

Department of Biochemical Engineering and Biotechnology

BEL 101: Biochemistry

Minor II (I semester 2013-2014)

Max. Marks 15  
Max. Time 1 hr.

Note: Answer Part A and Part B in separate answer books

Part A

Q1(a)	A person is interested in producing a molecule with enzymatic activity to cleave viral specific protein. Based on your understanding of enzymology and immunology explain what strategy should be used to obtain such an enzymatic activity?	[1]
(b)	Based on a plot between velocity of an enzyme catalyzed reaction and substrate concentration how will you differentiate between allosteric enzyme and enzyme following Michaelis-Menten kinetics? What is the significance of catalytic efficiency of an enzyme?	[2+1]
Q2 (a)	What factors act to preserve the asymmetry of biological membranes with respect to the distribution of phospholipids?	[1]
(b)	Synthetic lipid bilayers containing two newly discovered transport antibiotics, X and Y, were prepared. If one is being transported across the membrane by carrier mediated transport and the other by forming channel, depict the results based on the ionic conductance across these bilayers as a function of temperature. Propose a mechanism for each of these transport antibiotics, briefly explaining your answer.	[2]

Part B

Q.3(a)	Why precipitation is generally used as a first step in large scale protein purification?	[1]
(b)	What is meant by "40-60% cut" in the context of ammonium sulfate precipitation used for protein purification?	[2]
(c)	What is the charge on the separation medium in the case of a cation exchanger? <del>-ve</del> <u>Am-BM</u>	[1]
Q4 (a)	Explain the role of alcoholic fermentation and lactate formation in the regeneration of NAD <sup>+</sup>	[3]
(b)	What purpose is served by initial phosphorylation of sugars during glycolysis?	[1]

