Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY
Winter Examination-2015

Subject Name : Chemical Structure & Macromolecules

Subject Code :4SC01CSM1 **Branch :** B.Sc. (Microbiology)

Semester :1 **Date :** 04/12/2015 **Time :**10:30 **To** 1:30 **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) What are the key features of an atomic orbital? **(1)**
b) Write electronic configuration of chlorine atom. **(1)**
c) What are the different classes of proteins based on their shape and size? **(1)**
d) Give example of catalytic and transport proteins. **(1)**
e) What is the function of contractile proteins? **(1)**
f) What are the forces that stabilize quaternary structure of protein? **(1)**
g) Define domains and motifs in tertiary structure of protein. **(1)**
h) Which phospholipid prevents the adherence of inner surfaces of lungs? **(1)**
i) Which polysaccharide is composed of β-glycosidic bond? **(1)**
j) What are different forms of DNA double helix? **(1)**
k) What is DNA renaturation? **(1)**
l) Draw the structure of purine bases of DNA. **(1)**
m) What is Chargaff's rule of DNA composition? **(1)**
n) What is DNA melting temperature? **(1)**

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

Q-2 **Attempt all questions** **(14)**

a) Explain the rules for assigning electrons in atomic orbital. **(7)**
b) Write a note on atomic orbital. **(7)**

Q-3 **Attempt all questions** **(14)**

a) Explain different methods for quantitative elemental analysis of C, H, N and halogen. **(7)**
b) Explain the effect of chemical bonds on physical properties of molecules. Calculate molecular weight of aniline and benzoic acid. **(7)**

Q-4 **Attempt all questions** **(14)**

a) Explain the highlights of Watson and Crick DNA model. **(7)**
b) Explain structure and functions of different types of RNA. **(7)**

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

a) Write a note on structure, function and nomenclature of nucleotides. **(7)**

b) Explain general method for the synthesis of peptides. Write reaction sequences and procedure involved in the synthesis of glycylalanine. **(7)**

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

a) Define and classify carbohydrates with suitable examples. Write a note on the derivatives of monosaccharides. **(7)**

b) Discuss the structure and functions of 3 biochemically important disaccharides. **(7)**

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

a) Describe the structure and functions of phospholipids. **(7)**

b) Write a note on structure and properties of triacylglycerols. **(7)**

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

a) Describe the classification of proteins on the basis of physical and chemical properties with suitable examples. **(7)**

b) Discuss the organization of protein structure. Give an account of the determination of secondary structure of protein. **(7)**