

M. Sc. DEGREE EXAMINATION, NOVEMBER 2008  
BIOINFORMATICS  
FIRST SEMESTER

COURSE : CORE  
PAPER : BIOCHEMISTRY  
TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ALL QUESTIONS.

(20 x 1=20)

I. FILL IN THE BLANKS:

1. Under normal atmospheric pressure the density of water is maximum at \_\_\_\_\_ degree Celsius.
2. The most important characteristics of living organisms are their capacity to grow and to \_\_\_\_\_.
3. The substrate level phosphorylation reaction in Citric Acid cycle is catalysed by \_\_\_\_\_ enzyme.
4. The number of ATP produced per molecule of glucose in anaerobic glycolysis is \_\_\_\_\_.
5. The charged molecule which is electrically neutral is known as \_\_\_\_\_.
6. The position of carbon atom at which ribose and deoxy ribose differ in their structure is \_\_\_\_\_.
7. The gradual change in optical rotation of a monosaccharide solution is known as \_\_\_\_\_.
8. The cyclic ring present in steroids is known as \_\_\_\_\_.
9. The nitrogenous base present in Lecithin is \_\_\_\_\_.
10. In a feedback inhibition the end product binds at \_\_\_\_\_ site of the enzyme.
11. The non protein part of holoenzyme is \_\_\_\_\_.
12. The multiple forms of an enzyme that catalyses \_\_\_\_\_.
13. The site of respiratory chain inhibited by cyanide is \_\_\_\_\_.
14. A negative sign of free energy indicates that the reaction is \_\_\_\_\_.
15. Naturally occurring antioxidant is \_\_\_\_\_.
16. Coenzyme which is involved in transamination reactions is \_\_\_\_\_.
17. Major organ involved in detoxification reaction is \_\_\_\_\_.
18. Molecules which are involved in the folding of proteins into their correct confirmation are known as \_\_\_\_\_.
19. The pH of a mixture of 0.10m acetic acid and 0.20m sodium acetate is \_\_\_\_\_.
20. The number of base pairs present in each turn of B – form of DNA helix is \_\_\_\_\_.

**SECTION – B**

**ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 500 WORDS.** (4 x 10 = 40)

21. What are the buffers involved in maintenance of blood pH? Explain them briefly.
22. Describe the Citric Acid cycle, with a note on its metabolic significance.
23. Define Isomerism. Explain the optical Isomerism with examples.
24. Write a note on Ramachandran plot.
25. Derive Michaelis – Menten Equation. Give the significance of  $K_m$  and  $V_{max}$ .
26. What are the laws of thermodynamics? Derive the relationship between standard free energy change and equilibrium constant.
27. Explain the role of Protein Kinases in signal transduction.

**SECTION – C**

**ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 1200 WORDS.** (2 x 20 = 40)

28. Give the detailed structural classification of amino acids.
29. Explain the Kinetics of competitive, Non-competitive and uncompetitive inhibition with the help of graphs.
30. Define oxidative Phosphorylation. Name the components of Respiratory chain and describe how they are organized into complexes. Explain chemiosmotic hypothesis.
31. What are Xenobiotics? Explain the phase I and phase II reactions of detoxification.

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