Indian Institute of Technology (IIT) Delhi
Department of Biochemical Engineering and Biotechnology

II SEMESTER 2008 – 2009
BEL 311 – PHY. & CHEM. PROPERTIES OF BIOMOLECULES

Date	May 04, 2009

MAJOR TEST

Time 2 hrs

Marks 40

Questions from Dr. Sundar's portions

Question #	Question	Marks
1	List the factors that influence the stability of nucleic acids.	(3)
2	Describe the viscosity and buoyant density properties of nucleic acids.	(2 + 2 = 4)
3	Explain, with an example, the engineered control of protein function	(4)
4	What is tautomerism of DNA bases? How does the increase in the pH above the physiological range affect the DNA structure?	(1 + 2 = 3)
5	What is DNA damage? How is the DNA-damage repaired, by each of the following pathways: (a) photoreversal, (b) base excision repair (c) nucleotide excision repair and (d) mismatch repair?	(2 + 4 = 6)

Dr. T.K. Chaudhuri's questions

Question #		Marks
6	Briefly explain the basis of FRET experiment. Explain some significant applications of the same with protein molecules.	(2 + 3) (5)
7	If there is a requirement for an industrial enzyme preparation which can work at higher temperature and higher pH. Explain the process of preparation of such an enzyme from the wild type protein and how to characterize the variants.	(5 + 5 = 10)
8	Explain the process of characterization of an intermediate protein conformation during denaturation process using biochemical and biophysical techniques.	(5)