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Biology

Paper 1

July - August 2022



UGANDA MUSLIM TEACHERS' ASSOCIATION

UMTA JOINT MOCK EXAMINATIONS – 2022

NAME.....

INDEX NO..... SIGNATURE.....

UGANDA CERTIFICATE OF EDUCATION

Biology

Paper one

2 ½ Hours

**INSTRUCTIONS**

- Answer all questions in section A and B, plus two questions from section C.
- Write the answers to Section A in the boxes provided, answers to section B in the spaces provided, and answers to section C must be written in the answer sheets provided.

FOR EXAMINER'S USE ONLY

Section	Marks	Examiner's signature & No.
A		
B No. 31		
No. 32		
No. 33		
C No. 1		
No. 2		
<b>TOTAL</b>		

## SECTION A (30 MARKS)

Answer all questions in this section. Write the letter representing the best correct answer to the question in the box provided.

1. The magnification of a biological drawing is given as X0.5. This means that the drawing is

- A. five times larger than the specimen.
- B. five times smaller than the specimen.
- C. half the size of the specimen.
- D. larger than the specimen.

2. Which one of the following is the respiratory surface in an earthworm?

- A. Skin epidermis.
- B. Spiracles.
- C. Tracheoles.
- D. Alveoli.

3. Spider differs from a mosquito because

- A. it possesses an exoskeleton.
- B. it has two main body parts.
- C. it has three main body parts.
- D. it has jointed limbs.

4. Which one of the following substrates is mainly used to provide energy in a starving individual?

- A. Water.
- B. Carbohydrate.
- C. Fat.
- D. Protein.

5. What is the probability of producing an albino if a carrier male marries an albino female for albinism?

- |        |         |
|--------|---------|
| A. 0.5 | C. 0.25 |
| B. 1   | D. 0.75 |

6. Which one of the following is the correct route taken by oxygen from the atmosphere to the muscles of an insect?
- Trachea → tracheoles → spiracles.
  - Spiracles → tracheoles → trachea
  - Spiracles → trachea → tracheoles.
  - Tracheoles → Spiracles → trachea.
7. Which one of the following sugars is exclusively contained in milk?
- Lactose.
  - Maltose,
  - Sucrose.
  - Galactose.
8. The number of red blood cells in the blood increases if a person
- has a bacterial infection.
  - excessively bleeds through a cut on a blood vessel.
  - climbs to the top of the mountain.
  - Feeds on a diet rich in proteins.
9. Which of the following structures is not common to both animal and plant cells?
- Nucleus.
  - Mitochondrion.
  - Cell membrane.
  - Chloroplast.
10. Which one of the following characteristics of organisms shows discontinuous variation?
- Skin colour.
  - Body size.
  - Height.
  - Tongue rolling.
11. Which one of the following is not an excretory organ in humans?
- Lungs.
  - Kidney.
  - Skin.
  - Rectum.

12. Which one of the following glands has both exocrine and endocrine functions?

- A. Adrenal gland.
- B. Pituitary gland.
- C. Pancreas.
- D. Hypothalamus.

13. In which part of the alimentary canal does the chemical digestion of fats begin?

- A. Stomach.
- B. Duodenum.
- C. Ileum.
- D. Mouth.

14. Which one of the following traits in humans is sex-linked?

- A. Blood group.
- B. Red-green colour blindness.
- C. Skin colour.
- D. Baldness.

15. Which one of the following does not favour transpiration?

- A. Windy air.
- B. High light intensity.
- C. High atmospheric pressure.
- D. Low humidity.

16. Which one of the following would contain the highest concentration of proteins?

- A. Urine.
- B. Serum.
- C. Glomerular filtrate.
- D. Blood plasma.

17. Enlargement of the thyroid gland may be as a result of deficiency of

.....in the diet.

- A. Mineral salts.
- B. Vitamin B<sub>12</sub>.
- C. Proteins.
- D. Iodine.

18. A person of blood group O is described as universal donor because he or she

- A. has both antigens A and B in the blood.
- B. Lacks both antigens A and B in the blood.
- C. a larger volume of blood.
- D. has both antibodies a and b in the blood.

19. What would happen to the enzyme if the temperature of the medium in which it is present is lowered to 0°C? The enzyme would be

- A. Inhibited.
- B. denatured.
- C. activated.
- D. inactivated.

