

CBCS SCHEME

21BT33

USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Third Semester B.E. Degree Examination, Jan./Feb. 2023

Biochemistry

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Derive Henderson – Hesselbalch equation and its limitations. (15 Marks)
b. Water has the ability to act as an Acid as well as base. Uphold the statement. (05 Marks)

OR

- 2 a. Write the physical and chemical properties of water. (05 Marks)
b. Explain the buffering action in biological system against pH changes. (06 Marks)
c. Add a note on preparation of percentage solution and normality solution. (09 Marks)

Module-2

- 3 a. Elaborate the steps involved in the conversion of 1 molecule of 6 C C aldo – sugar into 2 molecules of 3 C compounds. (10 Marks)
b. Give the classification of polysaccharides based on type of sugar units and function with suitable structural example. (10 Marks)

OR

- 4 a. Implicate the pathway where lactate, amino acids, glycerol, pyruvate, oxaloacetate serves as substrate molecules for the generation of simple sugar with energy consumption and yield. (10 Marks)
b. i) Explain the classification of lipids with biological importance. (06 Marks)
ii) Give the classification of fatty acids based on nature of R group and function. (04 Marks)

Module-3

- 5 a. Add a note on :
i) Acid – base properties of amino acids with reaction. (04 Marks)
ii) Formation of peptide bond with its important characteristics. (06 Marks)
b. Ureotelic organisms excrete ammonia (NH₃) in the form of urea through ornithine cycle. Uphold the statement. (10 Marks)

OR

- 6 a. Explain in detail Watson – Crick model of DNA, with neat labeled diagram. (10 Marks)
b. i) Compare and contrast different forms of DNA. (04 Marks)
ii) Explain the structure of (2D) tRNA. (06 Marks)

Module-4

- 7 a. “ATP is called the Energy currency of the cell”. Justify the statement with structures. (10 Marks)
b. Cyclic photophosphorylation involves “photosystem – I (p700) and is not involved in O₂ production. Uphold the statement. (10 Marks)

OR

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 8 a. Explain the non – cyclic electron flow with neat process sequence. (10 Marks)
b. Mitochondrial electron transport chain produce ATP by utilizing the products of citric acid cycle, fatty acid and amino acid metabolism. Justify the statement. (10 Marks)

Module-5

- 9 a. Discuss the pathophysiology of diabetes multitus. (10 Marks)
b. A 72 year female suffering from overproduction and accumulation of uric acid in blood (product of purine metabolism). Elucidate the disease condition giving an emphasis to homeostasis. (10 Marks)

OR

- 10 a. Discuss the clinical condition resulting from loss of Homogentisate 1, 2 dioxygenase activity. (10 Marks)
b. A new born baby suffering from a genetic disorder caused by deficient activities of branched chain α – Keto acid dehydrogenase enzyme. Elucidate the disease condition giving an emphasis to clinical conditions. (10 Marks)
