

MARCH 2024

The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy, in collaboration with NASTA	SUBJECT CODE NUMBER 0710	PAPER NUMBER 1
GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION	SUBJECT TITLE BIOLOGY	
CANDIDATE NAME:		
CANDIDATE NUMBER:		
CENTRE NUMBER:		
ADVANCED LEVEL		

Time Allowed: One and a half hours
INSTRUCTIONS TO CANDIDATES:

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

1. USE A SOFT HB PENCIL THROUGHOUT THIS 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 code and subject title—BIOLOGY Paper 1".
4. Insert the information required in the spaces above.
5. Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. 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.
6. Insert the information required in the spaces provided on the answer sheet using your HB pencil:

Candidate Name, Centre Number, Candidate Number, Subject Code Number, and Paper number

How to answer questions in this examination:

7. Answer ALL the 50 questions in this examination. All questions carry equal marks.
8. Non-programmable calculators are allowed.
9. For each question there are four suggested answers, A, B, C and D. Decide which answer 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]
10. Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
11. Avoid spending much time on any question. If you find a question difficult, move to the next question. You can come back to this question later.
12. Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
13. You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.

1. Which definition of the magnification of a drawing of the cross section of a leaf is correct?
- The actual size of the leaf multiplied by the magnification of the microscope
 - The measured difference in size between the leaf and a drawing of the leaf
 - The increase in size of the leaf when observed using a microscope
 - The size of the drawing of the leaf divided by the actual size of the leaf

2. Some secretory cells synthesize and release glycoproteins. What is the correct sequence of some of the events that occur in a secretory cell?
- exocytosis
 - products accumulate in secretory vesicles
 - mRNA binds to ribosomes
 - synthesis of glycoproteins
- 3, 4, 1, 2
 - 3, 4, 2, 1
 - 4, 3, 1, 2
 - 4, 3, 2, 1

3. Which statement describes how the molecular structure of starch is suited to its function?
- Amylose has a branched structure and amylopectin is coiled to give a compact molecule for transport.
 - In the breakdown of amylose and amylopectin, many condensation reactions release stored energy.
 - In the formation of amylose and amylopectin, many hydrolysis reactions allow the release of stored energy.
 - Amylose and amylopectin form a complex that is insoluble and so does not affect the water potential of the cell.

4. The structure of phospholipids includes:
- polar phosphate heads
 - hydrophobic fatty acid chains
 - saturated fatty acid chains.

What are essential for the formation of a phospholipid bilayer in a cell surface membrane?

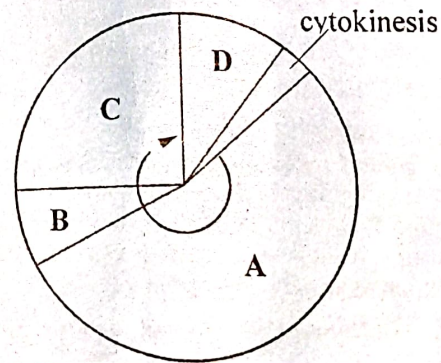
- 1 and 2
 - 1 and 3
 - 2 and 3
 - 3 only
5. Which statement describes carrier proteins in cell surface membranes?
- Carrier proteins are found on the outer surface of the membranes allowing cell recognition.

- Carrier proteins are involved in moving substances through the membranes by either active transport or passive transport.
- Carrier proteins allow the binding of ligand molecules, which causes changes within cells.
- Carrier proteins are involved in moving substances through the membranes by passive transport through water-filled pores.

6. What happens to a typical bacterium when it is placed in surroundings that have a higher water potential than the water potential inside the cell?
- The bacterium bursts because the cell wall has no structural function.
 - The bacterium dies because water leaves the cell by osmosis.
 - There is no change because the cell wall is impermeable to water.
 - There is a net movement of water into the bacterium.

7. By which process do hydrogen carbonate ions leave red blood cells?
- active transport
 - endocytosis
 - chloride shift
 - phagocytosis

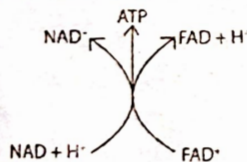
8. The diagram below shows the mitotic cell cycle. During which phase is DNA replicated?



9. Which statement about the behaviour of chromosomes during mitosis is correct?
- They attach to the spindle fibres to contain them within the nucleus.
 - They condense to prevent further translation of genes.
 - They reach the poles of the cell and begin to uncoil.