20. Which one of the following process does not involve active transport?

- A. Selective reabsorption in kidney tubules.
- B. Absorption of end products of digest.
- C. Loading of sugar into phloem sieve tubes.
- D. Loss of water from the plant leaves through the stomata.

21. Which one of the following has the greatest energy content in a food chain?

- A. Producer.
- B. Secondary consumer.
- C. Primary consumer.
- D. Tertiary consumer.

22. Which one of the following parts of the human ear is not concerned with hearing?

- A. Semi-circular canals.
- B. Cochlea.
- C. Ear drum.
- D. Ossicles.

23. Which one of the following is not a function of the liver?

- A. Detoxifying toxins.
- B. Secretion of hormones.
- C. Destruction of old red blood cells.
- D. Blood sugar regulation.

24. Which one of the following is a pair of female reproductive hormones?
- A. Oestrogen and Progesterone.
  - B. Follicle stimulating hormone and testosterone.
  - C. Antidiuretic hormone and insulin.
  - D. Thyroxine and Luteinising hormone,
25. Which one of the following parts of the brain controls the rate of breathing?
- A. Medulla oblongata.
  - B. Cerebrum.
  - C. Cerebellum.
  - D. Pons.
26. Which one of the following parts of the kidney carries out the excretory function?
- A. Medulla.
  - B. Pelvis.
  - C. Nephron.
  - D. Cortex.
27. Which one of the following soil types has the greatest water retention capacity?
- A. Silt.
  - B. Sand.
  - C. Loam.
  - D. Clay.
28. Which one of the following cells do not have nuclei when mature?
- A. Sieve tube elements and companion cells.
  - B. Red blood cells and white blood cells.
  - C. Sieve tube elements and red blood cells.
  - D. Companion cells and white blood cells.
29. Which one of the following is an example of a multiple fruit?
- A. Pineapple.
  - B. Ovacado.
  - C. Mango.
  - D. Tomato.

30. Which one of the following is a function of the choroid layer in the human eye?

- A. Offers protection.
- B. Nourishing the retinal cells.
- C. Controlling the amount of light entering the eye.
- D. Accommodation of objects.

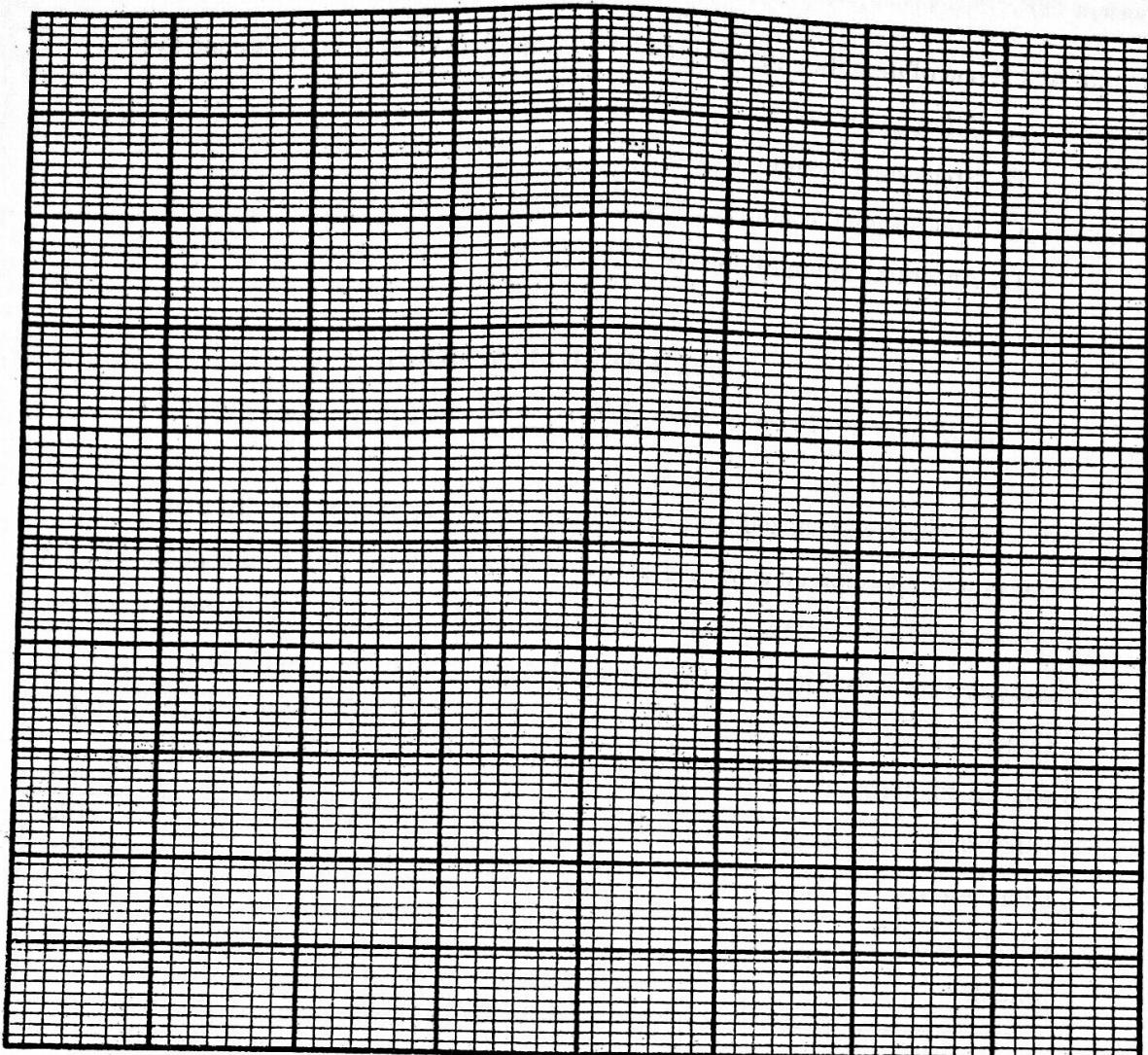
### SECTION B (40 MARKS)

