GHS **EOT 2** **S. 2**
BIOLOGY P553/1 (THEORY) **AUGUST 2017**
TIME: 2 HOURS

NAME:……CLASS/NO……..

INSTRUCTIONS

Attempt all the questions in section A and B and C in the spaces provided

ANSWERS TO SECTION A

1	7	13	19	25
2	8	14	20	26
3	9	15	21	27
4	10	16	22	28
5	11	17	23	29
6	12	18	24	30

FOR OFFICIAL USE ONLY

SECTION A	
SECTION B	
SECTION C	
TOTAL	

SECTION A

1. Which one of the following is the correct order of food movement in the in the gut of a ruminant?
   A. Rumen → recticulum → omasum → abomasum
   B. Recticulum → rumen → abomasum → omasum
   C. Rumen → recticulum → abomasum → omasum
   D. Recticulum → rumen → omasum → abomasum
2. Bryophyllum leaves are modified for?
   A. vegetative propagation
   B. protection of the plant
   C. support
   D. Attaching the plant onto objects
3. Which one of the following groups of animals lives on land and in water?
   A. Fish
   B. Amphibians
   C. Reptiles
   D. Mammals

4. A medium of high pH stops the action of
   A. Pepsin
   B. Lipase
   C. Ptyalin
   D. Maltase
5. Which of the following are seed bearing plants?
   A. spermatophyte
   B. Bryophyta
   C. Phycophyta
   D. Pteridophyta

6. Which of the following parts of a flower are non essential?
   A. calyx and corolla
   B. stamens and carpels
   C. stamens and corolla
   D. carpels and coroll
7. Which of the following are NOT underground stems?
   A. Rhizomes
   B. Tubers
   C. Stolons
   D. Bulb
8. The following is a list of some parts of the alimentary canal: stomach, ileum, colon and oesophagus.
   Which of the following places them in the correct order in which food passes through?

   A. Stomach, ileum, colon, oesophagus.
   B. Oesophagus, stomach, ileum, colon.
   C. Oesophagus, stomach, colon, ileum.
   D. Stomach, colon, oesophagus, ileum.
9. One of the major functions of vitamin C in the human body is
   A. To provide body resistance against diseases.
   B. To provide resistance against blood cells.
   C. To add bulk to food eaten.
   D. To increase the rate of heartbeat.
10. Clay soil is usually water logged due to

   A. too much water
   B. Small pores poor drainage
   C. Higher force of capillarity
   D. Large particles
11. Eating excess proteins at one meal is wasteful because
   A. proteins are body building foods and very little is required to build cells.
   B. excess proteins are only used to repair broken down cells.
   C. excess proteins cannot be stored in the body.
   D. excess proteins are harmful to be circulatory systems.
12. The role of rennin in children during digestion is
   A. Breaking down milk protein into peptides.
   B. mixing the milk protein with digestive enzyme.

C. activating pepsin to digest the milk protein.
D. coagulating milk protein.

13. Which one of the following fruits is an example of a drupe?
    A. Avocado.
    B. Passion
    C. Tomato
    D. Orange
14. A collection of flowers on the same stalk is
    A. a composite
    B. a multiple flower
    C. An inflorescence
    D. a polycarpous pistil
15. Beans are usually included in crop rotation cycle because they
    A. act as cover crop
    B. increase humus content in the soil
    C. improve water retention of the soil
    D. restore nitrogen in the soil
16. Which one of the following is correct about nutrition in a Rhizopus?
    A. Digestion of food occurs outside the organism.
    B. It makes its own food
    C. Digestion of food is intracellular
    D. It does not produce enzymes.
17. The stalk that attaches a seed to the placenta in a fruit is called the?
    A. Pedicel
    B. Petiole.
    C. Funicle.
    D. Style.
18. Termites are able to eat wood because they:
    A. produce cellulase enzyme.
    B. possess strong mandibles.
    C. contain fungi in the gut.
    D. contain cellulose digesting bacteria in the gut.
19. The maize fruit is an example of:-
    A: Schizocarp
    B: Berry
    C: Caryopsis
    D: Drupe
20. Which one of the following contains more chloroplasts in a leaf?
    A. Palisade layer
    B. Spongy layer
    C. Guard cells
    D. Epidermal cells
21. Which of the following minerals is found in almost all foods
    A. Phosphorous
    B. Magnesium
    C. Iron
    D. Iodine
22. What are the products of digestion of lactose sugar?
    A. Glucose only
    B. Glucose and galactose
    C. Fructose and galactose
    D. Fructose and glucose

23. To identify a substance Y, a student performed the following experiment.

Test	Observation
(i) Heated Y with Benedict's Solution	Solution remained blue
(ii) Heated Y with hydrochloric acid, cooled, added sodium hydrogen carbonate, benedict's solution, then heated again.	Solution turned from blue to orange.

