Assignments for Week-10

Q1. Isothermal Titration calorimetry can be used to study:
   a. Protein-Small Molecule Interactions
   b. Protein-Carbohydrate Interactions
   c. Protein-Lipid Interactions
   d. Thermal unfolding of proteins

Q2. In single ITC experiment, the parameters which can be determined are
   a. Enthalpy of binding
   b. Binding constant
   c. Stoichiometry of the reaction
   d. Entropy of binding

Q3. The principle of ITC is
   a. Heat exchange between system and surroundings
   b. Physical changes observed during titration
   c. Power differential between the sample cell and reference cell
   d. Interaction and comparison of components in sample cell and reference cell

Q4. The concentration of reactants needed in ITC experiment can be estimated from the value of
   a. Binding affinity
   b. Enthalpy of binding
   c. Entropy of binding
   d. Gibbs free energy change upon binding

Q5. Which of the following do not follow Lipinski rule of 5?
   a. MW less than 500
   b. No more than 10 H-bond acceptors
   c. More than 5 H-bond donors
   d. No toxic groups

Q6. Which buffer can be used at the physiological pH?
   a. HEPES
   b. Glycine
   c. Phosphate
   d. MOPS

Q7. Essential factors which make important contributions in engineering binding affinity are
   a. Desolvation
   b. Hydrogen bonds
   c. Van der Waals interaction
   d. Hydrophobic packing
Q8. If the van’t Hoff enthalpy and calorimetric enthalpy match in an ITC experiment, it suggests that

(A) the binding is only taking place with the denatured state of the protein
(B) the binding is only taking place with the native state of the protein
(C) the binding is taking place with both the native state and an intermediate state of the protein
(D) the binding is taking place only with an intermediate partially folded state of the protein

Q9. Encapsulation of a drug in the core of cationic micelles represents

(A) ionic nature of the drug
(B) hydrophobic nature of the drug
(C) hydrogen bonding ability of the drug
(D) zwitter-ionic nature of the drug

Q10. Demicellization process is

(A) exothermic
(B) endothermic
(C) endothermic with increase in entropy
(D) exothermic with increase in entropy