

Roll No.

D-1004**M. Sc. (Fourth Semester) (Main/ATKT)****EXAMINATION, May-June, 2020**

ZOOLOGY

Paper First

(Biochemistry)*Time : Three Hours]**[Maximum Marks : 80*

Note : Attempt all Sections as directed. Draw appropriate diagrams where necessary.

Section—A

1 each

(Objective/Multiple Choice Questions)**Note :** Attempt all questions.

Choose the correct answer :

1. All proteins contain the :

- (a) Same 20 amino acids
- (b) Different amino acids
- (c) 300 Amino acids occurring in nature
- (d) Only a few amino acids

2. The optically inactive amino acid is :

- (a) Glycine
- (b) Serine
- (c) Threonine
- (d) Valine

3. An aromatic amino acid is :

- (a) Lysine
- (b) Tyrosine
- (c) Taurine
- (d) Arginine

4. An amino acid that does not form an α -helix is :

- (a) Valine
- (b) Proline
- (c) Tyrosine
- (d) Tryptophan

5. An essential amino acid in man is :

- (a) Aspartate
- (b) Tyrosine
- (c) Methionine
- (d) Serine

6. A ketogenic amino acid is :

- (a) Valine
- (b) Cysteine
- (c) Leucine
- (d) Threonine

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7. Biuret reaction is specific for :
- (a) -CONH-linkages
 - (b) -CSNH₂ group
 - (c) -(NH)NH₂ group
 - (d) All of these
8. Sakaguchi's reaction is specific for :
- (a) Tyrosine
 - (b) Proline
 - (c) Arginine
 - (d) Cysteine
9. Millio-Nasse's reaction is specific for the amino acid :
- (a) Tryptophan
 - (b) Tyrosine
 - (c) Phenylalanine
 - (d) Arginine
10. Ninhydrin with evolution of CO₂ forms a blue complex with :
- (a) Peptide bond
 - (b) α- Amino acids
 - (c) Serotonin
 - (d) Histamine
11. The most important epimer of glucose is :
- (a) Aalactose
 - (b) Fructose
 - (c) Arabinose
 - (d) Xylose

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12. Which of the following is a non-reducing sugar ?
- (a) Isomaltose
 - (b) Maltose
 - (c) Lactose
 - (d) Tehalose
13. A positive Seliwanoff's test is obtained with :
- (a) Glucose
 - (b) Fructose
 - (c) Lactose
 - (d) Maltose
14. Vitamin A or retinal is a :
- (a) Steroid
 - (b) Polyisoprenoid compound with a cyclohexenyl ring
 - (c) Bezoquinone derivative
 - (d) 6-Hydroxychromane
15. Retinol is transported in blood bound to :
- (a) Aoretinol binding protein
 - (b) α₂- Globulin
 - (c) β- Globulin
 - (d) Albumin
16. Deficiency of Vitamin A causes :
- (a) Xerophthalmia
 - (b) Hypoprothrombinemia
 - (c) Megaloblastic anemia
 - (d) Pernicious anemia

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17. Vitamin synthesized by bacterial in the intestine is :

- (a) A
- (b) C
- (c) D
- (d) K

18. Gaucher's disease is due to the deficiency of the enzyme :

- (a) α -Fucosidase
- (b) β -Galactosidase
- (c) β -Glucosidase
- (d) Sphingomyelinase

19. Coenzymes are :

- (a) Heat stable, dialyzable, non-protein organic molecules
- (b) Soluble, colloidal, protein molecules
- (c) Structural analogue of enzymes
- (d) Different forms of enzymes

20. A nucleotide consists of :

- (a) A nitrogenous base like choline
- (b) Purine + pyrimidine base + sugar + phosphorous
- (c) Purine or pyrimidine base + sugar
- (d) Purine or pyrimidine base + Phosphorous

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Section—B

2 each

(Very Short Answer Type Questions)

Note : Attempt all questions. Answer the questions in two or three sentences.

1. Draw the structural formula of any *two* amino acids with negatively charged R groups.
2. Draw the structural formula of any *two* sulphur containing amino acids.
3. Draw the structural formula of any *two* amino acids with aromatic rings.
4. Draw the structural formula of *three* epimers of glucose.
5. Sugars have number of stereoisomers because they contain several carbon atoms. (Fill in the blanks with Large/Small and Symmetrical/Asymmetrical).
6. Describe the various sources and functions of calciferol.
7. Gout is a condition due to catabolic disorder of which macromolecule ?
8. Hypouricemia is a result of deficiency of which enzymes ?

Section—C

3 each

(Short Answer Type Questions)

Note : Attempt all questions. Answer the questions in about 75 words.

1. Elucidate the parallel and antiparallel β -sheet structure of proteins.

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2. Describe the α -helix structure of proteins.
3. Differentiate between aldoses and ketoses, the two families of monosaccharides.
4. Describe the sources, structure and functions of vitamin C.
5. Describe the various sources and functions of vitamin A.
6. What are the main functions of coenzymes ?
7. Describe structure and functions of t-RNA.
8. What are the main functions of nucleoproteins ?

Section—D

(Long Answer Type Questions)

Note : Attempt all questions. Answer the questions in about 150 words.

1. Describe the salient features and significance of 'Ramchandran Plot'. 7

Or

Describe the various stages of protien anabolism.

Or

Describe the various stages of protein catabolism.

2. Write an essay on carbohydrate metabolism. 7

Or

Describe the structure and metabolism of lipids.

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Or

Describe the structure, regulation, activity and functions of coenzymes.

3. Describe the chemistry of DNA. 6

Or

Write an essay on 'Nucleoproteins'.

Or

Write an essay on nucleic acid metabolism.

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