**Candidate's Name: …….....**

**School:.....**

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**Signature:.....**

| Centre No. | | | | | Personal No. | | |
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**553/1**
**BIOLOGY**
**(Theory)**
**Paper 1**
**July/Aug. 2022**
2½ hours

# HOIMA DIOCESE EXAMINATIONS BOARD

**UCE Mock Examination, 2022**

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 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** *in the answer booklets provided.*

| For Examiners' Use Only | | | |
|---|---|---|---|
| **Section** | | **Marks** | **Examiner's signature and No.** |
| **A** | **No. 1-30** | | |
| **B** | **No. 31** | | |
| | **No. 32** | | |
| | **No. 33** | | |
| **C** | **No.** | | |
| | **No.** | | |
| **Total** | | | |



**Turn Over**

## SECTION A (30 MARKS)

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

**1.** Which one of the following are the products of digestion of lactose?

A. Glucose and glucose
B. Glucose and galactose
C. Fructose and glucose
D. Galactose and fructose

**2**. The following are a result of a plant cell placed in a more concentrated solution than the cell sap **except** the

A. cells become fraccid.
B. vacuole loses become small.
C. cell loses water.
D. cell gains water.

**3.** **Figure 1** shows the relation between temperature and the rate of a chemical reaction.

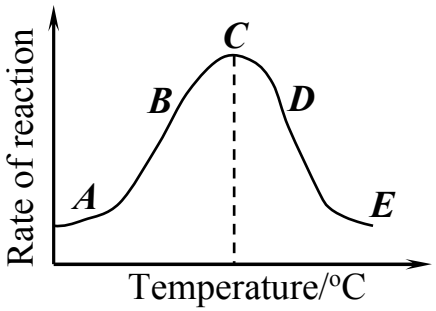



**Fig. 1**

The explanation for the reaction rate between ***D*** and ***E*** is that the

A. enzyme molecule was activated.
B. enzyme molecule rapidly changed its shape.
C. temperature was optimum for the reaction.
D. enzyme molecule was denatured.

**4.** In an experimental set-up to show that carbon dioxide is essential for photosynthesis, the role of soda lime is to

A. add carbon dioxide to the air.
B. remove carbon dioxide from air.
C. to remove chlorophyll from leaf.
D. to absorb water from the leaf.

**5.** Palisade cells are adapted to capture as much sunlight energy as possible in the following ways **except** by

A. containing lots of chloroplasts.
B. having cylindrical shapes and so packed closely together.
C. being arranged in a single layer.
D. having spherical shape and larger air spaces between them.

**6.** Which of these in a protective function of white blood cells in the body?

A. Phagocytosis.
B. Blood clotting.
C. Transport of oxygen in the blood.
D. Distribution of heat round the body.

**7.** Which part of the brain directly controls the rate of the heart?

A. Cerebellum.
B. Cerebrum.
C. Medulla oblongata.
D. Olfactory lobe.

**8.** In which part of the nephron does reabsorption of all the glucose take place?

A. Bowman's capsule.
B. Loop of Henle.
C. Collecting duct.
D. Proximal convoluted tubule.

**9.** Which of the following adjustments take place in the eye when light intensity is high?

A. Circular muscles of the iris contract.
B. Contractions of the radial muscles of the iris.
C. Relaxation of the circular muscles of the iris.
D. Enlargement of the pupil.

**10.** Which one of these is true when an arm is bent?

A. Biceps contract
B. Biceps relaxes
C. Triceps contracts
D. Both biceps and triceps

**11.** Which of these favours cross pollination?

A. Having monoecious flowers.
B. Having bisexual flowers.
C. Having anthers and stigmas ripening at the same time.
D. Having flowers buried in the ground.

**12.** In which part of the testicle are sperms produced?

A. Epididymis.
B. Seminiferous tubules.
C. Sperm duct.
D. Cowper's gland.

**13.** While determining the population density of fish by capture, mark and release method, the following precautions are taken **except**

A. choosing a stable population.
B. capturing animals at random.
C. allowing enough time for the marked animals to mix.
D. using marks that are more obvious.

