

Assignments for Week-8:

Q1. In the DSC output, heat capacity is

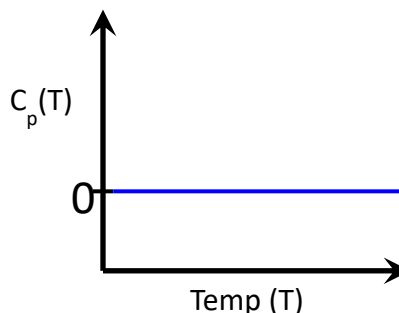
- a. inversely proportional to power
- b. directly proportional to scan rate
- c. inversely proportional to scan rate
- d. directly proportional to power

Q2. In a DSC experiment, errors can arise from

- a. Difference in volumes of sample cell and reference cell
- b. Difference in shape of sample and reference cell
- c. Difference in concentration of solvent in sample cell and reference cell
- d. Air bubble in the sample cell

Q3. In a DSC output, the following image represents

- a. perfectly matched cells
- b. no sample in the sample cell
- c. imperfectly matched cells
- d. huge difference in cell volume of sample and reference cells



Q4. The Henderson-Hasselbalch equation is:

- a. $\text{pH} = \text{pK}_a - \log ([\text{acid}]/[\text{base}])$
- b. $\text{pH} = \text{pK}_a + \log ([\text{base}]/[\text{acid}])$
- c. $\text{pH} = \text{pK}_a - \log ([\text{base}]/[\text{acid}])$
- d. $\text{pH} = \text{pK}_a + \log ([\text{acid}]/[\text{base}])$

Q5. Autoprotolysis stoichiometry guarantees the $\text{pH} = \text{pOH}$, thus at the stoichiometric point and 298 K, the pH of water is

- a. 6.8
- b. 7.4
- c. 7.0
- d. 6.5

Q6. Buffers are used in biological systems because

- a. Biological systems like proteins are only soluble in buffers
- b. They maintain the ambient pH of the biological systems

- c. They have high ionic strength so electrical neutrality of the biological systems is maintained
- d. They can absorb or release a proton, if needed

Q7. A solution of 0.1 M CH_3COOH is titrated with 0.1 M NaOH solution the pH of the resultant solution would be approximately equal to:

- a. 4.6
- b. 7.0
- c. 5.8
- d. 9.2

Q8. When $\text{pH} < \text{pK}_{\text{in}}$: indicator is predominantly in form.

- a. Basic
- b. Neutral
- c. Acidic
- d. None of the above

Q9. Which of the following cannot be used as an indicator in an acid base titration:

- a. Methyl orange
- b. Phenolphthalein
- c. Litmus
- d. Nile red

Q10. The native functional form of the protein is in its

- a. Primary structure
- b. Secondary structure
- c. Tertiary structure
- d. Quaternary structure.