound. It expresses the number of different elements forming a compound. **[2 marks]**

ii. NaCl ⟶ Common Salt

$C_6H_{12}O_6$ ⟶ Sugar **[Any 1 x 2 marks = 2 marks]**

(b) i. Types of force

i. Electrostatic force: It is a force produced when an electrically neutral substance loses or gains electrons making it positively or negatively charged. **[2 marks]**

ii. Force of gravity: It is the type of force that pulls objects towards the centre of the earth. **[2 marks]**

iii. Tensional force: It is the force produced when an elastic object is stretched and released. **[2 marks]**

(c) i. An enzyme is a molecule that accelerates or catalyzes chemical reactions in digestion. **[2 marks]**

ii. – Enzymes are destroyed by excessive heat
- Enzymes are made up of proteins
- Enzymes work best within a specific range of pH
- Enzymes act on specific substrates
- Enzymes work best within a specific temperature range.

[Any 3 x 0.5 = 1.5 marks]

(d) Difference between afforestation and deforestation

Afforestation	*Deforestation*
Tress are planted	Trees are cut down
Resources are renewed	Resources are used up
A forest is grown	The forest is destroyed

[Any 3 x 0.5 = 1.5 marks]

QUESTION 3 [15 MARKS]

3. (a) How to determine the area of a pawpaw leaf

i. place the pawpaw leaf on a square paper and draw the outline of the shape
ii. count and record the number of full squares and half squares inside the shape
iii. Add the number of full squares and half squares together to give the area of the pawpaw leaf. **[3 x 1 = 3marks]**

(b) i. Atomic number is the number of protons in the nucleus of an atom. **[1 mark]**

ii. Neutrons: It is a sub- particle of an atom that has no change due to differences in the number of neutrons. **[1 mark]**

iii. Electronic configuration: It is the arrangement of electrons in the shell of an atom in order of increasing energy level. **[1 mark]**

(c) i. Tissue respiration is a process whereby oxygen taken into the lungs is used up by the individual cells of the body to breakdown food substances such as glucose to produce energy **[3 marks]**

ii. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ + Energy **[2 marks]**

(d) i. The wood ash will act as a liming agent and will de acidify the soil by increasing its pH because of the presence of calcium carbonate **[2 marks]**

ii. 1. Calcium 2. Potassium 3. Phosphorus 4. Magnesium 5. Aluminum 6. Sodium

7. Boron 8. Copper 9. Sulphur 10. Zinc

[Any 2 x 1 mark = 2 marks]

QUESTION 4 [15 MARKS]

(a) (i) Dentition is the characteristic number, type and arrangement of teeth in the mouth of an organism. There are two types of dentition namely; heterodont and homodont. **[2 marks]**

(ii) a. Enamel It is the hardest substance that protects the dentine

b. Dentine It is a bone-like tissue which acts as a shock absorber

[2 x 1 mark1 = 2 mark]

(b) (i) An alloy is a metal made by combining two or more metallic elements in order to give greater strength or resistance to corrosion **[1 mark]**

(ii) Properties of an alloy

1. Strength
2. Hardness
3. Durability
4. Ductility
5. Tensile strength
6. Toughness **[4 x 1 mark = 4 marks]**

(c) (i) P – N Junction is a boundary between P and N- type materials in a semi-conductor crystal **[1 mark]**

(ii) α. Forward – bias

The P – type region of a semi conductor is connected to the positive terminal of a battery and the N – type to the negative terminal **[1 mark]**

β. Reverse –bias

P – type of the semi conductor is connected to the negative terminal of the battery and N – type to the positive terminal **[1 mark]**

(d) (i) 1. It is well aerated
2. It has good soil structure
3. It is rich in organic matter
4. It has PH that is suitable for plant growth
5. It has a high water holding capacity
6. It is rich in microorganisms that support plant growth
7. It is rich in nutrients necessary for plant growth

[**4 x 0.5 marks = 2 marks**]

(ii) 1.Boron
2. Copper
3. Iron
4. Chloride
5. Manganese
6. Zinc **[2 x 0.5 marks = 1 mark]**

QUESTION 5 [15 MARKS]

(a) i) how an image is formed

An image is formed when two or more rays meet or appear to meet. **[2 marks]**

ii) difference between real and virtual images

Real	Virtual
1. Images can be formed on a screen	1. Images cannot be formal on a screen
2. light rays meet after refraction	2. Light rays do not meet after refraction
3. image is formed by the actual intersection of ray	3. Image is formal by the apparent intersection of rays

[Any 2 x 1 = 2 marks]

(b) (i) 1. Habitats provide conducive weather conditions to organisms.
2. Habitats support the survival of organisms
3. Habitats provide the basic needs (food, water and shelter) of organisms.