**14.** At what stage of meiosis does the paring of homologous chromosomes take place?

A. Interphase I
B. Prophase II
C. Metaphase I
D. Prophase I

**15.** What percentage of off spring 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%

**16.** Which of the following is a taxonomic class?

A. Annelida
B. Arthropoda
C. Plantae
D. Mammalia

**17.** Which of the following features is most important in constructing a dichotomous key?

A. Body structure
B. Body colour.
C. Body size.
D. Age of organism.

**18.** Which of the following pairs of insects undergoes incomplete metamorphosis?

A. Housefly and mosquito.
B. Butterfly and cockroach.
C. Honey bee and moth.
D. Cockroach and grass hopper.

**19.** Which of the following sets consists only of dry indehiscent fruits?

A. Achene, cypsela, nut.
B. Achene, follicle and legume.
C. Caryopsis, legume and capsule.
D. Schizocarp, capsule and caryopsis.

**20.** Which of the following is a product of aerobic respiration in plants?

A. Ethanol, carbon dioxide, energy.
B. Carbon dioxide, water, energy.
C. Lactic acid, carbon dioxide.
D. Ethanol, carbon dioxide and water.

**21.** Which of the following functions is performed by only a modified leaf?

A. Food manufacture.
B. Gaseous exchange.
C. Transpiration.
D. Vegetative propagation.

**22.** Which of the following feature is used to determine whether leaves are compound?

A. Types of venation.
B. Presence or absence of leaflets.
C. Type of stalk.
D. Nature of margin.

**23.** 10 g of soil sample was heated at 110$^{o}$C to a constant mass of 8 g. What was the percentage of water in the soil sample?

A. 8%
B. 20%
C. 25%
D. 80%

**24.** Why is it important to boil a leaf in ethanol while carrying out a test for starch in it?

A. To dissolve the waxy cuticle.
B. To make cells permeable to iodine.
C. To remove chlorophyll.
D. To stop the chemical reactions in the cells.

**25.** Which of the following is a functional adaptation of a molar tooth?

A. Sharp pointed end.
B. Flat smooth top.
C. Ridged surface.
D. Many roots.

**26.** Digestion of proteins in mammals starts in the

A. duodenum.
B. mouth.
C. stomach.
D. ileum.

**27.** Universal recipients are said to be with blood **AB**, because they have

A. antigens.
B. both antibodies **a** and **b**.
C. no antibodies.
D. no antibodies.

**28.** Removal of a ring bark from a tree trunk interferes with the movement of

A. water to the leaves.
B. mineral salts to leaves.
C. food to the leaves.
D. food to the roots.

**29.** Which of the following occurs when the eye is focused to a near object?

A. Ciliary muscles relax.
B. Lens becomes long and thin.
C. Suspensory ligaments contract.
D. lens become short and thin.

