

# GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate of Education Examination

0710 BIOLOGY 1

JUNE 2023

ADVANCED LEVEL

Centre Number	
Centre Name	
Candidate Identification No	
Candidate Name	

**Mobile phones are NOT allowed in the examination room.**

## MULTIPLE CHOICE QUESTION PAPER

One and a Half (1½) Hours

### INSTRUCTIONS TO CANDIDATES

*Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.*

1. USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

*Before the examination begins:*

3. Check that this question booklet is headed "Advanced Level – 0710 Biology 1".
4. Fill in the information required in the spaces above.
5. Fill in the information required in the spaces provided on the answer sheet using your HB pencil:  
**Candidate Name, Exam Session, Subject Code and Candidate Identification Number.**

Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.

*How to answer the questions in this examination*

6. Answer ALL the 50 questions in this Examination. All questions carry equal marks.
7. Each question has FOUR suggested answers: A, B, C and D. Decide on the best answer that is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.

For example, if C is your correct answer, mark C as shown below:

[A] [B]  [C] [D]

8. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
9. Avoid spending too much time on any one question. If you find that a question is difficult, move on to the next question. You can come back to this question later on.
10. Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
11. **At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet after. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.**

Turn Over

1. Which of the following carbohydrates has monomers linked by  $\beta$ 1-4 linkages?  
 A Maltose.  
 B Lactose.  
 C Sucrose.  
 D Cellulose.
- 
2. Classification of organisms based on evolutionary relationships between organisms is called:  
 A Artificial classification.  
 B Phylogenetic classification.  
 C Natural classification.  
 D Numerical classification.
- 
3. An example of a globular protein is:  
 A Salivary amylase.  
 B Collagen.  
 C Keratin.  
 D Haemoglobin.
- 
4. The presence of two cell layers in the body wall of multicellular organisms makes them to be called:  
 A Triploblastic animals.  
 B Coelomate animals.  
 C Diploblastic animals.  
 D Pseudocoelomate animals.
- 
5. Each individual has a unique DNA finger print because each individual has a unique set of:  
 A mutations in the DNA.  
 B proteins in the blood.  
 C enzymes in the mitochondria.  
 D amino acids in the blood.
- 
6. During expiration, which of the following takes place?  
 A External intercostal muscles contract and ribs move upwards and outwards.  
 B Internal intercostal muscles relax and ribs move inwards and downwards.  
 C External intercostal muscles relax and ribs move downwards and inwards.  
 D Internal intercostal muscles contract and ribs move upwards and outwards.
- 
7. In which of the following organs is the epithelial tissue ciliated?  
 A Alveoli of lungs.  
 B Bowman's capsule.  
 C Oviducts.  
 D Epidermis of skin.
- 
8. Which class of food is respired when  $RQ \leq 1$ ?  
 A Proteins.  
 B Lipids.  
 C Dietary fibers.  
 D Carbohydrates.
- 
9. The vesicles that pinch off and fuse to form cisternae of the golgi apparatus come from which cell organelle?  
 A Endoplasmic reticulum.  
 B Nucleus.  
 C Mitochondria.  
 D Cell surface membrane.
- 
10. An invertebrate is collected from a fresh water pond. Dissection of this invertebrate shows three developmental body layers. It has a cuticle as its outer body covering. To which phylum does it belong?  
 A Arthropoda.  
 B Annelida.  
 C Cnidaria.  
 D Echinodermata.
- 
11. In humans, gaseous exchange takes place in the:  
 A Lungs.  
 B Nostrils.  
 C Trachea.  
 D Alveoli.
- 
12. An example of divergent evolution is:  
 A wings of insects and wings of birds.  
 B wings of birds and forelimb of humans.  
 C wings of honey bee and wings of bats.  
 D wings of bats and wings of butterfly.
- 
13. The liver breaks down RBC to produce:  
 A Urea.  
 B Ammonia.  
 C Amino acids.  
 D Bile pigments.
- 
14. In genetic engineering restriction endonuclease enzymes are used to:  
 A cut DNA at specific locations.  
 B cut RNA at specific locations.  
 C cut proteins at specific locations.  
 D cut amino acids on a polypeptide chain.
- 
15. Which of these types of cells contain the highest concentration of mitochondria?  
 A Erythrocyte.  
 B Leukocyte.  
 C Neuron.  
 D Sperm cell.

16. These are produced during mitosis:
- four cells that are genetically different.
  - two cells that are genetically identical.
  - two cells that genetically different.
  - four cells that genetically identical.

17. The  $F_2$  phenotypic ratio for a monohybrid cross with complete dominance is:

- 3:1.
- 2:1:0.
- 1:2:1.
- 1:1.

18. Which of the following has dead cells at maturity?

- Companion cells.
- Guard cells.
- Sieve tube members.
- Vessel members.

19. Meiotic genetic variation in a population is caused by:

- crossing over and independent assortment in meiosis.
- mutation.
- random mating and fertilization.
- different environmental conditions.

20. Which of these is found in bile salts that emulsify fats?

- Sodium chloride and sodium hydrogen carbonate.
- Sodium taurocholate and sodium glycocholate.
- Sodium chloride and sodium taurocholate.
- Sodium hydrogen carbonate and sodium glycocholate.

For questions 21 to 28, one or more of the response(s) is/are correct. Choose:

- If (i), (ii) and (iii) are correct.
- If (i) and (iii) are correct.
- If (ii) and (iv) are correct.
- If only (iv) is correct.

21. Rods differs from cones in that:

- rods are less numerous than cones.
- rods are more sensitive than cones.
- rods are unevenly distributed while cones are evenly distributed on the retina.
- rods have low visual acuity while cones have high visual acuity.

