Exam.Code:0435
Sub. Code: 3466

2022

M. Sc. (Biotechnology) First Semester

MBIO-102: Biomolecules

Time allowed: 3 Hours Max. Marks: 80

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

I. Attempt the following:-

a) Comment on the significance of Hexose monophosphate shunt pathway.

b) Write the FAD requiring reaction of Kreb's cycle.

c) What is Ramachandran plot ? What information does it provide?

d) Briefly describe the structure of a protein involved in cellular defence.

e) Write the structure of triacylglycerol. What is its function?

f) What are glycerophospholipids? Give structure of any two.

g) What is difference in the structure of a nucleoside and nucleotide?

h) Why is uracil not present in DNA? (8x2)

UNIT - I

II. a) Discuss in detail the glycolytic pathway, its regulation and energetics.

b) Write the structure and function of important disaccharides. (10,6)

III. a) Discuss the following:-

i) Regulation of glycogenesis

ii) Isomerism in carbohydrates

b) Discuss the classification of carbohydrates in detail giving suitable example of each category. (2x8)

UNIT - II

IV. a) Describe the secondary structure of proteins and forces stabilising these structures.

b) Write a short note on the role of molecular chaperones in protein folding. (10,6)

P.T.O.

V. Write short notes on the following:-

a) Prediction of secondary and tertiary structure of proteins.

b) Triple helix and supersecondary structures. (8x2)

UNIT - III

VI. a) Describe the structure and function of the following:-

i) terpenes

ii) steroids

iii) prostaglandins.

b) Write the pathways for synthesis and utilisation of ketone bodies. (2x8)

VII. a) Describe Fatty acid synthase complex and regulation of fatty acid synthesis.

b) Discuss the classification of unsaturated fatty acids. Write the structure of each subclass. (2x8)

UNIT - IV

VIII. a) Describe the salvage pathway for nucleotides and its significance.

b) Draw the structure of A, B and Z form of DNA. How do they differ from each other? (6,10)

IX. a) What is Tm? Describe its relation to GC content of DNA.

b) Write the regulatory steps for de novo synthesis of pyrimidines and discuss its regulation.

c) Write the steps for conversion of IMP into GDP and ADP. (4+6+6)

x-x-x