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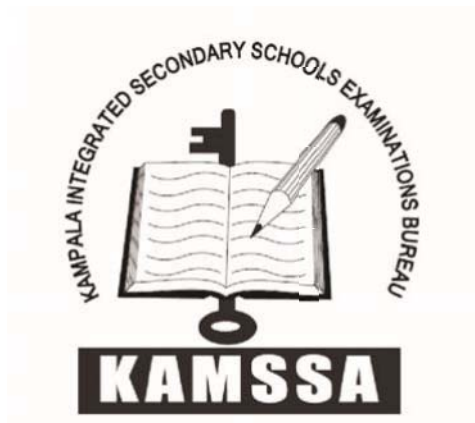
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**Biology**

**Paper 1**

**2 hours 30 minutes**

**July/August 2022**



**KAMSSA JOINT MOCK EXAMINATION**  
**Uganda Certificate of Education**

**BIOLOGY**

**Paper 1**

**2 hours 30 minutes**

**Instructions to candidates**

- Answer all questions in section **A** and **B** plus two questions in Section **C**.
- Answers to Section **A** **MUST** be written in the boxes provided on the right hand side of each question.
- Answer to Section **B** **MUST** be written in the spaces provided.
- Answers to Section **C** must be written in the answer booklets provided.

**FOR EXAMINER'S USE ONLY**

Section/Question	Marks	Examiner's No. & Sign
SEC. A		
SEC. B		
SEC. C No.		
No.		

### SECTION A: (30 MARKS)

Answer all questions in the section. Write the letter representing the most correct answer to each question, in the box provided.

1. What is the original source of energy for nearly all living organisms?  
A. Soil                      B. Sun                      C. Plants                      D. Water                      ☐
2. During menstruation blood discharged results from the  
A. Bleeding of part of the ovary after ovulation  
B. Breaking up of the unfertilized egg  
C. Breaking down of the uterine walls  
D. Breaking of the cells lining the Vagina                      ☐
3. Which of the following are not transported in the blood?  
A. ATP and Pepsin                      C. Insulin and Adrenalin  
B. Urea and glucose                      D. Carbon dioxide                      ☐
4. An open circulatory system is characteristic of.....  
A. Earth worm                      C. Man                      ☐  
B. Grasshopper                      D. Hydra                      ☐
5. Which of the following consists of a single of species?  
A. A community                      C. A biome                      ☐  
B. A population                      D. An ecosystem                      ☐
6. Nerve – controlled responses differ from the endocrine controlled response in that the former are  
A. Rapid                      ☐  
B. Of longer duration  
C. Not associated with homeostasis maintenance  
D. Transmitted by the circulatory system
7. In which of the following blood vessels is the highest concentration of absorbed food likely to be found soon after digestion of food in humans?  
A. Hepatic artery                      C. Venacava                      ☐  
B. Hepatic vein                      D. Hepatic portal vein
8. Insects excrete nitrogenous compounds in the form of  
A. Ammonia                      C. Uric acid                      ☐  
B. Urea                      D. Nitrogen salts
9. Which one of the following does not help a plant to reduce transpiration?  
A. Flattened stem                      C. Hairy leaves                      ☐  
B. Sunken stomata                      D. Reduced leaves
10. To identify substance Z, a student performed the following experiment.

Test	Observation
1cm <sup>3</sup> of Z was boiled with 1cm <sup>3</sup> of Benedict's solution	A colourless solution turned to a blue solution that persisted
1cm <sup>3</sup> of Z was boiled with dilute hydrochloric acid, cooled then 1cm <sup>3</sup> of sodium hydroxide added. The mixture then Boiled with 1cm <sup>3</sup> of Benedict's solution	A colourless solution turned to a blue solution, to a green solution, to yellow precipitate and finally to an orange precipitate.

From the observations, it can be concluded that food substance Z is

A. Sucrose

C. Starch

B. Glucose

D. Reducing sugar

☐

11. Control of breathing rate in mammals is

A. Completely and voluntary control

B. Majorly influenced by the level of CO<sub>2</sub> in the blood

C. Controlled by the blood pressure in the arteries

D. Largely according to the level of the oxygen in the blood

☐

12. Many small animals use their skin as the only respiratory surface because they

A. Are not large enough to have lungs

B. Have a large surface area compared to their body volume

C. Use less energy and therefore less oxygen than larger animals

D. Are faster runners than large animals

☐

13. Some bacteria which live in the large intestines are useful in the production of vitamins which are beneficial in the human body. This type of association is

A. Saprophytism

C. Parasitism

B. Commensalism

D. Mutualism

☐

14. Which of the following is usually associated with organisms whose reproduction involves external fertilization?

A. Production of large number of eggs

B. High parental care of the offspring

C. Early weaning of young ones

D. High dependence of the embryo on the mother

☐

15. If you want to find the proportion of water in the soil you have to dry it gently at around 10°C in an oven. The possible explanation for this is

A. Too much heat might make soil gain heat

B. To avoid melting the crucible which holds the soil

C. To avoid burning off humus

D. To avoid setting the soil on fire

☐

16. Which one of the following is not a method of controlling mosquitoes?

A. Setting traps baited with poison

B. Spraying the walls of houses insecticides

C. Keeping fish in ponds

D. Removing rubbish where water can collect

☐

17. Cubes P, Q, R and S of the same dimensions were cut out from the same raw Irish potato, whose sap had a sugar concentration of 22%. The cubes were then placed in test tubes each containing a sugar solution of a different concentration as shown in the table below

Cube	Sugar concentration of solution (%)
P	15.0
Q	26.0
R	21.5
S	44.0

☐

Which cube will longest after 4 hours?