22. In isometric growth:

- organs of the body grow at the same rate.
- increase in size is not accompanied by change in shape.
- examples are seen in organisms like grasshopper and Tilapia.

- growth is intermittent.

23. The cytoskeleton:

- is composed of protein microfilaments and microtubules.
- gives support to unicellular organisms.
- is present in the cells of both unicellular and multicellular organism.
- is tough and hard.

24. During anaerobic respiration:

- 36 to 38 ATP molecules are produced.
- the cytoplasm and mitochondria are the sites of glucose breakdown.
- there is complete breakdown of glucose.
- pyruvate becomes the hydrogen acceptor.

25. At full turgor in a cell:

- water potential is zero.
- solute potential is equal to pressure potential.
- water uptake by the cell stops.
- wall pressure is not equal and opposite to turgor pressure.

26. Which of the following is /are correct of hormones in animals?

- They are soluble inorganic molecules.
- They are effective when in very large quantities.
- They are fast in action with short lasting effects.
- They are transported in blood.

27. Functions of FSH in human reproduction include:

- stimulation of spermatogenesis.
- stimulation of growth of primary follicles.
- stimulation of developing follicle in ovary to secrete oestrogen.
- stimulation of ovulation.

28. During light – dependent reactions of photosynthesis:

- NADP is synthesized.
- ATP is synthesized.
- Carbon dioxide is synthesized.
- Photolysis of water occurs.

29. The chemical messenger florigen which controls flowering in plants is secreted by:

- Flowers.
- Leaves.
- Petiole.
- Phloem.

Turn Over

30. A deficiency of thyroxine at birth in humans leads to:
- Dwarfism.
  - Cretinism.
  - Gigantism.
  - Goitre.
- 
31. Cytokinesis in mitotic division of plant cells involves:
- cleavage of the cytoplasm.
  - furrowing of the cytoplasm.
  - invagination of the cytoplasm.
  - formation of cell plate.
- 
32. Two causes of eutrophication are:
- sewage and oil spillage.
  - chemical fertilizers and sewage.
  - chemical fertilizers and oil spillage.
  - pesticides and sewage.
- 
33. In enzyme activity, the molecule haem is considered as:
- a prosthetic group.
  - a coenzyme.
  - an activator.
  - an inhibitor.
- 
34. The volume of air that always remains in the lungs after deep expiration is:
- Expiratory reserve volume.
  - Residual volume.
  - Tidal volume.
  - Tidal capacity.
- 
35. The highest amount of  $\text{CO}_2$  is transported in blood in the form of:
- Carbon dioxide.
  - Carbonic acid.
  - Carbamino-haemoglobin.
  - Hydrogencarbonate ions.
- 
36. In which of these groups of animals is the blood pigment haemocyanin present?
- Annelids, molluscs, mammals.
  - Molluscs, chordates, insects.
  - Insects, crustaceans, molluscs.
  - Annelids, nematods, chordates.
- 
37. The process in which an attenuated pathogen is used to stimulate the production of antibodies against the pathogen is called:
- Capping.
  - Vaccination.
  - Opsonization.
  - Passive immunity.
- 
38. The role of oestrogen and/or progesterone in contraceptive pills is to:
- favor the secretion of FSH and LH from the anterior pituitary gland to enable ovulation.
  - suppress the secretion of FSH and LH from the anterior pituitary gland to prevent ovulation.
  - prepare the uterine lining for implantation.
  - Favor gastrulation.
- 
39. Which of the following can best illustrate primary succession?
- rock--> grass-->, mosses--> shrubs--> trees.
  - bare rock--> mosses--> ferns--> trees--> shrubs.
  - lichens--> mosses--> grasses--> ferns--> trees.
  - bare rock--> lichens--> mosses--> ferns--> grasses.
- 
40. An inhibitor that changes the entire shape and structure of the enzyme is called:
- an allosteric inhibitor.
  - a non-competitive irreversible inhibitor.
  - a competitive reversible inhibitor.
  - a non-competitive reversible inhibitor.
- 
41. Why is biological control considered to be better than chemical control of pests?
- All pests are sure to be eliminated.
  - It is less expensive.
  - It will not kill beneficial organisms.
  - It is easier to carry out.

For questions 42 to 50 there are two statements. Read through the statements and then choose:

- A if both statements are true and the second explains the first.
- B if both statements are true but the second does not explain the first
- C if the first statement is true and the second is false
- D if the first statement is false and the second is true.

First Statement	Second Statement
42. During the light dependent reactions of photosynthesis there is provision of hydrogen in the form of NADH.	During the light dependent reactions there is photolysis of water.
43. A type of vector used in genetic engineering is plasmids.	Plasmids are circular pieces of DNA found in bacteria cells.
44. In myofibrils of skeletal muscles the actin binding site contains troponin and tropomyosin.	Tropomyosin blocks actin binding site switching on/off muscle contraction.
45. All cells in the complex xylem tissue are dead cells.	The types of cells that make the complex xylem tissue are xylem parenchyma cells.
46. Pollen tubes grow towards the micropyle end of ovules due to chemicals released by the egg cell.	The pollen tubes show positive chemotropism.
47. The genetic code is read in the 3'-5' direction.	The genetic code is a linear code.
48. In bread mould, the hyphae are aseptate.	The hyphae of bread mould lack cross walls.
49. The upper and lower cheek teeth in ruminant herbivores are shaped in W and M respectively making them to interlock during chewing.	The lower and upper cheek teeth in ruminant herbivores grow throughout life.
50. The inspiratory centre stimulates the rate and depth of inspiration.	The inspiratory centre is found on the dorsal and lateral portions of the breathing centre.

**STOP**

**GO BACK AND CHECK YOUR WORK.**