

# 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.
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- 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)

