

NAME:..... CENTRE/ INDEX No.....
 SCHOOL..... SIGNATURE:.....

553/1
BIOLOGY
(Theory)
PAPER 1
July/August 2018
2½ hours



WAKISSHA JOINT MOCK EXAMINATIONS

Uganda Certificate of Education

BIOLOGY

(THEORY)

Paper 1

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

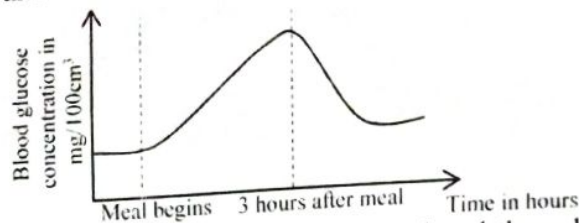
- This paper consists of three sections; A, B and C.
- Answer **all** questions in sections A and B, and any **two** questions from section C.
- Any additional questions answered will not be marked.
- Answers to section A should be written in the boxes provided, on the right side.
- Answers to section B should be written in the spaces provided.
- Answers to section C should be written in the answer booklet/sheets provided.

For Examiner's use only		
Section	Marks	Examiner's Initials & No.
A		
B	No. 31	
	No. 32	
	No. 33	
C	No.	
	No.	
Total		

SECTION A (30 MARKS)

Answer **all** questions in this section.

1. The following graph shows the blood glucose concentration in a healthy person before, during and after a meal.



What hormone causes the decrease in glucose level three hours after the meal?

- A. Antidiuretic hormone.
- B. Glucagon.
- C. Insulin.
- D. Oestrogen.

☐

2. Which one of the following terms describes the change from plant proteins to ammonium compounds.

- A. Nitrification.
- B. Putrification.
- C. Fermentation.
- D. Denitrification.

☐

3. In cell division chromosomes align along the equatorial region during

- A. Anaphase.
- B. Telephase.
- C. Prophase.
- D. Metaphase.

☐

4. The success of a mosquito in spreading pathogens may be attributed to presence of :

- A. wings and claws.
- B. legs and wings.
- C. proboscis and wings.
- D. proboscis and claws.

☐

5. Essential Amino acids are referred to as essential because they

- A. are the only one the body requires.
- B. are of high biological value and the body can make them.
- C. can only be provided from an artificial source.
- D. are of high biological value and the body cannot make.

☐

6. Which sequence describes the flow of energy in an ecosystem?

- A. Carnivore → herbivore → plant → sun
- B. Plant → herbivore → carnivore → sun
- C. Sun → carnivore → herbivore → plant
- D. Sun → plant → herbivore → carnivore

☐

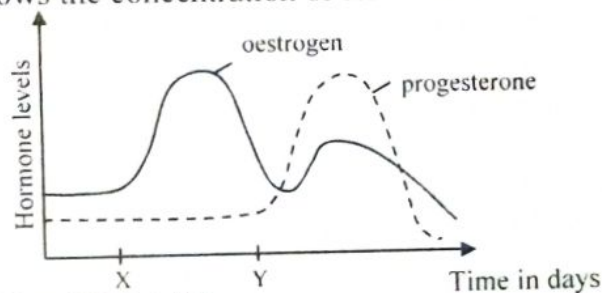
7. A field produces a poor crop yield of maize after being used for the same crop for several years. Beans were grown and the following year maize was grown again successfully. Which of the following is the probable explanation of the effects of beans on the soil? The...

- A. texture of soil was improved.
- B. amount of humus in the soil was increased.

☐

- C. nitrogen content was increased.
D. acidity of the soil was reduced.
8. Which part of the brain controls reflex activities of the body?
A. cerebrum.
B. cerebellum.
C. medulla oblongata.
D. hypothalamus.
9. In which of the following parts of the maize grain are most carbohydrates stored?
A. Cotyledon.
B. Radicle.
C. Endosperm.
D. Plumule.
10. Which one of these cell organelle would be most active at sites where substances move against diffusion gradient?
A. Nucleus.
B. Mitochondria.
C. Chloroplasts.
D. Ribosomes.

11. The following graph shows the concentration of female sex hormones in the blood over time.



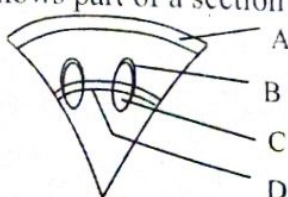
What happens at point X and Point Y?

