

GB ASSESSMENT TEST

VIRTUAL MOCK EXAMINATION (4)

INTERGRATED SCIENCE, MAY, 2020.

FINAL MARKING SCHEME

OBJECTIVE TEST

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

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. I- rubber cork, cork, rubber stopper
II- conical flask
III- delivery tube **[3 x 1mark = 3 marks]** *Correct spelling to score*
ii. $4\text{Al} + 6\text{H}_2\text{SO}_4 \rightarrow 2\text{Al}_2(\text{SO}_4)_3 + 6\text{H}_2$ **[4 marks]**
iii. Hydrogen gas **[1 mark]**
iv. – zinc – sodium – magnesium
– lead **[Any 2 x 1mark = 2 marks]**
- (b) i. I – Plasma
II- Red blood cells
III – White blood cells
IV. Blood platelets **[4 x 1mark = 4 marks]**
ii. 1. Dissolved food substances eg. Glucose
2. Mineral salts 3. hormones 4. Blood protein
5. Gases
6. Water substances **[Any 2 x 1mark = 2 marks]**
iii. Functions of blood
it carries oxygen from the lungs to the body tissues
it carries carbon dioxide from the body tissues to the lungs
it distributes heat in the body to regulate body temperature
it helps the penis to erect for sexual intercourse
it carries digested food from the small intestines to the body tissues
it contains white blood cells which helps the body fight against disease.
[Any 3 x 1mark = 3 marks]
iv. Blood platelets **[1 mark]**
- (c) i. Fuse **[2 marks]**

- ii. Live wire **[2 marks]**
iii. * The device B will “blow” when the current is above 13A. 13A is the maximum current the device can contain
* When the current exceeds 13A, the fuse becomes overheated and melts.
* On melting, the fuse breaks the flow of current through the appliances (“blow”).
* It helps prevent the electrical appliances from getting damaged. **[4 marks]**
iv. * Device A: this is because device A can only allow current up to 5A, (it melts when the current exceeds 5A) but device B will only melt if the current exceeds 13A. **[2 marks]**
- (d) i. A- tick **[1 mark]**
B- tapeworm **[1 mark]**
ii. – lice, ringworm, mistletoe, dodder, aphids,
[Any 4 x ½ mark = 2 marks]
iii. *correct classification* **[2 marks]**
iv. A parasite is an organism that lives in a close relationship with another organism; its host and gains its sustenance from the host organism
whiles a pest is an organism that causes annoyance and transmits diseases to humans and animals. **[2 marks]**
v. Parasite A (tick) – this is because it transmits micro-organisms that cause disease such as babesiosis, heart water and anaplasmosis. **[2 marks]**

PART 11
THEORY [60 MARKS]

QUESTION 2 [15 MARKS]

2. (a) i. Weather forecasting is a prediction of what the weather will be like in the near future. **[1 mark]**
ii. Importance of weather forecasting.
- it gives an advance warning of an impending danger
- it is used as a daily guide in aviation
- it is useful in the shipping industry
- it helps us to plan properly in all our activities.
E.g. Fishing, farming etc. **[Any 2 x ½ mark = 1 mark]**
iii. – one long drinking straw, one sheet of A4 thick card, one drawing pin, a section broom handle, a pair of scissors.
[Any 2 x ½ mark = 1 mark]
(b) – Every human has 23 pairs of chromosomes, the 23rd chromosomes is what determines the sex of a child. Men have XY chromosomes while women have XX chromosomes. With the production of a male child, a Y chromosome is needed and this can only come from the man. Women will always give out an X chromosome, therefore given birth to a male child depends largely on the chromosome released by the man. In general the sex of a child is determined by the men not the women.
[2 marks]
ii. physical traits in humans
- height
- eye colour
- blood type
- hair and skin colour
- shape of nose and eyes
- ability to roll the tongue **[Any 2 x 1 mark = 2 marks]**
(c) i. Move the pivot closer to the load / increase the effort distance **[2 marks]**
ii. – nutcracker
- Wheelbarrow
- Bottle opener **[Any 2 x 1 mark = 2 marks]**
(d) i. – Hydrogen
- Lithium
- Sodium
- Potassium **[Any 2 x 1 mark = 2 marks]**
ii. Chemical properties of metals
- metals react with oxygen to produce basic oxide

- metals react with water to produce an oxide and hydrogen gas
- metals react with acids to produce salt and hydrogen gas.
[Any 2 x 1 mark = 2 marks]

QUESTION 3 [15 MARKS]

3. (a) i. A compound machine is the combination of two or more simple machines that works together. **[1 mark]**
ii. * tractor
* bulldozer
* Mower
* Forklift
* Chainsaw
* Generators
* Sewing machines **[Any 4 x ½ mark = 2 marks]**
(b) i. – Cultural control is the practice of modifying the growing environment to reduce the prevalence of unwanted pest. **[1 mark]**
- Physical control of hand picking of pest and parasites such as tick from the body of the host animals. **[1 mark]**
- Biological controls involve the use of predators, parasites and pathogens to reduce the population of the parasites. **[1 mark]**
(c) i. Deficiency disease is a disease that is caused by the absence or inadequate supply or inadequate intake of a particular nutrient or food substances. **[1 mark]**
ii. α. Riboflavin – Anaemia
β. Retinol – Night blindness
γ. Niacin – Pellagra **[Any 3 x 1 mark = 3 marks]**
(d) i. An insoluble solute is a solute that does not dissolve in a given solvent. **[1 mark]**
ii. – kerosene
- oil
- petrol
- sand
- calcium carbonate (powdered chalk)
- grease **[Any 4 x ½ mark = 2 marks]**

iii.

