

Candidate's Name:

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Signature:

553/1
BIOLOGY
(Theory)
Paper 1
2019
2 ½ hours

LAYIBI HIGH SCHOOL AYWEE CAMPUS-GULU
END OF TERM I EXAMINATIONS
S.4
BIOLOGY THEORY

Paper 1

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper consists of sections **A**, **B** and **C**.*

*Answer **all** questions in Sections **A** and **B**, plus **two** questions from Section **C**.*

*Circle on the most correct alternative for questions in section **A**, and answers to Section **C** must be written in the answer booklets provided.*

For Examiners' Use Only		
Section	Marks	Examiner's Signature and No.
A:		
B: No. 31		
No. 32		
No. 33		
C: No. No.		
Total		

SECTION A (30 MARKS)

1. Muscles are attached to bones by
A. cartilages. B. tendons C. muscle fibres. D. ligaments.
2. At which level of organization is the type of blood vessel referred to as a vein?
A. A cell
B. Organ system
C. Organ
D. Tissue
3. The rise of water in a tall tree ascends without it breaking due to;-
A. Root pressure
B. Cohesive force
C. Transpiration
D. Adhesive

4. Which one of the following is correctly matched with classification of housefly?

	Phylum	Class	Order
A.	Arthropoda	Insecta	Diptera
B.	Arthropoda	Insecta	Isoptera
C.	Arthropoda	Insecta	Hymenoptera
D.	Arthropoda	Insecta	Dictyoptera

5. Blood clotting in man can only occur appropriately in the presence of
A. platelet and hormones
B. Hormones and plasma
C. Platelet and fibrinogen
D. Fibrinogen and leucocytes
6. The major reason what termites are able to eat wood is
A. they produce cellulose enzymes
B. they possess strong mandibles
C. Microscopic fungi live in their guts
D. They ingest only small pieces
7. Which of the following is not related to reproduction in insect?
A. Incomplete metamorphosis
B. complete metamorphosis
C. moulting
D. menstruation
8. Which of the following human reproductive hormones is produced by pituitary gland?
A. Oestrogen
B. Testosterone
C. Follicle Stimulating Hormone

D. progesterone

10. The opening of stomata during night and closure during day is an attempt to;

- A. Stop gaseous exchange
- B. Conserve water
- C. Conserve energy
- D. Lower the temperature

11. The table below shows the relative value in the consumption of food reserves of different seeds.

Relative food reserves Seeds	Carbohydrates	Proteins	Fats
Castor oil	0	18	65
Ground nuts	22	25	45
Maize	74	10	05
Rice	75	9	2

Which one of the four seeds would provide greatest quality of nutrient for the growth of foetus in expectant mother

- A. Maize
- B. Groundnuts
- C. Rice
- D. Castor oil

12. If the liver of an individual is damaged, which of the following activities is likely to be affected

- A. Digestion of proteins
- B. Elimination of urine
- C. Formation of glycogen
- D. Regulation of water

13. Three test tubes were set, so that tube 1 and 2 contained glucose and tube 3 contained distilled water, a few drops of solution X were added to test tube 1 and 3 only. After five minutes samples from each test tube were added to a drop of solution white tile, the results were tabulated as shown below

Test tube	1	2	3
Reaction	Bleucolour	N change in colour	No change in colour

From the result, that chemical compound which was represented in solution X is

- A. Starch
- B. Glucose
- C. Enzymes
- D. Sucrose

14. The branch of biology which entirely deals with the study of animal behaviour is;

- A. Physiology
- B. Ethology
- C. Ecology
- D. Morphology

15. Which sequence represents the correct pathway for removal of urine from the human body?
- A. Kidney-urethra- urinary bladder
 - B. Ureter-kidney-urinary bladder- urethra
 - C. Urethra- kidney- urinary bladder- ureter.
 - D. Kidney-ureter-urinary bladder-ureter
16. If a potato cylinder has the following measurement;
Length of sides = 12mm
Area of sides = 4mm²
Its surface area to volume ratio is;
- A. 6:1 C 12:1
 - B. 3:1 D. 4:1
17. Compared to inspired air; expired air, contains?
- A. Less oxygen but more carbondioxide
 - B. Less oxygen and less carbondioxide
 - C. More oxygen and more carbondioxide
 - D. More oxygen and less carbondioxide.
18. Prolonged muscular activity increases concentration of lactic acid in the muscle level, which one of the following takes place as result of this;
- A. Reduced muscular activity.
 - B. Reduced breathing rate
 - C. Elimination of lactic acid
 - D. Production of more sweat.
19. For a traffic policeman to stretch out his arm to the right, the
- A. biceps muscle contracts while the triceps muscle relaxes
 - B. triceps muscle contracts while the biceps muscle relaxes
 - C. biceps muscle and triceps muscle both relax
 - D. triceps muscle and biceps muscle both contract
20. Which one of the following are paired fins in a fish?
- A. Caudal and dorsal
 - B. Pectoral and pelvic
 - C. Ventra and pectoral
 - D. Dorsal and ventral
21. The vertebra with facet on both the centrum and transverse process is;
- A. Cervical
 - B. Thoracic
 - C. Lumber
 - D. Sacral
22. The advantage of the red blood cells lacking the nucleus is;-
- A. Contain more haemoglobin
 - B. To give up oxygen readily
 - C. To be more permeable to oxygen
 - D. Have high affinity for oxygen
23. Which of the following part of microscope magnifies the object?