- | | |
|--|--|
| <p>X</p> <p>A. Menstruation</p> <p>B. Menstruation</p> <p>C. Repair of uterus wall lining</p> <p>D. Repair of uterus wall lining</p> | <p>Y</p> <p>Ovulation</p> <p>Repair of uterus wall lining</p> <p>Menstruation</p> <p>Ovulation</p> |
|--|--|
12. The first step in the test for starch in a leaf, is to place the leaf in boiling water for about one minute. What is the purpose of this step? To...
A. denature all enzymes in the leaf.
B. make the leaf softer so that it is easier to test for starch.
C. remove air in the leaf.
D. remove chlorophyll from the leaf.
13. Low land athletes report for a sports competition organized on high lands three months before the competition? This would be in order for them to acquire.
A. higher fat deposits under their skin.
B. larger muscles.
C. higher erythrocyte numbers.
D. higher leucocyte numbers.
14. A scout standing for long in a parade may faint and fall down. Which of the following is the best explanation?
A. There is less oxygen supply to brain.
B. The leg muscles became paralysed.

Turn Over

- C. He could have drunk a lot of alcohol before.
D. There was accumulation of lactic acid in the muscles.
15. Which conditions would cause a plant to wilt most rapidly?
A. High humidity, high temperature, high wind speed.
B. High humidity, low temperature, high wind speed.
C. Low humidity, high temperature, high wind speed.
D. Low humidity, low temperature, high wind speed.
16. Suppose one's pancreas gets damaged, what would happen to that person?
He would develop:
A. Kwashiorkor.
B. Diabetes insipidus.
C. Diabetes mellitus.
D. Malaria.
17. A pastoralist will always retain within his herd a bull whose characteristics are desirable. This is an example of
A. crossing over.
B. artificial insemination.
C. cross breeding.
D. artificial selection.
18. Which of the following forms of fusion will result into formation of the primary endosperm in seed?
A. The tube nucleus with egg cell.
B. Generative nucleus with egg cell.
C. one male nucleus with egg cell.
D. Second male nucleus with polar nuclei.
19. Which of the following changes when one walks out of a brightly lit place to a poorly lit place? The...
A. pupils become larger.
B. lens becomes longer.
C. pupils become narrower.
D. lens becomes thicker.
20. Which of the following eye defects is corrected by using cylindrical lenses
A. Hypermetropia.
B. Glaucoma.
C. Myopia.
D. Astigmatism.
21. Accumulation of Lactic acid in muscles of an athlete during exercise is due to
A. Perspiration.
B. Anaerobic respiration.
C. Panting.
D. Aerobic respiration.

22. The diagram below shows part of a section through a stem

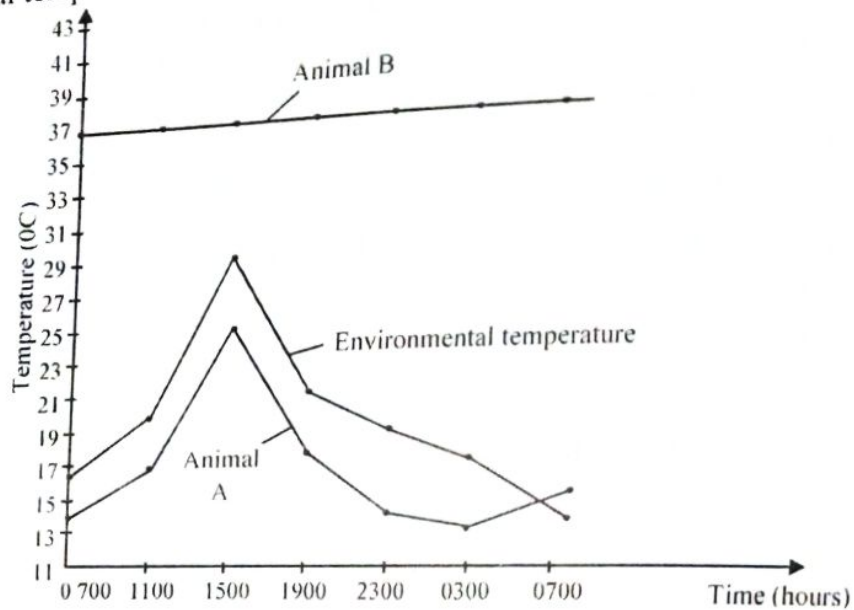


Which one of these parts A, B, C, D is responsible for secondary growth?

