

### **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 represent

- (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