

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

553/1
BIOLOGY
 (Theory)
PAPER 1
 July/August
 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 of each question.
- 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 B (30 MARKS)

Answer **all** questions in this section.

Write the letter representing the most correct answer to each question, in the box provided.

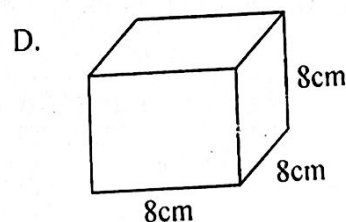
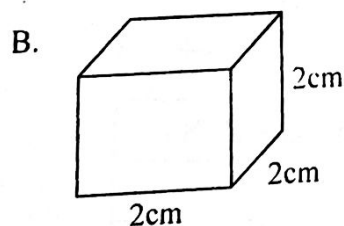
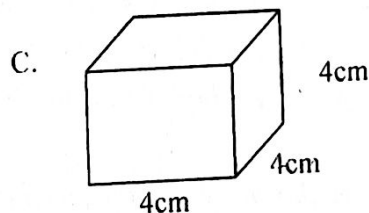
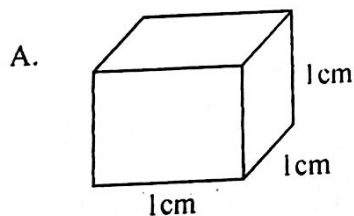
1. Small sized plants with under developed yellow leaves is due to deficiency of .
- A. Zinc.
B. Calcium.
C. Nitrogen.
D. Potassium.

2. Birds with long pointed beaks have evolved to feed on.
- A. Nectar.
B. Seeds.
C. Nuts.
D. Fresh.

3. Which of the following shows the correct flow of deoxygenated blood to lungs?
- A. Posterior venacava → Aorta → Pulmonary vein.
B. Hepatic vein → Posterior venacava → Pulmonary artery.
C. Aorta → Posterior venacava → Pulmonary artery.
D. Aorta → Hepatic vein → pulmonary vein.

4. Succus entericus is secreted by
- A. Salivary gland.
B. Pancreas.
C. Stomach walls.
D. Walls of small intestines.

5. Which of the following cubes would take in the highest quantity of dye, when all are immersed at the same time?



6. Which one of the following human blood groups lacks antibodies in its serum?
- A. O
B. A
C. AB
D. B

7. The associations between fungi and plant roots are called
- A. Parasitic.
B. Commensalism.
C. Saprophytism.
D. Mycorrhizae.

In a plant leaf, gaseous exchanges occurs in the

- A. Palisade layer.
- B. Mesophyll.
- C. Upper epidermis.
- D. Lower epidermis.

☐

9. Which one of these is located in the dermis of the skin?

- A. Sebaceous gland.
- B. Malpighian layer.
- C. Granular layer.
- D. Cornified layer.

☐

10. Organisms in cold areas are characterized by

- A. small size.
- B. hairless body.
- C. small extremities.
- D. large ears.

☐

11. Which one of these is the least concentrated in urine than in plasma.

	Substance	% in plasma	% in urine
A:	Sodium	0.3	0.35
B:	Chloride	0.4	0.6
C:	Urea	0.03	2.0
D:	Uric Acid	0.004	0.05

☐

12. Which one of the following does not directly affect the pH of the soil?

- A. Absorption of bases by plant roots.
- B. Production of carbon dioxide by plant roots.
- C. Leaching.
- D. Water logging.

☐

13. Which one of these is an effector?

- A. Ear.
- B. Eye.
- C. Skin.
- D. Intestinal wall.

☐

14. Which set of pairs of organisms is endothermic?

- A. Mammals and amphibians
- B. Mammals and birds.
- C. Amphibians and birds.
- D. Fish and reptiles.

☐

15. The following results were obtained during an experiment to determine the amount of air in soil. Soil = 20cm^3 , Water = 30cm^3 , Water and soil after stirring = 45cm^3 . What was the percentage of air in the soil?

- A. 10%.
- B. 20%.
- C. 25%.
- D. 30%.

☐

16. If a diploid number of chromosomes of a certain species is 20, what would be the number of chromosomes from its skin cell?

- A. 40.
- B. 20.
- C. 5.
- D. 10.

