



**TECHNICAL UNIVERSITY OF MOMBASA**

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**FACULTY OF APPLIED AND HEALTH SCIENCES**

**DEPARTMENT OF MEDICAL SCIENCES**

**UNIVERSITY EXAMINATION FOR:**

**DMLS**

**AMD 2105: MEDICAL BIOCHEMISTRY I.**

**SPECIAL/ SUPPLEMENTARY EXAMINATIONS**

**SERIES: SEPTEMBER 2018**

**TIME: 2 HOURS**

**Instructions to Candidates**

You should have the following for this examination

*-Answer Booklet, examination pass and student ID*

This paper consists of Choose Nochoose Sect/Quest. AttemptChoose instruction.

**Circle the correct answer in section A.**

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**Section A (Answer All questions)**

1. The following are functions of biological membrane **EXCEPT**:-
- Site for metabolism.
  - Regulate passage of components.
  - Definition of a cell as a compartment.
  - Takes part in chemical reactions.

2. One of the following is a fat soluble vitamin;
- a. Vitamin A.
  - b. Vitamin C.
  - c. Vitamin D.
  - d. Vitamin B.
3. The following are types of eukaryote cells **EXCEPT**:-
- a. Plant cells.
  - b. Bacterial cells.
  - c. Animal cells.
  - d. Archaea.
4. Classification of carbohydrates includes;
- a. Glycoproteins.
  - b. Polyhydroxyketones.
  - c. Polyhydroxyaldehydes.
  - d. Oligosaccharides.
5. Most of the enzymes known to man are;
- a. Proteins.
  - b. Lipids.
  - c. Vitamins.
  - d. Carbohydrates.

6. The different classes of enzymes include all the following **EXCEPT**:-

- a. Transferases.
- b. Lyases.
- c. Monooxidases.
- d. Oxidoreductases.

7. All the following apply to the lipid bilayer **EXCEPT**:-

- a. Inflexible.
- b. Fusion with other membranes.
- c. Self-sealing.
- d. Hydrophilic and hydrophobic.

8. .... is informed by phospholipids when they are into contact with water.

- a. Hydrophilic heads.
- b. Monolayers.
- c. Bilayers.
- d. Hydrophobic tails.

9. Pyridoxine is also known as vitamin

- a. B12
- b. B6.
- c. B2
- d. B1

10. Vitamin B2 is also known as

- a. Cobalamin.
- b. Ascorbic acid.
- c. Pyridoxine.
- d. Riboflavin.

11. The following are all the functions of proteins **EXCEPT**:-

- a. Responding to stimuli.
- b. Breakdown of molecules.
- c. DNA replication.
- d. Transportation of molecules.

12. An increase in red blood cell fragility results from a deficiency of vitamin .....

- a. Vitamin B.
- b. Vitamin C.
- c. Vitamin E.
- d. Vitamin K.

13. The structural lipid components of the myelin sheath of nerve cell membranes are:-

- a. Phosphosphingolipids.
- b. Myelosides.
- c. Globosides.
- d. Cerebrosides.

14. Retinol is a constituent of vitamin

- a. A.
- b. D.
- c. E.
- d. K.

15. Tetrahydrofolate is a result of reduction of ..... within the cells.

- a. Folate (folic acid).
- b. Glutamate.
- c. Dihydrofolate.
- d. Glutamate.

16. Niacin is required for the synthesis of active form of

- a. Vitamin B2.
- b. Vitamin B3 and nicotinamide adenine dinucleotide (NAD<sup>+</sup>)
- c. Nicotinamide.
- d. Riboflavin.

17. Phosphoglycerides are abundant in the

- a. Brain.
- b. Spleen.
- c. Kidney.
- d. Lungs.

18. Cholesterol is a precursor of

- a. Insulin.
- b. Steroid hormones and bile acids.
- c. Glycolipids.
- d. Phosphosphingolipids.

19. All the following are false about phytomenadione **EXCEPT**:-

- a. Is a water soluble analogue of vitamin E.
- b. Does not promote hepatic synthesis of active prothrombin.
- c. Is not indicated in babies at birth.
- d. All the above.

20. The three main classes of protein correlating with tertiary structure include all the following **EXCEPT**:-

- a. Transport proteins.
- b. Globular protein.
- c. Fibrous proteins.
- d. Membrane proteins.

