

GB ASSESSMENT TEST

VIRTUAL MOCK EXAMINATION (2)

INTERGRATED SCIENCE, APRIL, 2020.

FINAL MARKING SCHEME

OBJECTIVE TEST

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

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 - electron
II. - K shell
III. - L shell
IV - M shell
V - Nucleus
VI. - Proton
*** correct spelling to score $6 \times \frac{1}{2} = 3$ marks**
- ii. 18 electrons **1 mark**
- iii. . α The number of protons equal the number of electrons. Hence the number of protons is 19 **1 mark**
 β . Atomic number is the same as the number of protons. Hence atomic number is 19 **1 mark**
 μ . Mass number protons + neutrons
 $39 = 19 + \text{neutrons}$
 $39 - 19 = \text{neutrons}$
Therefore neutrons = 20 **1 mark**
 Υ . Potassium (K) **1 mark**
- iv. Atoms are made up of positively charged particles called proton, negatively charged particles called electrons and neutrons which have no charge.
The number of protons and electrons are equal in an atom, and then the positive and negative charges cancel out making the atoms electrically neutral. **2 marks**
SUB-TOTAL = 10 MARKS
- (b) i. I- Coil or solenoid
II- Magnet
III- Connecting wire **[* correct spelling to score $3 \times 1 = 3$ marks]**
- ii. Procedure
1. Connect the part labelled I to an alternatively current supply.
 2. Place the part labelled II inside the part labelled I.

3. Switch on a.c supply
4. Slowly withdraw the part labelled II in East-West direction until it is some distance away from the part labelled I while a.c current is still on. **[4 marks]**

- iii) - Hammering
- Heating **[2 x 1.5 marks = 3 marks]**

SUB-TOTAL = 10 MARKS

- (c) i- Chloroplast is where photosynthesis take place. **[2 marks]**
ii- Chlorophyll. **[2 marks]**
iii- Structure H (stomata) **[3 marks]**
iv- Sunlight provide the energy which is used to combine the raw materials; water and carbon dioxide. **[3 marks]**
- (d) i. A – Tomato plant
B – Cabbage plant **[2 x 1 mark = 2 marks]**
ii. Image A (Tomato plant) **[2 marks]**
iii. To support/ prevent the tomato plant from falling. **[2 marks]**
iv. – Weeding
- Harvesting
- Fertilizer application
- Pesticide application.
- Prunning.
- Storage **[4 x 1 mark = 4 marks]**
(NB: Do not accept cultural practices which happens before growth of a plant)

PART 11
THEORY [60 MARKS]

QUESTION 2 [15 MARKS]

2. (a) i. Force is a push or a pull acting upon an object as a result of its interaction with another object. **[1 marks]**
- ii. No. The force exerted on the scale would be equal because $\text{force} = m \times a$. Since both masses are the same and the acceleration due to gravity is the same for both cases, the forces are equal. **[3 marks]**
- (b) α . Adaptation – Adaptation is a slow process by which individuals, population or species change in form or function in such a way as to survive better under given environmental conditions. **[2 marks]**
- β . Endangered species- endangered species are species of plants and animals that are faced with extinction. **[2 marks]**
- (c) i. A metal is an element that forms ions by losing electrons. **[1 mark]**
- ii. Examples of metals; Chlorine, oxygen, iodine and sulphur, Neon, Nitrogen **[Any 2 x 1/2 = 1 mark]**
- iii. Sodium reacts with sulphuric acid to produce sodium sulphate and hydrogen gas;
 $\text{Na} + \text{H}_2\text{SO}_4 \rightarrow 2\text{Na}_2\text{SO}_4 + \text{H}_2$ **[1 mark]**
- (d)

Disease	Animal
New castle	Poultry birds
Anthrax	All farm animals
Avian flu	Birds
Foot rot	Sheep, Cattle, horses, goats

[Any 4 x 1 = 4 marks]

QUESTION 3 [15 MARKS]

3. (a) i. It is the intentional act of introducing impurities into an extremely pure semiconductor for the purpose of modulating its electrical properties. **[2 marks]**
- ii. When silicon atom is doped with aluminum atom, a P – type silicon is produced which has holes in its valence band and provides a mechanism for conduction. This type of doping is called trivalent doping. **[2 marks]**
- (b) i. A transistor is a three terminal solid – state semi-conductor device commonly used as an amplifier or an electrical switch. **[1 mark]**
- ii. 1. It is used as the fundamental building block of the circuitry that governs the operations of computers, cellular or mobile phones and other electronic devices.
2. It revolutionized the field of electronics.