☐

Turn Over

17. In which region of the mammalian vertebral column do the vertebrate have vertebrarterial canals?
A. Neck. ☐
B. Lumber.
C. Thoracic.
D. Sacrum.
18. At what stage of meiosis does the pairing up of homologous chromosome occur?
A. Prophase II. ☐
B. Prophase I.
C. metaphase I.
D. metaphase II.
19. In the colonization of a bare rock, the next most likely groups of plants after the lichens are the;
A. Trees. ☐
B. Shrubs.
C. Grasses.
D. Mosses.
20. Which one of the following is richest in iron?
A. Liver. ☐
B. Milk.
C. Butter.
D. Cheese.
21. Which one of these is the functional part of the kidney?
A. Cortex. ☐
B. Pelvis.
C. Medulla.
D. Nephron.
22. Slow rate of repair of the uterine wall after menstruation in mammals is due to deficiency of;
A. Luteinizing. ☐
B. Progesterone.
C. Oestrogen.
D. Follicle stimulating hormone.
23. Which one of these is a dry indehiscent fruit?
A. Berry ☐
B. Caryopsis
C. Legume
D. Capsule
24. Which one of these modes of reproduction is sexual?
A. Conjugation ☐
B. Spore formation
C. Budding
D. Fragmentation

5. Which one of these farming practices cause soil exhaustion?
 A. Strip cropping.
 B. Crop rotation.
 C. Mono culture.
 D. Mulching. ☐
26. Which one of the following organs excretes urea?
 A. Bladder.
 B. Lungs.
 C. Liver.
 D. Tongue. ☐
27. Which one of the following would not contribute to the accuracy of the capture-recapture method of estimating population size?
 A. Using a stable population.
 B. Using a small mark.
 C. Allowing time before the recapture.
 D. Capturing animals selectively. ☐
28. Which one of the following is NOT an adaptation of a leaf for absorption of carbondioxide.
 A. Presence of air space in mesophyll layer.
 B. Presence of chloroplasts.
 C. Its exposure to air.
 D. Its thinness. ☐
29. Control of rolling in fish is by
 A. dorsal and anal fins.
 B. pectoral and pelvic.
 C. pectoral and anal fins.
 D. caudal and dorsal fins. ☐
30. A hormone secreted in the body in the event of danger is
 A. Secretin.
 B. Thyroxine.
 C. Adrenaline.
 D. Insulin. ☐

SECTION B

Answer **all** questions in this section.

All answers **must** be written in the spaces provided.

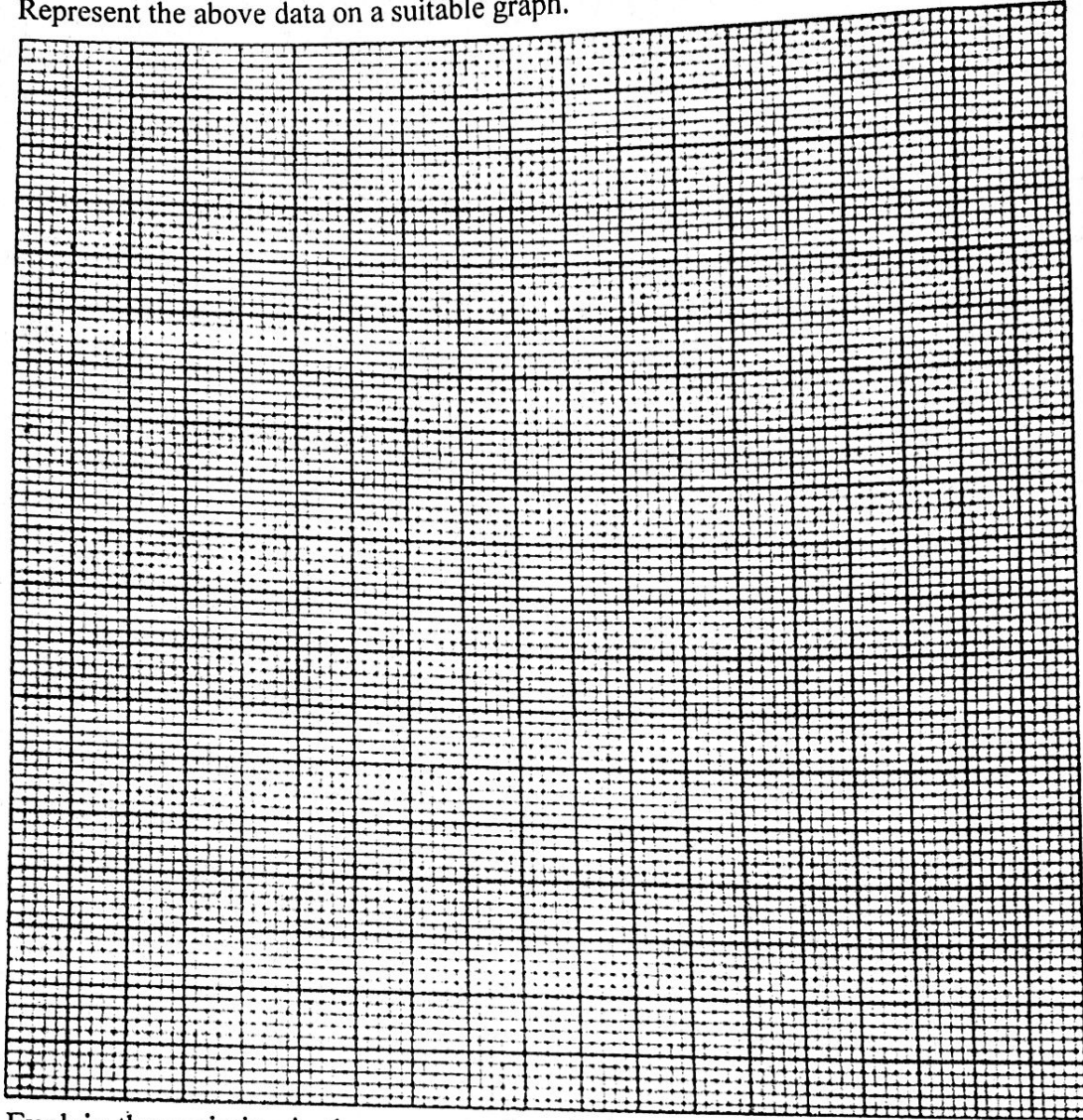
31. A hungry person had a meal after which the concentration of glucose in blood was determined.
 This was measured hourly as blood passed through the hepatic portal vein (HPV) and iliac vein (IV) in the legs. The results are shown in the table below.

