



# Digital Teachers

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**SENIOR SIX**

P530/1

**BIOLOGY**

**PAPER 1**

**EXAM 4**

**FOR CONSULTATION CALL 0776802709**

**INSTRUCTIONS TO CANDIDATES:**

- *Answer all questions in both sections A and B*
- *Answers to Section A questions must be written in the boxes provided*
- *Answers to Section B should be written in spaces provided.*
- *No additional sheets of paper should be inserted in this booklet.*

**FOR EXAMINERS USE ONLY**

<b>Section</b>	<b>Marks</b>
A (1 – 40 )	
B 41	
42	
43	
44	
45	
46	
<b>Total</b>	

## SECTION A

1. Which of the following properties of proteins is most important in creating molecular order in cells/
  - a) Tendency to form a colloidal state
  - b) Amphoteric properties.
  - c) High molecular weight
  - d) Ability to form precipitates with strong acids
2. All the following are found in prokaryotic cells except,
  - (a) DNA
  - (b) Single chromosomes
  - (c) Golgi-body
  - (d) Mesosome
3. The synthesis of the messenger RNA may be described as,
  - (a) Transcription
  - (b) Replication
  - (c) Translocation
  - (d) Transduction
4. Lipids will always pass through s membrane because of,
  - a) Presence of polar groups in the membrane.
  - b) Pinocytosis
  - c) Lack of water in the membrane.
  - d) Presence of mono polar groups in the membrane
5. The matrix in the cartilage is secreted by the
  - a) Fibroblast
  - b) Osteoblasts
  - c) Chondroblasts
  - d) Chondrocytes
6. Species of beetles was introduced in an attempt to control the spread of water hyacinth in the Ugandan lakes. If the beetles reduced the spread of the weeds, this would be an example of,
  - a) Biological control.
  - b) Ecological balance
  - c) Chemical control
  - d) Successful competition
7. Which one of the following is a polysaccharide present in the human muscle?
  - a) Amylose
  - b) Collagen
  - c) Glycogen
  - d) Myoglobin
8. A natural population of organisms which interbreed and produce fertile offspring is,
  - a) Genus
  - b) Phylum
  - c) Family
  - d) Species.

9. Which of the following methods bellow is most suitable for estimating the population of the paramecium in a pond?
- Random sampling
  - Total count
  - Removal sampling
  - Capture-recapture method
10. The only way in which a very large molecule such as proteins could cross a cell membrane is by,
- Endocytosis
  - Active transport
  - Facilitated diffusion
  - Simple diffusion
11. The cell wall pressure equals to the osmotic potential of the cell,
- At incipient plasmolysis
  - At partial turgor
  - When the diffusion pressure deficit is zero
  - At complete plasmolysis
12. Which one of the following is not a structural of an ecosystem?
- Green plants
  - Solar energy
  - Decomposers
  - Predators
13. The eutrofication of lakes and rivers result from;
- Thermal pollutants
  - Bio-degradable pollutants
  - Radiation pollutants
  - Non-biodegradable pollutants
14. In a living cell, the lysosome organelles contain a number of enzymes. What would be the effect on cell of puncturing the organelle? The cell will undergo,
- Plasmolysis
  - Haemolysis
  - Crenating
  - Auto-lysis
15. Which one of the following is confined within the nucleus?
- Messenger RNA
  - Transfer RNA
  - Ribosome
  - DNA molecules
16. One of the pair of the protein is found in skeletal muscle.
- Actin and myosin
  - Keratin and Actin
  - Myosin and fibrinogen
  - Myosin and collagen,
17. Which one of the cell organelle is associated with the final stage of most cell secretions?
- Smooth endoplasmic reticulum

