**Name:………………………………………….………………….Class:…………Adm No:…….**

**BIOLOGY**

**FORM 2 OPENER EXAM-AUGUST**

**TIME:**

**INSTRUCTIONS.**

**Answer all the questions in the spaces provided.**

1. State the function of the following organelles. (2mks)
2. Lysosomes

***Contain lytic enzymes that destroy worn out cells.***

1. Ribosomes

***They are sites for protein synthesis***

1. A student observed a row of 16 epidermal cells in a microscopic field that was 8mm in diameter. Calculate the average length of one cell in micrometres. Show your working. (3mks)

***Size of one cell = diameter of field of view***

***Number of cells in field of view.***

***8mm x 1000um***

***1mm***

***= 8000um***

***16cells***

***=500um***

1. A student drew a 6cm diagram of a plant flower if the actual length of the flower was 12cm. calculate the magnification of the drawing made by the student. Show your working. (3mks)

***Magnification of a handlens = Drawing length***

***Actual length of the object***

***6cm = x0.5***

***12cm***

1. State three factors that affect the rate of diffusion. (3mks)

***Diffusion gradient***

***Thickness of tissues***

***Size of molecules***

***Temperature***

***Type of medium***

***Surface area to volume ratio***

1. An experiment was set-up in a laboratory as shown below.
2. What will happen to visking tubing in M and N after two hours. (2mks)

***M – will swell / increase in size***

***N – Will shrink / decrease***

1. Explain the observations made in M. (2mks)

***Sodium chloride solution is a hypertonic solution while distilled water is a hypotonic solution therefore distilled water molecules will move from the beaker to the visking tubing by osmosis making it to swell.***

1. What does visking tubing represent in a living organism? (1mk)

***Cell membrane/ plasma membrane/plasmalema.***

1. Distinguish between autotrophism and heterotrophism modes of nutrition. (2mks)

***Autotrophism is a mode of nutrition in which some plants manufacture their own complex food substances from simpler substances such as carbon (IV) oxide and water while heterotrophism is a mode of nutrition that involves taking complex ready made food materials from plants and other animals.***

1. State three properties of monosaccharides. (3mks)

***They are soluble in water***

***They form sweet tasting solution***

***They are reducing sugars***

***They are crystalisable.***

1. The equation below shows formation of a disaccharide.

Glucose + Glucose process p Q + water

1. Name process P. (1mk)

***Condensation***

1. Product Q. (1mk)

***Maltose***

1. Other than product Q named above name other two examples of disaccharides. (2mks)

***Sucrose***

***Lactose***

1. List four factors which affect enzyme controlled reaction. (4mks)

***Temperature***

***pH***

***Specificity***

***Enzyme co-factors and co-enzyme***

***Enzyme inhibitors***

***Substrate concentration and enzyme concentration.***

1. Name two nutrients that are absorbed without being digested by the enzymes in humans. (2mks)

***Water***

***Vitamins***

***Mineral ions/salts***

1. List three types of salivary glands. (3mks)

***Sublingual***

***Sub-mandibular***

***Parotial sub-maxillary***

1. Give two roles of saliva in the process of digestion. (2mks)

***Lubricates food***

***Moistens food***

***Softens food***

***Dissolves food***

***Contains salivary amylase hence digests starch to maltose***

***Provides an alkaline medium for action of salivary amylase.***

1. Differentiate between homodonts and heterodonts. (2mks)

***Homodonts: are animals which have the same types, size and shape of teeth while heterodonts are animals with different types, size and shapes of teeth.***

1. The diagram below represents the lower jaw of a mammal.
2. Name the mode of nutrition of the animal whose jaw is shown above. (1mk)

***Heterotrophism***

1. Mode of feeding. (1mk)

***Herbivorous***

1. Give a reason for your answer in (b) above. (1mk)

***Presence of a diastema***

1. Diet of the animal. (1mk)

***Vegetation/ grass/green leaves.***

1. Name the toothless gap labeled K. (1mk)

***Diastema***

1. Name the substance that is responsible for hardening of teeth. (1mk)

***Calcium phosphate***

1. State the roles of the structures found within a tooth:
2. Blood vessels. (1mk)

***They supply nutrients to living tissues in the dentine.***

***Remove waste products from the dentine***

1. Nerves. (1mk)

***They detect heat, cold and pain in the tooth***

1. List two major types of dental diseases. (2mks)

***Dental carriers***

***Periodontal disease***

1. Give two roles played by bile salts in the process of digestion. (2mks)

***They aid in the breakdown of fats into tiny fat droplets to increase their surface area for digestion (emulsification)***

***They provide an alkaline medium which the enzymes work best.***

***They neutralize the acidic chime from the stomach.***

1. Explain five ways in which the illume is adapted to its functions. (5mks)

***Long and narrow to increase surface area for digestion and bring digested food into close contact with walls of the ileum for easier absorption.***

***Highly coiled to slow down movement of food thus allowing more time for digestion and absorption to take place.***

***Large number of villi and micro-vill to increase surface area.***

***Presence of thinner layer of cells to reduce diffusion distance of digested food.***

***Presence of dense network of capillaries in the villi into which amino acids, sugar and vitamins are absorbed.***

***Presence of lacteals in the villi for the absorption of fatty acids and glycerol.***

1. The following is a dental formula of a certain mammal.

I0/3 C0/1 Pm3/3 m3/3

1. Calculate the total number of teeth of the mammal. (2mks)

***0 + 0 + 3 + 3 x 2 = 12***

***3 + 1 + 3 + 3 x 2 = 20***

***32 teeth***

1. Give the likely mode of feeding. (1mk)

***Herbivorous***

1. Give a reason for your answer in (ii) above. (1mk)

***It lacks incisors and canines in the upper jaw to create a horny pad.***

1. Name the disease in humans caused by deficiency the following: (5mks)
2. Vitamin A

***Night blindness***

1. Vitamin D

***Rickets***

1. Vitamin C

***Scurvy***

1. Iodine

***Goiter***

1. Iron

***Anemia***

b. State one function of water in the diet. (1mk)

***it is a solvent of soluble food substances cooling of the body.***

***Provided the medium for transport of dissolved food substances.***

***Facilitates hydrolysis of food substances.***

c. State five factors that determine energy requirements in human beings. (5mks)

***Basal metabolic rate***

***Occupation/everyday activity***

***Age***

***Body size***

***Sex***