A. P

B. Q

C. R

D. S

18. Which one of the following equations represents anaerobic respiration in plants?  
 A. Glucose → Carbon dioxide and water  
 B. Glucose → Carbon dioxide + alcohol + energy  
 C. Glucose → Water + alcohol + energy  
 D. Glucose → Carbon dioxide + energy ☐
19. When a seedling is placed in a rotating Klinostat, no curvature occurs because  
 A. Auxins are not produced  
 B. Growth is accelerated  
 C. Auxins are uniformly distributed in the growing parts  
 D. All parts of the seedling are uniformly inhibited from growing ☐
20. Which one of the following conditions may result from under secretion of thyroxine?  
 A. Enlarged thyroid gland  
 B. Increased metabolism  
 C. Protruding eye balls  
 D. Loss of weight ☐
21. Which of the following sets of bones make up the hind limb in humans?  
 A. Radius, tibia, fibula  
 B. Femur, tibia, fibula  
 C. Tibia, fibula, humerus  
 D. Tibia, radius, ulna ☐
22. The disadvantage the amoeba has in using binary fission is that  
 A. The process is slow  
 B. It occurs only in aquatic environment  
 C. Few offspring are produced  
 D. There is no variation among offspring ☐
23. What percentage of offspring will have blood group O if a man heterozygous for blood group B marries a woman heterozygous for blood group A?  
 A. 100%    B. 75%    C. 50%    D. 25% ☐
24. Which one of the following occurs in a mammal which is in a cold environment?  
 A. More blood flows to the skin  
 B. Metabolic rate decreases  
 C. Vasoconstriction of skin arterioles occurs  
 D. Erector pili muscles relax ☐
25. A somatic cell in an organism contains 24 pairs of chromosomes. The number of chromosomes in a gamete of this organism is  
 A. 24    B. 12    C. 48    D. 6 ☐
26. A vertebra with canals specialized for passage of blood vessels is called  
 A. Lumbar vertebra  
 B. Thoracic vertebra  
 C. Cervical vertebra  
 D. Sacral vertebra ☐
27. Lactic acid produced in muscles is got rid of by?  
 A. Oxidation  
 B. Storing it in the liver  
 C. Converting it to ethanol  
 D. Converting it to fat ☐
28. The forces which mostly help water to move up a tall plant are  
 A. Osmosis and diffusion  
 B. Capillarity and transpiration  
 C. Osmosis only  
 D. Capillarity and osmosis ☐
29. Which one of the following uses gills, skin, buccal cavity and lungs for gaseous exchange at some point in their life cycle?  
 A. Amphibians    B. Fish    C. Reptiles    D. Birds ☐
30. Which one of the following parts of teeth contains living tissue?  
 A. Cement    B. Enamel    C. Dentine    D. Pulp cavity ☐

### SECTION B (40 MARKS)

Answer **all** questions from this section. Answers must be written in the spaces provided.

- 31.** In an experiment; five identical shoots of Elodea were placed in separate test tubes of pond water in which dilute solution of sodium hydrogen carbonate had been added. Test tube 1 was exposed to light from a 30 watt bulb placed at a distance of 10cm, and the number of bubbles evolved per minute recorded. This was then repeated for test tubes 2, 3, 4 and 5 at distances of 15cm, 20cm, 25cm, and 30cm respectively. The results are shown in the table below.

Test tubes	Distance from the source of light	Number of bubbles evolved per minute
1	10	120
2	15	120
3	20	54
4	25	30
5	30	17

(a) What was the aim of the experiment?

(01 mark)