21. Phosphatidylcholine is an example of ..... found in biological membranes.

- a. Sphingolipids.
- b. Sterol lipids.
- c. Glycerophospholipids.
- d. Prenol lipids.

22. The best know role of protein in a cell is as

- a. Biomolecules.
- b. Enzymes.
- c. Signal transducers.
- d. Amino acids.

23. .... functions in the synthesis of certain glycoproteins and mucopolysaccharides necessary for mucus production and normal growth regulation.

- a. Retinol.
- b. Carotene.
- c. Cholecalciferol
- d. Calcitrol.

24. All the following are fat soluble vitamins **EXCEPT**:-

- a. Vitamin A.
- b Vitamin K.
- c. Vitamin B.
- d. Vitamin E.

25. Maintenance of a cell`s turgor and control of movement of molecules between cytosol and sap is an organelle know as

- a. Plasmodesmata.
- b. Vacuole.
- c. Cellulose.
- d. Chloroplast.

26. The aspects of a protein structure includes all the following EXCEPT:-

- a. Secondary structure.
- b. Quaternary structure.
- c. Technical structure.
- d. Primary structure.

27. .... Results from UV radiation of ergosterol.

- a. Dehydrocholesterol.
- b. Calcitriol.
- c. Cholecalciferol.
- d. Ergocalciferol.

28. Vitamin D deficiency results in

- a. Rickets in children.
- b. Scurvy.
- c. Anaemia.
- d. Blindness.

29. Osteomalacia in adults is as a result of deficiency in vitamin

- a. A.
- b. E.
- c. K.
- d. D.



30. Riboflavin and ATP is used in the synthesis of

- a. Flavin adenine dinucleotide (FAD).
- b. Flavin mononucleotide (FMN).
- c. Flavin.
- d. Thiamine.

31. 1.2-1.7 mg/day is a daily requirement for

- a. Thiamine.
- b. Riboflavin.
- c. Flavin.
- d. Folic acid.

32. The liver is the storage site for vitamin

- a. E.
- b. B.
- c. A.
- d. K.

33. Tocopherols are a mixture of related compounds that result in vitamin

- a. B.
- b. A.
- c. K.
- d. E.

34. Vitamin B5 is also known as

- a. Pantothenic acid.
- b. Ascorbic acid.
- c. Nicotinic acid.
- d. Pyridoxine.

35. Process of synthesizing a protein from and mRNA template is.

- a. Translation.
- b. Transcription.
- c. Transportation.
- d. Transcribing.

36. All the following are basic amino acids **EXCEPT**:-

- a. Histidine.
- b. Arginine.
- c. Lysine.
- d. Cysteine.

37. Glycine and alanine are ..... amino acids.

- a. Hydrophobic.
- b. Hydrophilic.
- c. Acidic.
- d. Basic.

38. Aspartic acid and glutamic acid are ..... amino acids.

- a. Acidic.
- b. Basic.
- c. Hydrophilic.
- d. Hydrophobic.

39. All the following are hydrophilic amino acids **EXCEPT**:-

- a. Asparagine.
- b. Cysteine.
- c. Histidine.
- d. Tyrosine.

40. Tryptophan is a ..... amino acid.

- a. Hydrophilic.
- b. Hydrophobic.
- c. Acidic.
- d. Basic.

## **SECTION B**

### **ANSWER ALL QUESTIONS**

41. List the water soluble vitamins (4mks)
  
42. Outline the functions of proteins (4mks)
  
43. Give two differences between prokaryotes and eukaryotes (4mks)
  
44. List at least four functions of biological functions (4 mks)
  
45. List the 3 main classes of protein correlating with tertiary structure (4 mks)
  
46. List the deficiencies of vitamin A, D, C and vitamin B12 (4 mks)
  
47. Name two reactions in the body that requires vitamin B12 as a co factor (4 mks)
  
48. Niacin is required for the function of the active form of vitamin B3 which are
  
49. List the properties of enzymes (4 mks)
  
50. Vitamins are of two distinct types ; they are; (4 mks)

**SECTION C**

**ANSWER ALL QUESTIONS**

51. Discuss the deficiencies associated with lack of the different vitamins (20 mks)

52. Discuss any two hormones (20 MKS)

