**BIOLOGY MARKING GUIDE**

**CLASS: SENIOR TWO**

 **SECTION A: (55 marks)**

1. Any one of **(1mark)**
* Fish and reptiles are poikilothermic / cold blooded
1. B for one mark
2. For 6 marks

|  |  |
| --- | --- |
| Name of the life process | Description |
| **Reproduction** | Living things produce offspring |
| **Growth** | Living things get bigger and develop |
| **Movement** | Living thing change the position of their body, or part of their body |
| **Respiration** | Breaking down of the glucose to release energy. |
| Feeding or nutrition | **Process by which organisms obtain nutrients** |
| **Irritability** | Detects and respond to changes in the environment. |

4.a

|  |  |  |
| --- | --- | --- |
| ANIMAL | PHYLUM | CLASS |
| i) spider | Arthropoda(0.5 marks) | Arachnida(0.5 marks) |
| ii)Toad | Chordata (0.5 marks) | Amphibia(0.5 marks) |
| **iii) Elephant** | **Chordata (0.5 marks)** | **Mammalia(0.5)** |

 b.Any three of (3 marks)

* Number of antennae
* Number of wings
* Number of eyes
* Number of body parts

5. i)A:Bronchi;B:Trachea;C:Pharynx;D:Bronchiole;E:Alveola one mark for every well labeled letter1×4=4

 ii ) cilia are found from the nose;trachea; bronchi any one location for one mark

* role of cilia : move up and out microbes and debris or dust or clean/purify the air .one role for two marks

iii)in alveola there is gaseous exchange site/2 marks

6. any four of**(4marks)**

* Avoid areas of known outbreaks.
* Wash your hand frequently
* Avoid bush meat
* Avoid contact with infected people
* Flow infection-control procedures
* Don’t handle remains
* Vaccine development

7a) Enzyme is a biological catalyst that speed up chemical reactions that take place in the body. definition for two marks

b)characteristics of enzymes: biological catalyst; catalyse reversible reactions;affected by PH/temperature;work in small amount;affected by inhibitors;are protein in nature;ect. Any five one mark per each(1×5)=5

c) factors that affect the rate: concentration of substrate; temperature; inhibitors;PH; concentration of enzymes;etc.any three 1×3)=3

8. **a)** Cell B- It has a definite shape and cell wall which are absent in animal cell /2marks

 b) Synovial joint: This is the type joint that allows a considerable degree of movement. /1mk

 c) (i) A tendon : Attaches muscles to the bones. /1mark

 (ii) A ligament: Connects bones of the joint. /1mark

 (iii) Synovial fluid: Protects the bone from mechanical shock. /1mark

 (iv) A cartilage: Allows friction- free movement. /1mark

9. i) A: kidney

 Function: It is where ultra filtration takes place. **(0.5 + 0.5 mark)**

 B: Ureter

 Function: It removes nitrogenous wastes from the kidney. **(0.5 + 0.5 mark)**

 C: Bladder

 Function: It stores nitrogenous wastes before being removed from the body. **(0.5 + 0.5 mark)**

 ii)

|  |  |
| --- | --- |
| organ | Excretory product |
| Kidney  | Urine |
| Skin  | Sweat |
| Lungs | Carbon dioxide |

 **(3marks)**

10. a) any two of (2 marks)

 Lions,lizards ,snakes

 b) any two of (2marks)

* The antelopes would increase
* The green plants would decrease

Primary consumers would compete

**11 a)** This is the movement of water molecules from the region of high water potential to the region of low water potential across semi permeable membrane. **/ 2marks**

 **b)** Water level will rise above the level of start of investigation. **/2marks**

 **c)** Water in the beaker is less concentrated and solution in the capillary tube is more concentrated and from the definition of osmosis, water will move from the beaker into capillary tube hence increasing solution level in the capillary tube. **/5marks**

 **d)** A red blood cell bursts when is put in pure water because pure water is less concentrated compared to red blood cell. Osmosis will cause water to enter the red blood cells, as more water enters, the cell tends to expand since it has no cell wall to overcome the osmotic pressure, it finally bursts but due to presence of cellulose cell wall present in plant cell they overcome the osmotic pressure hence don’t burst. **/6marks**

 **SECTION B:( 30 marks)**

**12.**  a) A-waxy cuticle B-leaf tissue C-Stoma D-upper epidermis E-Chloroplast F- Guard cell. **For 0.5 marks per each.**

 b)

1. The cells that make food by photosynthesis- **Leaf tissue.(1mark)**

 2 .Makes the leaf waterproof-  **Waxy cuticle**.**(1mark)**

3. Hole that lets gases in and out of the leaf- **stoma(1mark)**

4. Has chlorophyll inside-**chloroplast**.**(1mark)**

 c) i) Leaves are broad and flat **.(1mark)**

 ii) The leaves are thin. **(1mark)**

 iii) They have stomata **(1mark)**

 **13.**

13a.

Well plotted graph for 4 marks.If not zero

**b)** At low PH the activity of an enzyme is low when PH increases the activity of an enzyme increases and it is maximum at optimum PH beyond optimum PH activity of enzymes decreases as enzymes are denatured. 2marks

**c)** The most suitable PH for enzyme amylase in this investigation is PH=7.0/1mark

**d)** Other factors (Not in this investigation) that affect the action of an enzyme such as amylase are: concentration of substrate; temperature; inhibitors; concentration of enzymes;inhibitors.Any three factors one mark for each(1×3)=3

**14.** a) Transpiration is the process by which plants lose water in the form of water vapour to the atmosphere. **(2 marks**)

 b) any two of**(2 marks)**

* Stomatal transpiration
* Cuticular transpiration
* Lenticular transpiration
1. any three of **(6marks)**
* Temperature –the warmer it is the faster transpiration happens. When it is warm the water particles have more energy .They more likely to evaporate.
* Humidity- a dry atmosphere ( low humidity) leads to increased transpiration. High humidity increases saturation of air with water vapour reducing transpiration rate.
* Light intensity –higher light intensity increases the rate of stomatal opening, leading to higher transpiration.
* Wind- wind carries away water vapour reducing saturation.This encourages faster transpiration rate.
* Atmosphere pressure-the lower atmospheric pressure, the higher the rate of transpiration.
* Availability of water- less water in the soil means less water reaches the leaves. This reduces the rate of transpiration.

 15) i) Proteins **(2marks)**

* Used for growth
* Used to repair worn out tissues

ii) carbohydrates- used to produce and store energy**(2marks)**

iii) Lipids **(2marks)**

* produce energy
* insulate body

iv) Vitamins **(2marks)**

* defend against infections
* They form coenzymes

v) Water **(2marks**)

* Universal solvent
* Medium for chemical reactions.

16 a)There are 3 main types of carbohydrates:

* monosaccharides which are simple sugar;they are sweet and soluble in water.

Example: glucose.

* Disaccharides made of 2 simple sugars join by glycosidic bonds; they are sweet and soluble in water.Example:sucrose made of glucose and fructose
* Polysaccharides made of many simple sugars;they are not sweet ;they are insoluble.

Examples:starch is a long chain of glucose molecules

Three marks for each type(1 mark for kind;one mark any other explanation related to the kind and one mark for one example)

b)test of reducing sugar

* Reagent:benedict’s reagent(blue in colour)
* Mix equal amount of the reagent and solution test in test tube
* Put the mixture to the source of heat and observe change in colour.
* If the reducing sugar is present colour changes from blue to green to yellow to orange.
* If absent no colour change/5marks (1 mark for the reagent;2marks for procedures; 2 marks for results).