

Sixth Semester B.Sc. Degree Examination, September 2020

(CBCS Scheme)

Chemistry

Paper VIII – BIOCHEMISTRY

Time : 3 Hours]

Sree Siddaganga College of Arts
Science & Commerce for women
LIBRARY, TUMKUR.

[Max. Marks : 90

Instructions to Candidates :

- 1) The question paper has two Parts A and B. Both the parts should be answered.
- 2) Write equations/reactions wherever necessary.

PART – A

Answer any **TEN** of the following questions. Each question carries **2** marks :

(10 × 2 = 20)

1. What are glycolipids? Give any one biological importance.
2. Name and write the structure of amino acid containing imidazole group.
3. What is genetic code? Write any two salient features.
4. Write the partial structure of polyribonucleotide.
5. Mention the significance of K_m and V_{max} of Michaelis-Menton equation.
6. Give the importance of metal ions in biological system.
7. Write the difference between substrate level phosphorylation and oxidative phosphorylation.
8. Write the calorific value / calorific content of carbohydrates and fats.
9. How pyruvate is converted into ethanol?
10. Write the GTP production step of TCA cycle.
11. Write the biological importance of insulin and glucagon.
12. What is hypervitaminosis? With which vitamins it is associated?

PART – B

Answer any **SEVEN** of the following questions. Each question carries **10** marks :

(7 × 10 = 70)

13. (a) Define :
(i) Saponification number
(ii) Iodine number
Mention the significance of them.
(b) Write the structure of phosphatidyl ethanolamine and phosphatidyl serine.
(c) Write the structure of cholesterol. Mention any one biological importance.
(4 + 3 + 3)
14. (a) What is a dipeptide? Write the structure and biological importance of oxytocin.
(b) Write a note on secondary structure of a protein.
(c) How will you synthesise an α - amino acid by Strecker's method? **(4 + 3 + 3)**
15. (a) What is primary structure of a protein? How will you determine primary structure of a protein by Edmann's degradation method?
(b) How an amino acid reacts with
(i) Cu^{2+} ions
(ii) Ninhydrin reagent
(c) What is an isoelectric point of an amino acid? Write its significance.
(4 + 3 + 3)
16. (a) What are nucleosides and nucleotides? Write the structure of adenylic acid and guanesine.
(b) Explain briefly the salient features of B-DNA.
(c) Explain semi-conservative mode of DNA replication. **(4 + 3 + 3)**
17. (a) Discuss the effect of substrate concentration and pH on enzyme catalysed reaction.
(b) Explain allosteric inhibition by taking hexokinase as an example.
(c) What are reversible inhibitors? Briefly explain uncompetitive inhibition with an example. **(4 + 3 + 3)**

18. (a) Explain any four general characteristics of enzymes.
(b) Explain the role of Mg^{2+} in chlorophyll and energy production.
(c) Write a note on $Na^+ - K^+ - ATPase$ (4 + 3 + 3)
19. (a) Explain the role of Ca^{2+} in blood coagulation and stabilisation of proteins.
(b) What are energy coupling reactions? Give an example.
(c) Define the following :
(i) Free energy
(ii) Exergonic reaction
(iii) Enthalpy (4 + 3 + 3)
20. (a) Schematically represent mitochondrial electron transport chain and mention the sites of ATP production.
(b) Write the regulatory reactions of glycolysis.
(c) Write any three differences between catabolism and anabolism. (4 + 3 + 3)
21. (a) Explain the reactions of β - oxidation of fatty acids.
(b) How succinate is converted into malate?
(c) Explain the decarboxylation of an aminoacid with suitable example. (4 + 3 + 3)
22. (a) What are secondary messengers? Explain the role of cAMP as secondary messenger.
(b) Write the classification of hormones based on structure with an example.
(c) Mention the coenzyme forms of the following vitamins :
(i) Pyridoxine
(ii) Nicotinic acid
(iii) Folic acid (4 + 3 + 3)