Time/ hour		0	1	2	3	4	5	6	7
Conc. of glucose (mg/100 cm ³ of blood)	HPV	85	85	140	130	110	90	90	90
	IV	85	85	125	110	90	90	90	90

Turn Over

(08½ marks)

a) Represent the above data on a suitable graph.



b) Explain the variation in the concentration of glucose in the hepatic portal vein (HPV) between;

(i) 0 – 1 hour

(02 marks)

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(ii) 1 – 2 hour.

(01½ mark)

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(iii) 2 – 5 hour.

(01½ mark)

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(iv) 5 – 7 hour.

(01½ mark)

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- c) Explain the differences in the concentrations of glucose in the hepatic portal vein and iliac vein between 2-4 hours. (05 marks)

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32. a) The cell sap of plant cells is usually 0.3M when contracted. Explain what would be observed if such plant cells were placed in (i) 0.2M solution. (03 marks)

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- (ii) 0.4M solution (03 marks)

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- b) Explain the effects of taking sea water at 3% salt concentration by a person whose blood salt concentrate is 1%. (03 marks)

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- c) Name one area in the human body where the physiological process in 33(b) above applies. (01 mark)

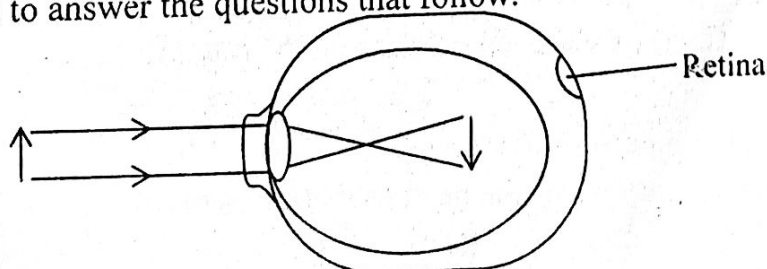
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3. a) Describe the changes in a shape of iris muscles as a person looks up from reading a book to see a distant object. (02 marks)

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- b) The diagram below shows the position of an image formed by a defective eye. Use it to answer the questions that follow.



Turn Over
7

- (i) Identify the eye defect illustrated in the diagram above. (01 marks)

- (ii) Explain how the defect is brought about. (03 marks)

- (iii) Draw a labelled diagram to show how the defect is corrected. (04 marks)

SECTION C

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

Answers to these questions **must** be written in the answer booklets/sheets provided.

34. Both air and water are respiratory media.
 a) Explain why air is a better respiratory medium than water. (06 marks)
 b) State how each of the following systems have been modified to increase surface area for gaseous exchange.
 (i) Tracheal system. (02 marks)
 (ii) Mammalian lungs. (02 marks)
 c) Explain why a tilapia fish suffocates immediately when it is removed from water. (05 marks)
35. a) What is meant by pollution? (02 marks)
 b) Explain the effects of the different air pollutants on human health. (13 marks)
36. a) Explain how photosynthesis is of value to man. (03 marks)
 b) Describe **six** adaptations of a leaf of a green plant for photosynthesis. (06 marks)
 c) State **six** ways in which the process of photosynthesis differs from respiration. (06 marks)
37. a) Explain the effects of vigorous exercise on the rate of;
 i) Heart beat. (05 marks)
 ii) Breathing of a person. (03 marks)
 b) Describe the adaptations of the heart to its functions. (07 marks)

END