

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Chemical Structure & Macromolecules

Subject Code : 4SC01CSM1

Branch: B.Sc. (Microbiology)

Semester : 1

Date : 25/04/2016

Time : 10:30 To 01:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

- Q-1** **Attempt the following questions:** **(14)**
- a) Write electronic configuration of Al and K. **(1)**
 - b) Draw the structure of pyrimidine bases of DNA. **(1)**
 - c) What is DNA denaturation? **(1)**
 - d) Draw the cyclic structures of D-glucose. **(1)**
 - e) What products will be produced by the acid hydrolysis of maltose? **(1)**
 - f) Give examples and structure of any one essential unsaturated fatty acid. **(1)**
 - g) Give the structural formula of stearic acid and oleic acid. **(1)**
 - h) Draw the structure of plasmalogen. **(1)**
 - i) Define domains and motifs in tertiary structure of protein. **(1)**
 - j) Give any two examples of polysaccharide. **(1)**
 - k) What are the different classes of proteins based on their functional properties? **(1)**
 - l) Calculate the molecular weight of aniline. **(1)**
 - m) Calculate the molecular weight of benzoic acid. **(1)**
 - n) What are the forces that stabilize quaternary structure of protein? **(1)**

Attempt any four questions from Q-2 to Q-8

- Q-2** **Attempt all questions** **(14)**
- a) What are different weak chemical forces exist between biological macromolecules? Explain with suitable examples. **(7)**
 - b) What is atomic orbital? Draw and explain different types of atomic orbital. **(7)**
- Q-3** **Attempt all questions** **(14)**
- a) Explain the rules for assigning electrons in atomic orbital. **(7)**
 - b) Explain different methods for quantitative elemental analysis of C, H, N and halogen. **(7)**
- Q-4** **Attempt all questions** **(14)**
- a) Explain general method for the synthesis of peptides. Write reaction sequences **(7)**



and procedure involved in the synthesis of Gly-Ala.

- b)** What are the major and minor bases found in nucleic acid? Draw the structures and explain the tautomeric forms of major bases. (7)

Q-5 **Attempt all questions** (14)

- a)** What is the Chargaff's rule of DNA composition? Explain the Watson and Crick DNA model. (7)
- b)** Explain structure and functions of different types of RNA. (7)

Q-6 **Attempt all questions** (14)

- a)** Write a note on different stereoisomers of D-glucose. (7)
- b)** Discuss the structure and functions of starch, glycogen and cellulose. (7)

Q-7 **Attempt all questions** (14)

- a)** Draw and explain different reactions associated with the chemical properties of monosaccharide. (7)
- b)** Write a note on structure and functions of phospholipids. (7)

Q-8 **Attempt all questions** (14)

- a)** Write a note on organization of protein structure. Give an account of the determination of tertiary structure of protein. (7)
- b)** Explain the classification of proteins based on their physical and chemical properties with suitable examples. (7)