3. It is used to amplify and switch an electronic signal.
4. It is used in switching an electrical power.

[Any 2 x 1/2 = 1 mark]

- iii. No, it is location dependent. It is greater at the center but diminishes as one move away from the earth surface. **[2 marks]**

- (c) i. The process of fertilization in animals occurs when the male sex cell (sperm cell) fuses with the female sex cell (ova egg cell) together to form a zygote. **[2 marks]**
- ii. Shoot system and Root system. **[2 x 1/2 = 1 mark]**
- (d) i. Camouflage is the use of any combination of materials, coloration or illumination for concealment by some animals to prevent them from damage. **[2 marks]**
- ii. Owl, Uroplatus Geckos, toad, Common baron caterpillar, spider, frog, Giraffe, chameleon **[Any 2 x 1 = 2 marks]**

QUESTION 4 [15 MARKS]

- (a) i. $\text{pressure} = \frac{\text{force}}{\text{area}}$ $\text{force} = m \times g = 144 \text{kg} \times 10 \text{m/s}^2$
 $\text{force} = 1440 \text{N}$
 $\text{area} = 4 \text{m} \times 3 \text{m} = 12 \text{m}^2$
 $\text{Pressure} = \frac{1440}{12}$
 $= 120 \text{Pa}$ **[2 marks]**
- ii. No. the electrons move away from the metal since it is a conductor of heat **[2.5 marks]**
- (b) i. We balance chemical equations in order to satisfy the law of conservation of matter **[1 mark]**
- ii. $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$ **[2 marks]**
- (c) i. A disease is a harmful change that interferes with the normal appearance, structure or function of the body or any of its parts **[1 marks]**
- ii. An infectious disease is a disease that can spread from one person to another and caused by microscopic organisms that invade the body, while a non-infectious disease is a disease that is not transferred from one person to another, example sickle cell anaemia **[2 marks]**
- iii. – Constipation, Peptic ulcer, Gallstone, Hemorrhoids, Stomach flu, Inflammatory bowel, irritable bowel. **[4 x 1/2 = 2 marks]**
- (d) i. Cattle, Sheep, Goats, Dogs, Poultry **[2 x 0.5 marks = 1 mark]**
- ii. Chemical control (spraying)
 Physical control (hand picking)
 Biological control (use of natural enemies)

Integrated control (combines all the control measures)

Cultural control (keep good sanitation) [3 x 0.5 marks = 1.5 mark]

QUESTION 5 [15 MARKS]

- (a) i Friction is a force that opposes the motion of an object when the object is in contact with another object or surface. [1 mark]
- ii. 1. Friction allows people to walk by pushing off the ground without slipping
2. Friction enables people to produce heat by rubbing their hands to stay warm.
3. Friction makes a car's brake work.
4. Friction enables the clutch of a car's engine to function properly.
5. Friction helps us to sharpen tools such as cutlasses, axes.
6. Friction enables the climber to climb to the top of a building or mountain without slipping.
7. Friction enables vehicles to move on roads without skidding off the roads.
8. Friction enables machine parts to move against each other when the machine is in operation [Any 4 x 1/2 = 2 marks]
- iii. Yes. The pressure of a given weight is greater when the weight is spread over a smaller surface area, and smaller when the weight is spread over a larger surface area. Therefore, crawling on ones stomachs will spread out their weight and prevent one from breaking the ice under, because one will exert less pressure. [3 marks]
- (b) i. Menstruation refers to the monthly discharge of blood through the vagina as a result of the breakdown of the surface layer of the uterus. [1 mark]
- ii Ejaculation refers to the discharge of semen into the vagina during copulation/mating. [1 mark]
- iii Fertilization refers to the fusion of a sperm and an ovum [1 mark]
- (c) i. A base is a substance that can combine with hydrogen ion/ A base is a compound that turns red litmus paper blue / A base is a proton acceptor. (A base produce hydroxide ion (OH⁻) when dissolved in water). [1 mark]
- ii. A base tastes bitter but an acid tastes sour. [1 mark]
- (d) i. 1. Over cropping
2. Soil erosion
3. Leaching
4. Burning of vegetation before cropping
5. Over use of chemical fertilizers
6. Over tillage
7. Over grazing [Any 4 x 1/2 = 2 marks]
- ii. 1. Application of suitable fertilizer

2. Addition of manure
3. Crop rotation
4. Re-afforestation
5. Preventing over grazing [Any 4 x 1/2 = 2 marks]

Question 6 [15 MARKS]

- (a) i. The speed of light is slowed; therefore the ray of light is refracted [1 mark]
ii. The angle of incidence will be greater than the angle of refraction. [1 mark]
iii. With wide tyres, the weight of the tractor is distributed over more on the ground surface. Because of that it doesn't sink into the mud as compared to skinner tyres. [2 marks]
- (b) i. Radical is an ion with more than two different atoms. Or it is a group of atoms of more than one kind of element that combine together as a charged unit. [1 mark]
- ii. α. Ammonium - (NH₄)⁺
β. Nitrate - (NO₃)⁻
μ. Sulphate - (SO₄)²⁻
¥. Permanganate - (MnO₄)⁻ [4 x 1 = 4 marks]
- (c)
- | Organism | Respiratory |
|---------------|-------------|
| Bluefish tuna | Gills |
| Scorpion | Book lungs |
| Louses | Trachea |
| Horse | Lungs |
- [4 x 1/2 = 2 marks]
- ii. 1. For movement
2. For growth
3. For reproduction
4. For repairs and replace of worn out cell parts
5. Maintenance of body temperature [Any 2 x 1/2 = 1 mark]
- (d) i. Compost is a partially decomposed organic material used in farming to improve soil. [1 mark]
- ii. – The nutrients they supply is more balanced
– It reduces leaching and erosion
– Improve root growth dye to better soil structure
– They increase organic matter content in the soil. [Any 2 x 1 = 2 marks]