Compounds	Mixtures
* A new substance is produced when a compound is formed	* No new substance is produced when a mixture is formed
* Produced by a chemical change	* Produced by a physical change

[Any 2 x 1mark = 2 marks]

QUESTION 4 [15 MARKS]

- (a) i. Reactive metals are metals that react with atmospheric oxygen, water and acids. [2 marks]
- ii. Aluminium reacts with oxygen in the presence of moisture to form aluminium oxide on its surface. Aluminium oxide forms a thin film over the surface of the metals and protects fresh parts of the aluminium metal from rusting. [2 marks]
- (b) a. Kinetic energy
(Because the water in the bucket is in motion). [1 mark]
- b. Potential energy
(Because the student is stable/positioned and not in motion). [1 mark]
- c. Work done= Force \times Distance where: Force= 150N, Distance=4m.
Therefore: Work done = 150N \times 4m
= 600Nm
= 600J or 600 joules [1.5 marks]
- d. Power output= $\frac{\text{Energy transferred (Work done)}}{\text{Time taken}}$
where; Work done= 600J, Time taken= 5s.
Power output= $\frac{600J}{5s}$
= 120 J/s
= 120Js⁻¹ or 120W (NOT w). [1.5 marks]
- (c) i. Species are a group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding. [1 mark]
- ii. types of habitat
- forest habitat
 - savanna habitat
 - desert habitat

- fresh water habitat
- marine habitat
- estuary habitat

[Any 4 x ½ = 2 marks]

- (d) α. Vaccination refers to the process of introducing into the body some weakened or dead pathogens which cause the body's immune system to produce appropriate antibodies. [1 mark]
- β. Symptom is a sign of a disease through which the disease is detected. [1 mark]
- ¥. Pathogen is a disease-causing organism such as bacteria, fungi, virus and protozoa. [1 mark]

QUESTION 5 [15 MARKS]

- (a) i. Photosynthesis is defined as the process by which green plants uses energy from sunlight to manufacture their own food by the combination of carbon dioxide in air water and mineral salts in the soil. [2 marks]
- ii. Carbon dioxide + water $\xrightarrow[\text{chlorophyll}]{\text{sunlight}}$ glucose + oxygen
 $6\text{CO}_3 + 6\text{H}_2\text{O} \xrightarrow[\text{chlorophyll}]{\text{sunlight}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ [2 marks]
- (b) i. Ohms law states that the potential difference (v) across a conductor is proportional to the current (I) flowing through the conductor at a constant temperature.
Mathematically, $V = IR$ (1)
Where V= potential difference or voltage
I = current
R = resistance
From equation (1) the following relations can be written
 $I = \frac{V}{R}$ and $R = \frac{V}{I}$ [2 marks]
- ii. Current $I = \frac{V}{R}$
Total Resistance = $\frac{R_1 R_2}{R_1 + R_2}$
= $\frac{3.0 \times 3.0}{3.0 + 3.0}$
= $\frac{9}{6} = 1.5 \Omega$
 $I = \frac{V}{R}$
= $\frac{9}{1.5} = 6 \text{ A}$ [2 mark]

(c)

Common name of compound	Systematic name	Chemical formula
Table salt	Sodium Chloride	NaCl
Sand	Silicon dioxide	SiO ₂
Carbon dioxide	Carbon (IV) oxide	CO ₂
Ferric oxide	Iron (III) oxide	Fe ₂ O ₃

[8 x ½ = 4 marks]

(d) i. Global warming is the increase in temperature of the atmosphere surrounding the earth's surface caused by increase in greenhouse effect.

[1 mark]

ii. * melting of icebergs

* increase in atmospheric temperatures

* rise in sea level which leads to flooding of low lying and coastal areas.

* changes in the natural patterns of drought, rainfall and flooding.

* reduction in water levels of inland water bodies.

[Any 4 x ½ mark = 2 marks]

Question 6 [15 MARKS]

(a) i. The periodic table is a list of every chemical element, each of which is represented by a symbol.

[1 mark]

ii. * Elements are arranged in order of increasing atomic number on the periodic table

* In each group of the periodic table the elements have similar properties.

* The position of an element on the periodic table determines whether it is a metal or non- metal

* Moving from left to right across each period, the elements changes from metals to non- metals.

[Any 4 x ½ mark = 2 marks]

(b) i. Ecosystems gain most of their carbon dioxide from the atmosphere which are used by plants to produce food molecules. These molecules are passed down to animals through consumption, thus it influences the flow of energy in an ecosystem.

[2 marks]

ii. – burning too much coal and petroleum products into the atmosphere

- cutting down trees reduces a large number of green plants which results in an increase in carbon dioxide present in the air.

- burning of farm residues will increase carbon dioxide in the air, which does not get recycled.

[Any 2 x 1mark = 2 marks]

(c) i. Vas deferens carries sperms from epididymis to the penis during ejaculation whiles the urethra serves as the passage way for both semen and urine.

[2 marks]

ii. * it prevents passage of some harmful products and pathogens from the mother to the embryo.

* it helps in the elimination of carbon dioxide and nitrogenous water (urea) from the embryo to the mother

* the placenta serves as the passage way for food, water and oxygen from the mother's blood to the embryo.

[Any 2 x 1mark = 2 marks]

(d) i. The pressure in fluids increases with depth of the fluid

[2 marks]

ii. * Pipette uses atmospheric pressure.

* Opening a tin of milk with a nail

* the brakes of car use fluid pressure to cause the car to stop

* pumping bicycle of vehicles tyres.

[Any 2 x 1mark = 2 marks]