**BIOLOGY FORM TWO EXAM**

**Marking scheme**

1. **Explain the following terms:**

**Taxonomy (1mk)**study of classification

**Species (1mk**)Smallest unit of classification whose members can freely interbreed giving rise to viable offsprings

1. **State the function of the following organelles**

**Lysosomes** Contains lytic enzymes for breakdown of wornout organelles (1mk)

**Golgi apparatus (2mk**) formation of lysosomes

* + 1. Packaging and transport of glycoprotein
1. **The chemical equation below represents a physiological process that takes place in living organisms:**

**R**

* 1. **C6H12O6 + C6H12O6 C12H22O11 + Q 2mrks**
	2. **Name the process R** a) Condensation;
	3. **Name the substance Q** b) water;
1. **Name the diseases caused by deficiency of: 2mrks**
	* + 1. **Iodine** Goitre;
			2. **Vitamin C**) Scurvy;
2. The following experiment was set up to demonstrate a physiological process. Two tubes A and B made of sheep’s bladder were filled with different liquids and placed in a basin containing a liquid

Liquid

Basin

**After 20 minutes, it was found that tube A felt hard and the liquid in it had increased. Tube B was soft and contained less liquid.**

**a)Explain what took place in tubes A and B** (4mks)

A liquid A is hypertonic to the surrounding;absorbed water via osmosis through the semipermeable sheep’s bladder

B liquid B is hypotonic to the surrounding;lost water via osmosis

**What does the sheep’s bladder correspond to?**

* + 1. Semipermeable membrane
1. **The diagram below shows chemical reactions A and B which are controlled by enzymes x and y respectively.**

Glucose + Fructose

Reaction A in presence

of enzyme **x**

Sucrose + Water

Reaction **B** in

presence of enzyme **y**

* 1. **Name: (i) Reaction A**– condensation; 2mrks
	2. **. (ii) Enzyme y**– Sucrase;
1. **What are the two functions of bile salts during the process of digestion 2mrks**
	* + - * To emulsify fats;
				* To provide an alkaline condition for enzyme activities;
2. **Name the component of a people’s diet that is essential for peristalsis. 1mrk**

Fruits and vegetables.

**b) Give two groups of food which are reabsorbed along the mammalian digestive** **system without undergoing digestion 2mrks**

vitamins,mineral salts ,water

1. **Give the roles of light in photosynthesis. 2mrks**
	1. **a) What is peristalsis?**  1mrk
2. Study the dental formula below:

**2**

**3**

**3**

**3**

**0**

**0**

**0**

**4**

1. **I** **; C** ; ; **PM** ; **M**

**a)Identify with reasons the mode of feeding of the animals whose dental formula is given** **above. (2mks)**

* + - * + Mode of feeding is herbivorous. Reject Herbivore
				+ Absence of upper incisors but have hony pad

**(b) Calculate the total number of teeth in the mouth of the above animal 1mrk**

* 1. (b) 30

**c)Explain why small mammals such as moles feed more frequently than larger ones such**

* + 1. **as elephants 2mrks**
		2. Small mammals have large surface area to volume ratio; hence lose heat quickly to environment; to replace the heat , lost, their metabolism is high making them to feed more frequently
1. **State the differences between plants and animals (3mks)**

|  |  |
| --- | --- |
| PLANTS | ANIMALS |
|  Make their own food through the process of photosynthesis |  Depend on plants and other animals for food; |
|  They do not move from one place to another |  They move from one place to another; |
| Respond slowly to stimuli |  Respond faster /quickly to stimuli; |

1. **Name three photosynthetic cells in plants** (2mks)

Guard cells

Pallisade cells

Spongy mesophyll cells

1. **Name the elements present in carbohydrates** (3mks)

Carbon,hydrogen and oxygen

1. The following diagram of a leaf shows what happens in a pant leaf during photosynthesis: -



**\(a) Give two ways in which leaves are adapted to absorb light 2mrks**

* 1. Broad and flat to absorb maximum light
	2. Have chloroplast with chlorophyll to trap light.
	3. Transparent cuticle to allow light to pass through

**(b) Name the gases labelled X and Y 2mrks**

* 1. ) X – Carbon (IV) Oxide
	2. Y – Oxygen

**(c) Name the tissue that transports water into the leaf and sugars out of the leaf 2mrks**

Xylem – Transports water

Phloem – Sugars out of the leaf

* 1. **(d) Explain why it’s an advantage for the plant to store carbohydrates as starch rather than as sugars** 2mrks(d) Starch is insoluble in water, hence osmotically inactive; This reduces effect on absorption of water.
1. . **(a) What is meant by digestion? 1mrk**

breakdown of complex food, substance; into simple diffusible substances;

**(b) Describe how mammalian small intestine is adapted to its function. 6mrks**

 coiled/ folded to allow food (enough) time/; Is relatively long; increase surface area for absorption of digested food and for digestion

Lumen has projection called villi; villi has projections called microvilli; to increase surface area for absorption

Walls have glands which secret enzymes for digestion; e.g. maltase/ sucrose/ lactase/ enterokinase/ peptidases

Some glands/ goblet cells produce mucus; which protects the intestinal wall from being digested and also reduce friction

Have openings of ducts which allow bile/ pancreatic juice into the lumen

The intestines have circular and longitudinal muscles; whose contraction and relaxation/ peristalsis leads to mixing of food with enzymes/ juices; facilitating rapid digestion; and helps push food along the gut

Intestines are well supplied with blood vessels/ highly vascularized; to supply oxygen/ remove digested food

Lacteal vessels; transport fats/ lipids

 have thin epithelia; to facilitate fast/ rapid absorption/ diffusion