- b) Rough endoplasmic reticulum
  - c) Ribosome
  - d) Golgi-apparatus
18. Which of the following enzymes would be adversely affected by high pH?
- a) Amylase
  - b) Pepsin
  - c) Trypsin
  - d) Lipase
19. Which of the following food materials has the highest amount potential energy per unit weight?
- a) Proteins
  - b) Fats
  - c) Vitamins
  - d) Monosaccharide
20. Which of the following are purines?
- a) Adenine and cytosine
  - b) Thymine and adenine
  - c) Thymine and cytosine
  - d) Adenine and guanine
21. Which of the following tissue forms the lining of blood capillaries?
- a) Cuboidal epithelium
  - b) Glandular cells
  - c) Columnar epithelium
  - d) Squamous epithelium.
22. The sequence of bases in one half of the DNA molecule is AGGCCU, what will be the complementary half of the sequence molecule?
- a) AGG CCA
  - b) TCC GGA
  - c) ACC GGA
  - d) TGG CCA
23. In an eco-system, the greatest energy content is found in:
- a) Tertiary consumers
  - b) Secondary consumers
  - c) Decomposers
  - d) Primary consumers
24. Chromatophores in organisms are
- a) Reproductive cells
  - b) Fat containing cell
  - c) Pigment containing cells
  - d) Carotinoid containing cells
25. How many kilo-joules of energy are released if 1g of sugar burned in oxygen raise the temperature of 500g of water by 7.5oC?
- a) 15.6 KJ
  - b) 156 KJ
  - c) 1.56 KJ
  - d) 1560 KJ

26. Competition by two species for the same ecological niche generally results in,
- The sharing of niche by the two species
  - One species taking possession of the niche
  - Both species leaving the niche
  - Interbreeding between the two species
27. Which of the following describes what happens at the tip of a newly formed amoeboid pseudopodium?
- Gel ectoplasm changes to sol endoplasm.
  - Gel endoplasm changes to sol ectoplasm
  - Sol ectoplasm changes to gel endoplasm
  - Sol endoplasm changes to gel ectoplasm.
28. The name given to chemical reaction in which two or more hexose's sugars combine to form larger units is:
- Condensation
  - Hydrolysis
  - Dehydrogenation
  - Iso merisation.
29. which one of the compounds combine with fatty acids to form fats?
- Glycine
  - Galactose
  - Phosphoric acid
  - Glycerol
30. Which one of the following substances contains globular proteins?
- Enzyme
  - Keratin
  - Elastin
  - Collagen.

## SECTION B

31. a) Define the following terms,

(i) Facilitated diffusion.

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(ii) Active transport.

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(iii) Osmosis

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(b) Give two similarities between facilitated diffusion and active transport

(i) .....

(ii).....

(c) State five ways in which osmosis is different from active transport.

(i).....  
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(ii).....  
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(iii).....  
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(iv).....  
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(v).....  
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32.(a) In which cell organelle is RNA made and where does it perform its function?

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(b) Give different types of RNA known so far,

(i).....

(ii).....

(iii).....

(c) Outline four structural differences between RNA and DNA.

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(d) What is meant by the following terms in protein biosynthesis?

(i) Transcription.

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(ii) Translation.

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(iii) Replication.

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33. The graph below shows physical and chemical constituents of river at increasing distance down stream from the point of sewage discharge.

(a) Suggest explanations for the variations down stream from the point sewage discharge, in concentrations of ammonium ions, dissolved oxygen, and suspended solids.

(i) Ammonium ions.

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(ii) Dissolved oxygen.

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(iii) Suspended solids

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(b) Mention at least two consequences of discharging sewage into a river.

(i).....  
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(ii).....  
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34. (a) Explain the following terms;

(i)Competitive inhibition:

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(ii) Non-competitive inhibition

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(b) In which ways do organic catalysts differ from in-organic catalysts?

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(c) Briefly describe the lock and key hypothesis of enzyme action.

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35. The diagram below shows cross sections through an earthworm

(a) Name the parts labeled (i) to (v) on the diagram.

(b) Name the type of skeleton above and give two advantages of such type skeleton.

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(c) What are the limitations of this type of skeleton to organisms possessing it.

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END