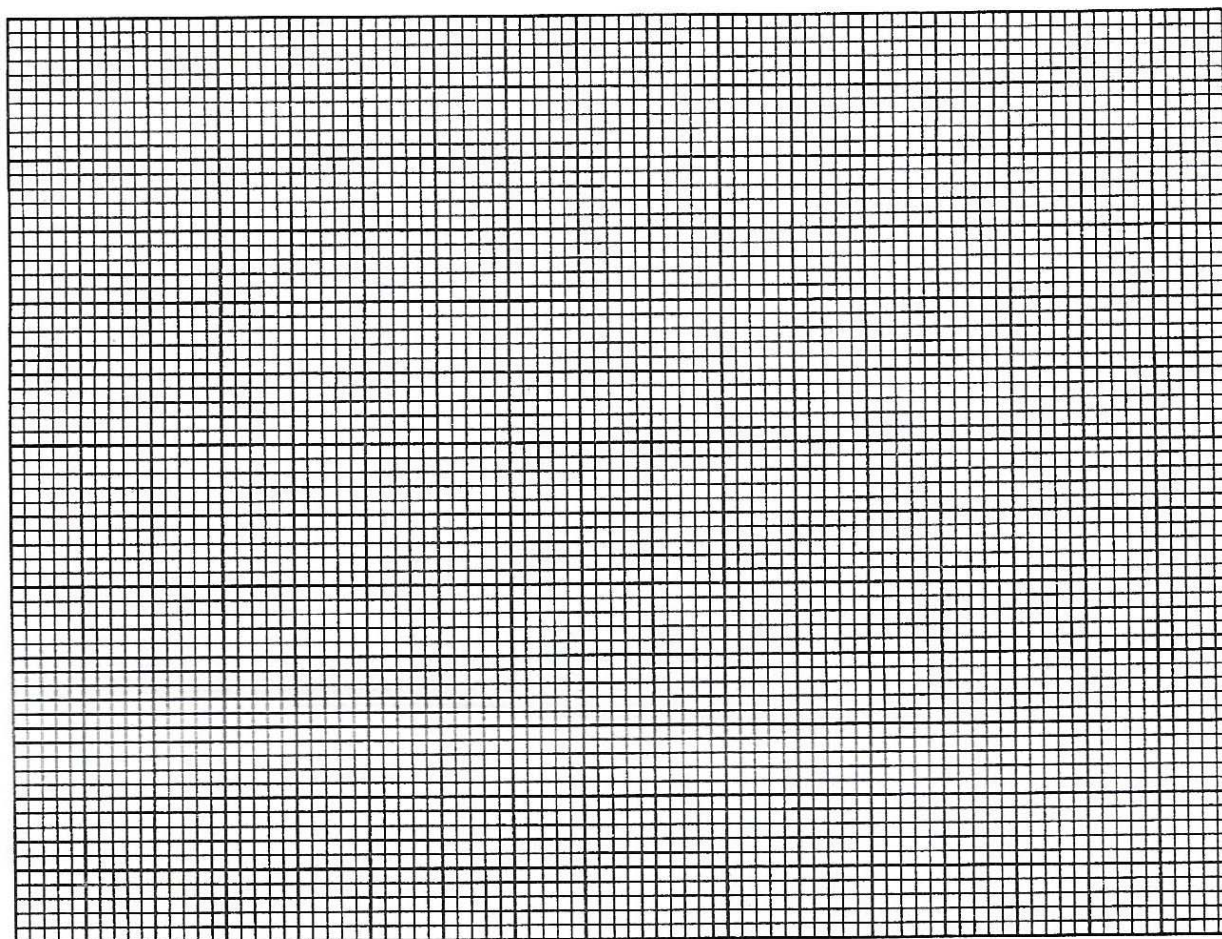
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(b) Plot the graph to represent the information in the table above.

(06 marks)



(c) Using the graph you have drawn; determine the number of bubbles when the source of light is 17 cm from the test tube. (01 marks)

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(d) Using the information provided, explain the observations:

(i) At 10 cm from the test tube (03 marks)

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(ii) From 15cm to 30 cm distance from the test tube (04 marks)

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(e) Explain why dilute solution of sodium hydrogen carbonate added to pond water in the test tubes. (02 marks)

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(f) Suggest an explanation for what would have been observed in the experiment if the distance from the light source was reduced further to 9cm. (02 marks)

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(g) Other than producing oxygen, state one other importance to humans of the process occurring in the test tubes. (01 marks)

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**32.** (a) Explain how the retina is adapted to its functions. (03 marks)

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(b) Explain the effect of the following movements of the different parts of the eye.

(i) Contraction of the iris. (02 marks)

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(ii) Relaxation of ciliary muscle (03 marks)

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(iii) Shortening and thickening of the lens (02 marks)

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**33.** (a) Outline the possible sources from which plants obtain nitrates. (04 marks)

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(b) Explain why water logged soils are usually nitrogen deficient. (02 marks)

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(c) List four ways by which soil may lose its fertility. (04 marks)

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### **SECTION C (30 MARKS)**

Answer any two questions from this section

- 34.(a)** With examples, state how different modifications of adventitious roots increase survival of plants. (09 marks)
- (b) Compare the internal structure of monocotyledonous and dicotyledonous roots. (06 marks)
- 35.(a)** Describe activities of digestion which occur in each of the following parts:
- (i) Mouth (04 marks)
- (ii) Ileum (06 marks)
- (b) How is the human stomach adapted to its functions? (05 marks)
- 36.(a)** Explain how the action of muscles causes air to pass from the atmosphere into the lungs. (09 marks)
- (b) How does oxygen move from the air in the lungs into the red blood cells? (03 marks)
- (c) Give three characteristics of an efficient respiratory organ. (03 marks)
- 37.(a)** What is the importance of water to animals? (06 marks)
- (b) Describe how water balance in the mammalian body is maintained. (09 marks)

**END**