23. The following events occur during the upstroke of flapping flight in birds except
 A. pectoralis minor muscles contract.
 B. pectoralis major muscles relax.
 C. pectoralis minor muscles relax.
 D. wings are pulled up wards. ☐
24. Very small mammals need to feed almost continuously because of their
 A. high surface area: volume ratio hence consequent rapid heat loss.
 B. low surface area: volume ratio hence consequent rapid heat loss.
 C. high surface area: volume ratio hence consequent low heat loss.
 D. low surface area: volume ratio hence consequent low heat loss. ☐
25. Which of the following characteristics are true for all insects?
 P undergo incomplete metamorphosis.
 R bear jointed limbs.
 S bear three pairs of limbs.
 Q possess wings.
 T bodies are divided into three main parts.
 A. P and S.
 B. T and Q.
 C. T and S.
 D. R and P. ☐
26. Which one of the following cells are for food storage in plant?
 A. Collenchyma cells.
 B. Guard cells.
 C. Parenchyma cells.
 D. Sieve tube cells. ☐
27. Which of the following bones are connected to form a pivot joint?
 A. Atlas and Axis.
 B. Femur and tibia.
 C. carpels and wrist.
 D. Humerus and scapula. ☐
28. The best method to determine the population of Oxalis species plant is?
 A. quadrat method.
 B. capture mark, recapture method.
 C. line transect.
 D. direct counting. ☐
29. After a volcanic eruption has covered an area with lava, which of the following is the most likely order of succession of the area?
 A. Lichens → grasses → shrubs → trees
 B. Mosses → grasses → lichens → trees
 C. Grasses → trees → Mosses → lichens
 D. Shrubs → grasses → trees → lichens ☐
30. Which one of the following parts of the middle ear is linked to the inner ear?
 A. Auditory nerve.
 B. Eardrum.
 C. Cochlea.
 D. Oval window. ☐

SECTION B (40 MARKS)

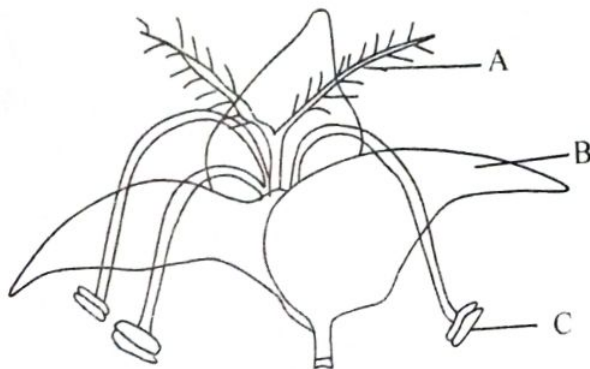
- Answer all questions in this section, writing your answers in the spaces provided.
31. The figure below shows graphs of body temperature of animals A and B plus the environmental temperature plotted against time of the day.



- a) What is the relationship between environmental temperature and the body temperature of animal?
- i) A _____ (1 mark)
- ii) B _____ (1 mark)
- b) Explain the relationship between environmental temperature and the body temperature of animal.
- i) A _____ (1 mark)
- ii) B _____ (1 mark)
- c) From the graphs predict and explain how active the animals A and B would be at night time. (5 marks)
- d) What advantage does this give one animal over the other in respect of being active? (5 marks)

How are mammals in cold areas adapted to temperature control? (6 marks)

Study the diagram below of flower of a plant and answer the questions that follow.



a) Name the parts labelled A, B and C. (1½ marks)

A. _____

B. _____

C. _____ (½ mark)

b) Suggest the agent of pollination for the flower.

c) State the adaptations of the flower for the agent of pollination mentioned in (b) above. (4 marks)

d) State the conditions that promote cross pollination in flowers. (4 marks)

Turn Over

33. a) Name a vitamin, an enzyme and a mineral element that are involved in the blood clotting process. (3 marks)
 Vitamin _____
 Enzyme(s) _____
 Mineral element _____
- b) Give reasons why knowledge about human blood groups is important during transfusion. (3 marks)

- c) State **two** ways by which white blood cells fight micro-organisms. (2 marks)

- d) Name the diseases of blood described by the following symptoms. (2 marks)
- i) In ability of the blood to clot.

- ii) Crescent-shaped red blood cells with abnormal hemoglobin.

SECTION C (30 MARKS)

Answer any **two** questions from this section.

34. a) What is soil conservation? (2 marks)
 b) State **four** ways through which soil fertility can be conserved. (4 marks)
 c) Explain why some fish die when large amounts of fertilizers are eroded into the lake. (3 marks)
 d) Besides fertilizers, state **three** other water pollutants and their respective effects to aquatic life. (6 marks)
35. Describe how the following parts of the human digestive system are adapted to their functions;
- i) mouth. (4 marks)
 ii) stomach. (5 marks)
 i) duodenum. (4 marks)
 ii) colon. (2 marks)
36. a) What is sexual reproduction? (2 marks)
 b) Describe the growth of the pollen tube and the process of fertilization in flowering plants. (7 marks)
 c) Describe an experiment to show that oxygen is necessary for germination. (6 marks)
37. a) State the differences between short sightedness and long sightedness. (5 marks)
 b) How is a human eye suited for sight. (8 marks)
 c) Name **two** other eye defects. (2 marks)

END