From the observations, the most likely food substance in Y is

A. Starch
B. Maltose
C. Sucrose
D. Glucose

24. Which of the following blood vessels transport blood most rich in nutrients?
A. Pulmonary artery
B. Hepatic portal vein
C. Mesentric artery
D. Renal vein

25. A maize grain is both a seed and fruit because it
A. shows hypogeal germination
B. has a fused pericarp and testa
C. shows two attachments or scars.
D. has both endosperm and cotyledon

26. Which one of the following is a characteristic of insects only?
A. Exoskeleton
B. Jointed legs
C. Two pairs of wings
D. Three body divisions

27. Which one of the following organisms carriers out intracellular digestion?
A. Fungi
B. Algae
C. Amoeba
D. Hookworm

28. The following are body secretions:
(i) Amylase
(ii) Trypsin
(iii) Hydrochloric acid
(iv) Pepsin
(v) Rennin

Which of them are contained in gastric juice?

A. (i) and (iii)
B. (ii) and (iv)
C. (iii) and (v)
D. (i) and (ii)

29. Which one of the following substances does not contain nitrogen?
A. Glycerol
B. Amino acids.
C. Amylase
D. Urea.

30. Which one of the following parts of the cell is responsible for energy production

A. Mitochondria
B. Nucleus
C. Chloroplast
D. Cell membra

SECTION B

31. The table below shows the rate of enzyme activity at different pH values

pH	1	2	3	4	5	6	7	8	9	10
Rate of product formation (mg/hr)	8	9.5	7.8	6	3.3	2	1.4	0.8	0	0

a) Using a suitable scale, draw a graph to represent the above information showing the rate of product formation against pH (7 marks)

b) Describe the changes in rate of product formation with increasing pH (4 marks)

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c) (i) what is the optimum pH value of this enzyme (1 mark)

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(ii) Suppose this enzyme is a digestive enzyme, in which part of the alimentary canal would it be active? (1 mark)

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(iii) Give a reason for your answer in c) (ii) above (2 marks)

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(iv) State the substrate acted upon by the enzyme above and its product (2 marks)

Substrate	Product

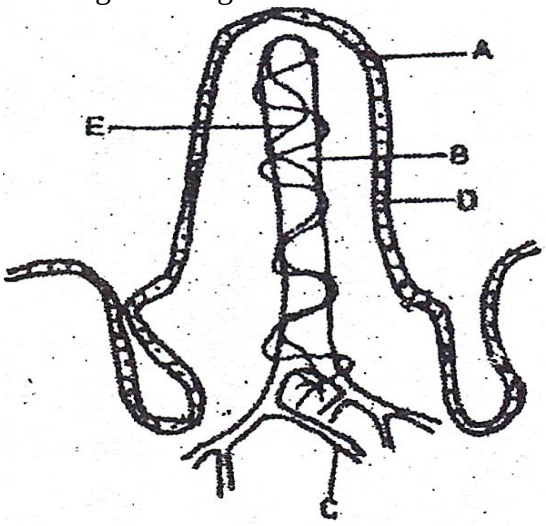
d) State any other three factors that affect enzyme activity apart from the one mentioned above. (3 marks)

i) ……

ii) ……

iii) ……

32. **(a)** The diagram in figure 5 shows the structure of a villus.



(a) Label parts marked A, B, C and E. (2 marks)

A ……

B……

C……

E ……

(b) What food substance enters (3 marks)

(i) B

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(ii) E

……

(c) State two factors which make a villus an effective absorbing structure. (2 marks)

(i) ……

(ii) ……

(d) How does the absorbed food in E reach the general circulation? (1 mark)

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(e) State two nutrients which are absorbed in the gut before reaching the villus. (2 marks)

(i) ……

(ii)……

Section C (attempt any one question from this section)

33. (a) Define the term digestion (1 mark)
(b) An athlete ate a meal of Posho (starch) and beans (proteins) in preparation for an MTN marathon. Describe the process of chemical digestion of what he ate in

(i) Mouth (3marks)

(ii) Stomach (3 marks)

(iii) Duodenum (5 marks)
(c). how is the villi adapted to its functions of absorption (3 marks)?

34. Describe an experiment to show that sand soil drains faster than clay soil (15 marks)

PRACTICAL

34. You are provided with specimens' S (premolar) and T (Molar) which are from the same mammal

(a) Identify the specimens giving reasons for your identity (6 marks)

Specimen	Identity	Reasons for identity
S		(i)……... (ii)……
T		(i)……... (ii)……

(b) State any four structural differences between S and T (3 marks)

S	**T**

(c) Using the observable structural differences, state the functions of specimen S and T (4 marks)

Specimen	Function	Structural features
S		
T		

(d) Name two other mammalian teeth apart from S and T (2 marks)

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(e) Draw and label specimen T (5 marks)

END