[Any 2 x 1 = 2 marks]

(ii) i- primary consumer
ii- secondary consumer **[2 marks]**

(c) (i) Solute is a substance that dissolve in a solvent while a solvent is a substance that dissolve a solute [**1 mark]**

(ii) Emulsion is a mixture of oil and water solution in a substance formed while solution is a substance formed when one substance dissolve in another.

[**1 mark]**

(d) i. Constituents of the soil
- Mineral particles
- Water
- Air
- Living organisms
- Organic matter [**Any 4 x ½ = 2 marks]**

(ii) Physical difference between clay and sand

Clay	Sand
Has tiny particles sizes	Has large particle sizes
Does not easily get heated	Easily get heated
Powdery to feel	Gritty to feel
Sticky when wet	Not sticky wen wet
Has smaller pore spaces	Has larger pore spaces

[Any 3 x 1 = 3 marks]

Question 6 [15 MARKS]

a) i. α) Distillation

1. Water is put into a distillation flask
2. Heat is applied to the water in the flask to form steam
3. The steam is passed through a condenser to produce pure water.

[1 mark]

β. Addition of alum

1. Alum is put into water
2. All smaller or fine impure particles coagulate to form larger particles
3. Larger impure particles settle at the bottom of the reseal containing the water **[1 mark]**

µ. Filtration

1. The impure water is poured into a funnel which has filter paper placed in it.
2. A beater is placed under the tunnel.
3. The water drains through the filter paper into the beaker
4. The water in the beaker is free of impurities.

[1 mark]

ii. Uses of water in agriculture

1. Water is used for fish farming
2. Water is used for irrigation
3. Water is used by spreading fertilizers, herbicides and pesticides
4. Water is consumed by farm animals

[Any 3 point x ½ mark = 1 ½ mark]

b) i. A parallel circuit provides multiple paths for the current, and each path used current independently. If lights in our various homes were wired in series and one lamp is unscrewed and no current goes through it, all other lights would go out too.

[**1 ½ mark]**

ii.. Resistance =20Ω
Current = 4.8A
Voltage =?
I=v/r I = Current
V= Voltage
R= resistance
V= IR
V = 4.8X 20
V= 96v

The voltage that passes through the loudspeaker is 96 volts [**2 mark]**

c)i. α) **[Any 1 point x 1mark = 1 mark]**

Artery	Vain
1. Transport blood away from the heart	1. Transport blood towards the heart
2. Carry blood at a high pressure	2. Carry blood at a low pressure
3. Has thick, muscular walls	3. Has thin, less muscular walls
4. Has no valves	4. Has valves
5. Has relatively small lumen	5. Has relatively large lumens

β. **[Any 1 point x 1mark = 1 mark]**

Pulmonary circulation	Systematic circulation
Involves blood circulation to and from the lungs	Involves blood circulation to and from all part of the body

(γ) **[Any 1 point x 1mark = 1 mark]**

Oxygenated Blood	Deoxygenated Blood
1. Bright red in colour	1. Purplish red in colour
2. Rich in oxygen	2. Rich in carbon dioxide

ii. Function of blood

1. Blood carries carbon dioxide from the body tissue to the lungs
2. Blood distributes heat in the body to regulate body temperature.
3. Blood carries hormones from the glands to target organs or tissues
4. Blood carries oxygen from the lungs to the body tissues.
5. Blood carries digested food from the small intestine to the body tissues.
6. Blood contains white blood cells which help the body fight against diseases.
7. Blood makes the penis erect so that sexual intercourse can take place.
8. Blood carries excretory products from the body tissue to the excretory organ

[Any 3 point x ½ mark = 1 ½ mark]

(d) i. Milling is the process by which the outer slain and embryo of a crop is removed before they are bagged and sent to the market. Example rice and oat. [**1 mark]**

ii) Reasons for controlling diseases in crop production.

i. To increase the income of farmer
ii. To increase crop yield
iii. To reduce cost of production
iv. To increase the quality of crops harvested
v. To be able to guide farm produce from rotting
vi. To increase the market value of crops

[Any 3 point x ½ mark = 1 ½ mark]