*Attempt all numbers in this section. Write your answers in the spaces provided.*

31. An experiment was carried out to investigate the effect of applying different concentrations auxin on roots and shoots of plant seedlings. The results obtained were expressed as a percentage stimulation (+) or inhibition of growth compared with the untreated controls. The results were recorded as shown in the table below.

Concentration of applied auxin (ppm)		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
percentage stimulation or inhibition of growth	Root	+5	+35	+50	+10	-50	-80	-90	-95	-100
	Shoot	0	0	0	+15	+30	+50	+105	+195	+5

(a). On the same axes, plot the percentage stimulation or inhibition of growth (vertical axis) against concentration of auxin applied. (08 marks)



(b). Describe the effect of auxin concentration on;

- i. root growth.

(03 marks)

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ii. Shoot growth.

(05 marks)

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(c). State two factors that can affect the distribution of auxin in a plant. (02 marks)

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32. (a) Distinguish between sex linked and sex limited traits. (02 marks)

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(b) Using appropriate symbols show the proportions of the offspring phenotype if a carrier hemophiliac woman marries a normal man. (05 marks)

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(c) Explain why hemophilia is more common in males than females. (03 marks)

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33. (a) Define an enzyme. (02 marks)

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(b) Describe the importance of the following sections in digestion

(i) Saliva. (03 marks)

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(ii) Bile. (03 marks)

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

*Attempt two questions from this section. Write your answers on the answers provided*

34. (a) The wall of the ventricles of the human heart have different thickness. Explain why this is important. (08 marks)
- (b) State with a reason how the heart rate of a person would be affected if he ...
- (i) climbs to the top of the mountain. (02 marks)
- (ii) sees a fierce animal. (02 marks)
- (c) State three adaptations of red blood cells their functions. (03 marks)
35. (a) State four differences between a sperm cell and an ovum. (04 marks)
- (b) How is a sperm cell suited for its function? (03 marks)
- (c) Explain the advantages of sexual reproduction over asexual reproduction (08 marks)
36. (a) Draw the transverse section of a dicotyledonous stem and label the parts that make up the vascular tissue. (03 marks)
- (b) State the functions of the labelled parts in (a). (02 marks)
- (c) Describe the functions of the different leaf modifications. (10 marks)
37. Describe how a dicotyledonous leaf is adapted to its function. (15 marks)

**\*\*\*END\*\*\***