**30.** Which of the following movements in fish is counteracted by pairs of fins?

A. Rolling.
B. Backward drag.
C. Pitching.
D. Yawing.

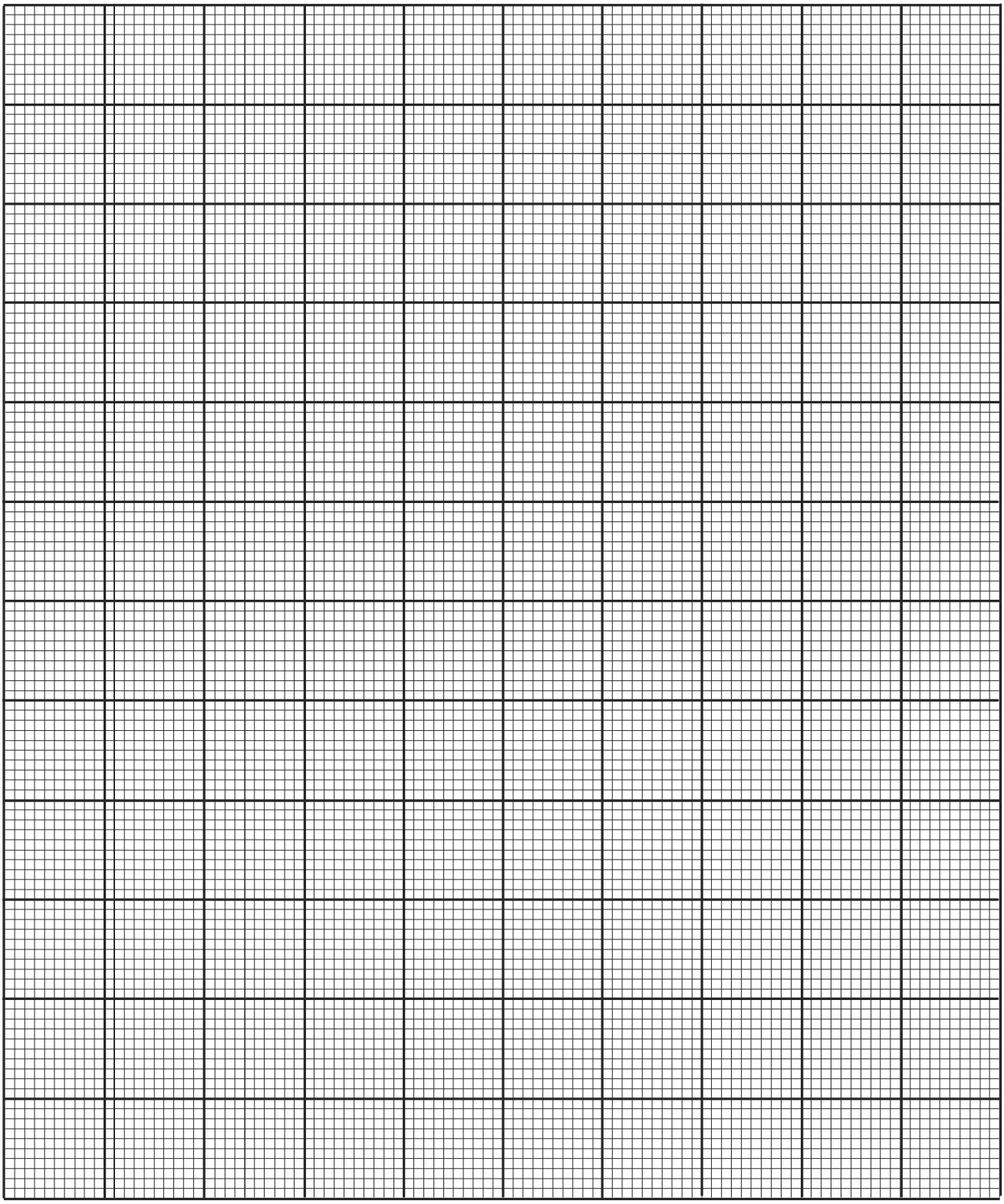
## SECTION B (40 MARKS)

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

**31.** In an intensive care unit, the angle at which the hair raises to the surface of the skin was monitored at different temperatures and recorded in the table below.

| **Temperature (ºC)** | 14 | 16 | 19 | 22 | 26 | 28 |
|---|---|---|---|---|---|---|
| **Angle (º)** | 80 | 70 | 60 | 45 | 20 | 10 |

(a) Plot a graph to represent the data above. (*08 marks*)



(b) Describe the shape of the graph. (*02 marks*)

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(c) Explain the trend. (*04 marks*)

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(d) Suggest other body adjustments the body undergoes at 15$^{o}$C. (*04 marks*)

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(e) Mention any two means by which animal bodies lose heat. (*02 marks*)

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**32.** (a) What are the causes of genetic variation? (*03 marks*)

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(b) Outline any **four** sites of meiosis in organisms. (*04 marks*)

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(c) State any **three** significances of mitosis in organisms. (*03 marks*)

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**33.** (a) Explain the role of each of the following during germination of seeds:

(i) Oxygen. (*02 marks*)

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(ii) Water. (*03 marks*)

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(iii) Warmth. (*02 marks*)

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(b) Explain briefly the importance of the following in plants:

(i) Primary growth (*01½ marks*)

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(ii) Secondary growth (*01½ marks*)

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## SECTION C (30 MARKS)

*Attempt any* **two** *questions from this section. Answers to these questions* **must** *be written in the answer booklets provided. Additional question(s) answered will* **not** *be marked.*

**34.** (a) Describe the process of gaseous exchange in the alveolus. (*07 marks*)

(b) How is the alveolus suited to gaseous exchange? (*04 marks*)

(c) Explain how breathing process is controlled. (*04 marks*)

**35.** (a) What is meant by atropism? (*02 marks*)

(b) Explain the mechanism involved in geotropism. (*07 marks*)

(c) Explain the importance of tropisms in plants. (*07 marks*)

**36.** (a) What is soil erosion? (*01 mark*)

(b) State the various types of soil erosion. (*05 marks*)

(c) Explain how man's activities may lead to soil erosion. (*09 marks*)

**37.** (a) With the aid of diagrams, describe the structure of:
(i) Artery. (*04 marks*)
(ii) Vein. (*04 marks*)

(b) Describe the route taken in the blood system by carbon dioxide molecule that is formed in the tissue of the leg to exhalation. (*07 marks*)

**END**