

C 31155

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Name.....

Reg. No.....

**THIRD SEMESTER B.Sc. DEGREE EXAMINATION  
NOVEMBER 2017**

(CUCBCSS—UG)

Biotechnology

BTY 3B 03—BIOCHEMISTRY

Time : Three Hours

Maximum : 80 Marks

**Section A**

*Answer any two out of four questions in about 1,500 words.*

*Each question carries 10 marks.*

1. Explain the arrangement of electron carriers in the electron transport chain.
2. Discuss the steps in urea cycle, indicating the compartmentalisation of enzymes involved.
3. Derive Michaelis-Menten equation and define  $K_m$ . Outline a method to determine  $K_m$  and  $V_{max}$ .
4. Discuss the physiological functions and deficiency disorders of any four water soluble vitamins.

(2 × 10 = 20 marks)

**Section B**

*Answer any seven out of fourteen questions in about 750 words.*

*Each question carries 5 marks.*

5. Explain the buffer action of acetate buffer.
6. Outline the steps in glycolysis under anaerobic condition and indicate the number of ATP molecules formed.
7. What are carbohydrates? How are they classified? Explain with suitable examples.
8. Explain the following properties of aminoacids :
  - (a) Amphoteric property.
  - (b) Reaction with ninhydrin.
  - (c) Reaction with nitrous acid.
  - (d) Reaction with formaldehyde.
  - (e) Optical property.
9. Explain the various secondary structures of proteins.
10. Outline the classification of lipids with suitable examples.

Turn over

11. How is palmitic acid oxidised to acetyl CoA ? Explain.
  12. Discuss the base composition of nucleic acids with the help of structures.
  13. Explain the features of DNA double helix with the help of a neat diagram.
  14. How are enzymes classified ? Explain with examples.
  15. Explain the different types of enzyme inhibition.
  16. Discuss the physiological functions of insulin.
  17. Explain the role of vitamin A in vision.
  18. Outline the principle behind the separation of amino acids by ion-exchange chromatography.
- (7 × 5 = 35 marks)

### Section C

*Answer all questions in about 300 words.  
Each question carries 3 marks.*

19. Biological buffer systems.
20. Chemiosmotic theory.
21. Globular proteins and fibrous proteins.
22. Types of DNA.
23. Principle of gel filtration.

(5 × 3 = 15 marks)

### Section D

*Answer all questions in about 200 words.  
Each question carries 2 marks.*

24. Distinguish between acidic and basic amino acids with examples.
25. Write the structure of cholesterol.
26. What are reducing disaccharides ? Give the structure of one reducing disaccharide.
27. List any *four* functions of proteins.
28. How can you locate the positions of DNA molecules separated by Agarose gel electrophoresis ?

(5 × 2 = 10 marks)