Name	:	1 No:	
BIOL 2021/2 TIME	2022 FORM 2 TERM 1 OPENER EXAM-AUGUST		
INSTRUCTIONS. Answer all the questions in the spaces provided.			
	State the function of the following organelles. a. Lysosomes Contain lytic enzymes that destroy worn out cells. b. Ribosomes They are sites for protein synthesis A student observed a row of 16 epidermal cells in a microscopic field that was diameter. Calculate the average length of one cell in micrometres. Show your was		
	Size of one cell = diameter of field of view Number of cells in field of view.	(SIIIKS)	
3.	8mm x 1000um 1mm = 8000um 16cells =500um A student drew a 6cm diagram of a plant flower if the actual length of the flower calculate the magnification of the drawing made by the student. Show your work Magnification of a handlens = Drawing length		
	Actual length of the object		
	6cm = x0.5 $12cm$		
4.	State three factors that affect the rate of diffusion. Diffusion gradient Thickness of tissues Size of molecules Temperature Type of medium Surface area to volume ratio	(3mks)	
5.	An experiment was set-up in a laboratory as shown below. i. What will happen to visking tubing in M and N after two hours. M – will swell / increase in size N – Will shrink / decrease	(2mks)	
	ii. 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.

iii. What does visking tubing represent in a living organism?

(1mk)

Cell membrane/plasma membrane/plasmalema.

6. 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.

7. State three properties of monosaccharides.

(3mks)

They are soluble in water

They form sweet tasting solution

They are reducing sugars

They are crystalisable.

8. The equation below shows formation of a disaccharide.

Glucose + Glucose process p Q + water

i. Name process P.

(1mk)

Condensation

ii. Product O.

(1mk)

Maltose

iii. Other than product Q named above name other two examples of disaccharides.

(2mks)

Sucrose

Lactose

9. 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.

10. Name two nutrients that are absorbed without being digested by the enzymes in humans.

(2mks)

Water

Vitamins

Mineral ions/salts

11. List three types of salivary glands.

(3mks)

Sublingual

Sub-mandibular

Parotial sub-maxillary

12. 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.

13. 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.

14. The diagram below represents the lower jaw of a mammal.

a.	Name the mode of nutrition of the animal whose jaw is shown above.	(1mk)		
	Heterotrophism			
b.	Mode of feeding.	(1mk)		
	Herbivorous			
c.	Give a reason for your answer in (b) above.	(1mk)		
	Presence of a diastema			
d.	Diet of the animal.	(1mk)		
	Vegetation/ grass/green leaves.			
e.	Name the toothless gap labeled K.	(1mk)		
	Diastema			
f.	Name the substance that is responsible for hardening of teeth.	(1mk)		
	Calcium phosphate			
15. State the roles of the structures found within a tooth:				
a.	Blood vessels.	(1mk)		
	They supply nutrients to living tissues in the dentine.			
	Remove waste products from the dentine			
b.	Nerves.	(1mk)		
	They detect heat, cold and pain in the tooth			
16. List two major types of dental diseases. (2m				
Dental carriers				
Periodontal disease				
17. 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.

18. 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.

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

 $I^0/_3 C^0/_1 Pm^3/_3 m^3/_3$

i. Calculate the total number of teeth of the mammal.

(2mks)

$$0+0+3+3 \times 2=12$$

 $3+1+3+3 \times 2=20$

32 teeth

ii. Give the likely mode of feeding.

(1mk)

Herbivorous

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

(1mk)

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

20. Name the disease in humans caused by deficiency the following:

(5mks)

i. Vitamin A

Night blindness

ii. Vitamin D

Rickets

iii. Vitamin C

Scurvy

iv. Iodine

Goiter

v. 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