- A. Eye piece and mirror
 - B. Objective lens and mirror
 - C. Eye piece and objective lens
 - D. Eye piece and adjustment
24. The cowpea flower is adapted for cross-pollination by having
- A. Large brightly colored petals
 - B. Nectaries at the base of the standard petal
 - C. Keel petal enclosing the androecium and gynaecium
 - D. Stamens that mature before the pistil
25. Which one of the molecules is osmotically active when placed in a semi permeable membrane?
- A. Glucose
 - B. Sucrose
 - C. Cellulose
 - D. Galactose
26. Which one of the following is the limiting factor of photosynthesis in an aquatic green plant submerged in water?
- A. Sunlight
 - B. Water
 - C. Carbondioxide
 - D. Oxygen
27. In a cold environment, the most effective physiological mechanism of coping up with this environment is?
- A. Sweating
 - B. Shivering
 - C. Fat insulation
 - D. Vaso constriction
28. The deficiency disease rickets is due to lack of element;-
- A. Phosphorus
 - B. Iodine
 - C. Iron
 - D. Nitrogen
29. An individual who drinks excessive alcohol walks uncoordinated due to an effect in the part of the brain called?
- A. Cerebrum
 - B. Medulla oblongata
 - C. Hypothalamus
 - D. Cerebellum
30. Which one of the following least contributes to global warming?
- A. Use of pesticides
 - B. Re-afforestation
 - C. Use of CFCs
 - D. Burn the fossil fuels

SECTION B [(40 MARKS)]

31. An experiment was performed to find out how fast a plant photosynthesized as the concentration of carbon dioxide in the air around it was varied. The results were shown in the table.

CO ₂ concentration by volume (%)	Rate of photosynthesis (arbitrary units)	
	Low light intensity	High light intensity
0.00	0	0
0.02	20	33
0.04	29	53
0.06	35	68
0.08	39	79
0.10	42	86
0.12	45	89
0.14	46	90
0.16	46	90
0.18	46	90

a) Plot the results on the same set of axes on a graph paper.
(10marks)

b) What is CO₂ concentration in normal air? (1marks)

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c) What is the rate of photosynthesis at this CO₂ concentration in high light intensity?
(2marks)

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d) i) Describe the shape of the curve for the rate at low light intensity. (3marks)

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- ii) Give an explanation for the shape of the curve described in d(i) above.
(3marks)

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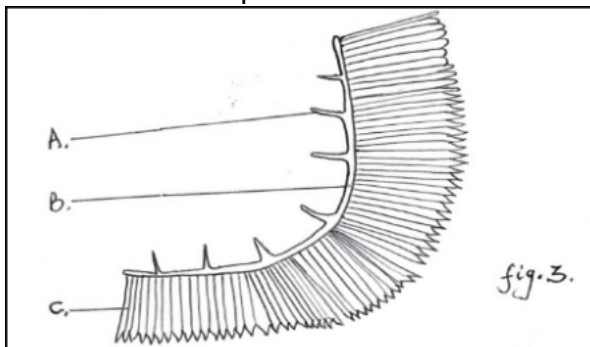
- e) What is the relationship between light intensity and the rate of photosynthesis?
(1mark)

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- f) Suggest one way by which the rate of photosynthesis can be measured.
(1mark)

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32. Figure 3 shows the structure of a gill of a bony fish. Study it carefully and use it to answer the questions that follow



- (a) Name the parts labeled A, B, C (1 ½ marks)

A
B
C

(b) Name one function of each of the parts labeled above (3 marks)

A

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B

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C

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(c)

c.) Briefly describe how the gill is adapted to perform its function(s) (5 ½ marks)

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33. Name the vitamin; mineral elements and enzymes necessary in the process of blood clotting.

i. Vitamin..... (1mark)

ii. Mineral element.....(1mark)

iii. Enzyme(1mark)

b) Give the reason why the knowledge of blood groups is important during blood transfusion (3marks)

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c) State two ways by which white blood cells fight microorganisms (2 marks)

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d) Name the diseases of blood described by the following symptoms

i. inability of blood to clot

(1mark)

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ii. Crescent shaped red blood cells with abnormal hemoglobin

(1mark)

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SECTION C (30 MARKS)

34. (a) describe the importance of breast feeding over bottle feeding
(5mks)

what are the function of placenta and how is it adapted to is functions?
10mks)

35.(a) State four reasons why birds fly? (2mks)

(b) In which ways are birds adapted for flight.
(07mks)

(c) With two examples in each case, describe the following types of skeletal systems.
(6mks)

- (i) Endoskeleton
- (ii) Exoskeleton
- (iii) Hydrostatic skeleton

36. Briefly describe the digestive processes that take place in

(i) the duodenum (5mks)

(ii) the ileum (4mks)

(b) How is ileum adapted to its function? (6mks)

37.a) what is soil conservation? (2 mks)

b) State four ways through which soil fertility can be conserved (4mks)

c) Explain why fish die when large amount of fertilizer are deposited in a water body (3mks)

d) Besides fertilisers .state three other water pollutants and their respective effects to aquatic life (6 mks)

END