27. Which one of the following sets consists of functionally related substances?
- Chitin, keratin, cellulose
 - Haemoglobin, myosin, starch
 - Collagen, keratin, glycogen
 - Glucose, starch, chitin
28. During respiration in absence of oxygen, pyruvic acid is converted into
- Lactic acid and water in animals
 - Ethanol and carbon dioxide in plants
 - Lactic acid and carbon dioxide in animals
 - Ethanol and water in plants.
29. An efficient physiological homeostatic mechanism is one which
- allows large fluctuation
 - responds to deficiency than excess
 - responds to small fluctuations
 - allows positive feedback
30. In single circulation, the blood pressure is low because
- the blood passes through two capillary systems
 - animals that have single circulation have single-chambered heart
 - the single circulation system lacks valves
 - the main vessels in single circulation are capillaries

31. Figure 1 shows a schematic diagram of a portion of a reaction chain



Which one of the following is true of the reaction?

- FAD is reduced
 - ATP is used in the reaction
 - Hydrogen passes from reduced NAD to FAD
 - NAD is oxidized
32. A tissue viewed under microscope showed numerous lysosomes in the cells. Which one of the following is the possible cause ?
- Active transport
 - Infections
 - High rate of internal transport
 - High rate of protein synthesis

33. What would be the phenotypic ratio of the offspring when a test cross is carried out on an individual who is a carrier for albinism?
- 3:1
 - 1:2:1
 - 1:1
 - 9:3:3:1
34. In *Drosophila*, there are red-eyed and white eyed types, the red-eyed being dominant over white. Genes controlling eye colour are sex linked. The ratio of the phenotypes resulting from mating a red-eyed male XY and white-eyed female (XX) is
- 1 red-eyed: 2 white-eyed
 - 1 red-eyed: 1 white-eyed
 - All red eyed
 - 2 red-eyed: 1 white-eyed
35. Vertebrates A and B belong to same species and A lives in dry environment while B lives in a wet environment. The kidney structure of A would differ from that of B by having
- fewer and bigger glomeruli with shorter loop of Henle
 - more numerous and small glomeruli with longer loop of Henle
 - more numerous and bigger glomeruli with shorter loop of Henle
 - fewer and smaller glomeruli with longer loop of Henle

For questions 36 to 40, one or more of the responses is/are correct. Choose;

- A if 1, 2 and 3 are correct
 B if 1 and 3 are correct
 C if 2 and 4 are correct
 D if only 4 is correct

36. What determines the specificity of an enzyme?
- The covalent and other bonding between R groups of the polypeptide
 - The optimum pH of the enzyme
 - The covalent peptide bonds between amino acids of the polypeptide
 - The shape of the substrate molecule

37. Which statements about a peptide bond are correct?
- 1 It joins two monomers which are always identical to each other.
 - 2 It contains four different atoms.
 - 3 It can be broken by the addition of water at room temperature.
 - 4 It is important in the primary structure of proteins.
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38. What contributes to the upward movement of water in a xylem vessel of a plant?
1. cohesion of water molecules by hydrogen bonding
 2. adhesion of water molecules to the cellulose walls of xylem vessels by hydrogen bonding
 3. removal of water from xylem vessels in a leaf reduces the hydrostatic pressure in the xylem
 4. capillarity in the sieve tubes and sieve tube elements.
-
39. Which events result in a person developing actively acquired immunity?
1. becoming infected by TB bacteria
 2. drinking breast milk
 3. receiving an injection of antigens
 4. receiving an injection of antibodies
-
40. Which of the following does DNA replication require?
1. DNA polymerase
 2. Deoxyribonucleotides
 3. DNA helicase
 4. RNA polymerase
-
41. The human eye and an octopus' eye are example of
- A. Homology
 - B. Divergent evolution
 - C. Analogy
 - D. Adaptive radiation
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42. A disadvantage of parallel flow in fish gills is that
- A. Water flows to slowly over the respiratory surface
 - B. Blood does not get saturated enough with oxygen
 - C. Blood and water are not close enough
 - D. Water flows to rapidly overfill

For questions 43 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
43. The carbondioxide acceptor during the Calvin cycle in a maize plant is RuBP	The maize plant is a C ₄ plant
44. The presence of a cell wall is a characteristic feature of cells.	The cell wall provides structural support and protection to plant cells
45. Enzymes are biological catalysts that increase the rate of chemical reactions in living organisms.	Enzymes lower the activation energy required for a reaction to occur
46. Antibodies are produced by B-lymphocytes as part of the immune response	Antibodies bind to specific antigens, marking them for destruction by other immune cells.
47. The Krebs cycle is a series of chemical reactions that occur in the mitochondrial cristae.	The Krebs cycle produces energy-rich molecules such as ATP and NADH.
48. Modification, packaging, and sorting of proteins occur in the golgi apparatus.	The Golgi apparatus receives proteins from the endoplasmic reticulum and directs them to their final destinations within the cell.
49. Cyclic photophosphorylation makes use of both PSI and PSII	The final electron acceptor in cyclic photophosphorylation is PSI.
50. As opposed to pyramid of numbers, pyramid of energy is never inverted	Only about 10% of energy flows from a lower trophic level to a higher trophic level

STOP! GO BACK AND CHECK YOUR WORK