

CODE NO: 07A1BS08

2008 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

**I B.TECH SUPPLEMENTARY EXAMINATIONS
PHYSICAL CHEMISTRY
(CHEMICAL ENGINEERING)**

AUG/SEP 2008

**TIME:3HOUR
MARK:80**

ANSWER ANY FIVE QUESTIONS ALL QUESTIONS CARRY EQUAL MARKS.

MARK [16*5=80]

1. When one liter of an aqueous solution containing 5gm of a solute is shaken with 50 ml of ether, it is found that 0.84 gm of the solute passes into ether layer. How much of the solute will be left unextracted when the aqueous solution left after the first extraction is shaken with a second installment of 50 ml of ether? The solute may be supposed to have the same molecular weight in both water and ether.
2. (a) State the phase rule and discuss the derivation of the phase rule.
(b) Apply phase rule to a one component system having more than one triple point.
3. Using the Rice- Herzfeld mechanism for the hydrogen-bromine reaction and employing steady state approximation for hydrogen-bromine, derive the rate law expression for the formation of HBr.
4. Give an account of the various methods employed for the purification of colloidal solutions.
5. Describe the following terms:
 - (a) Ions in solution
 - (b) Ionic Reactions, colligative properties
 - (c) Heat of neutralization
 - (d) Colour of certain compounds and their solution.
6. What is meant by describing one metal as more electro positive than another? Briefly describe three experiments by which you could show that zinc is more electro positive than copper.
7. Discuss in details the kinetics of
 - (a) Uimolecular surface reactions
 - (b) Bimolecular surface reactions.
8. Discuss in details of hydro dynamic voltammetry with neat sketch.