VITHALBHAI PATEL&RAJRATNA P.T. PATEL SCIENCE COLLEGE
VALLABH VIDYANAGAR
INTERNAL TEST – 2013
B.Sc. (SEMESRET - V)

Date: 07.10.2013 Time: 3.30 pm to 5.00 pm
Day: Monday Total marks:30

Subject: PHYSICAL CHEMISTRY (US05CCHE06)

Q-1. Choose the one alternative that best completes the statement or answers the question. (06)

(i) How many number of phases are there in $CaCO_{3(s)} = CaO_{(s)} + CO_{2(g)}$
(a) 0 (b) 1 (c) 2 (d) 3

(ii) A compound which melts sharply at a constant temperature into a liquid of the same composition as the solid is said to possess
(a)incongruent melting point (b) congruent melting point
(c) peritectic temperature (d) eutectic temperature

(iii) For adsorption, the plot of log x/m against log p is linear with slope equal to
(a) K (b)log k (c) n (d) 1/n

(iv) Which of the following is less than zero during adsorption
(a) ΔS (b) ΔG (c) ΔH (d) all of above

(v) The current due to the electrostatic force of attraction between the ion and electrode is known as
(a) diffusion current (b) migration current
(c) capacitive current (d) charging current

(vi) Which of the following is used to remove dissolved oxygen in cell solution ?
(a) KCl (b) H_2 gas (c) gelatin(d) N_2 gas

Q-2. Give answers of any three questions given below. (06)

(i) A substance Z has its triple point at 18 °C and 0.5 atm, its normal melting point is 20 °C and its normal boiling point is 300°C.Sketch the schematic phase diagram for z.

(ii) Why it is not possible to have a quadruple point in a phase diagram for a one component system?

(iii) Define : (a)adsorbate and (b) adsorbent

(iv) Give the postulates of BET theory.

(v) Describe polarographic maxima.

(vi) How and why migration current can be eliminated in polarography ?

Q-3. Discuss in detail the phase diagram for sulphur system. (06)

OR

Q-3. Draw and discuss the phase diagram in which two components form a compound with incongruent melting point. (06)

Q-4. Write a note on applications of adsorption. (06)

OR

Q-4. Explain different types of experimental physical adsorption isotherms graphically. (06)

Q-5. (a) Describe various factors affecting the diffusion current (03)

(b) A sample to be analysed for Zn^{+2} by use of 0.8 mM Pb^{+2} as a pilot ion in a standard solution containing equal concentrationsof Zn^{+2} and Pb^{+2}. The ratio of diffusion current constant of Zn^{+2} and Pb^{+2} was 1.30. The Zn^{+2} diffusion current is found to be 0.75 times that of lead. Calculate the zinc contain for a given sample. (03)

OR

Q-5. (a) Write a note on standard addition method. (03)

(b) The diffusion co-efficient of oxygen at 25 °C in aqueous solution is $2.65 \times 10^{-5} Cm^2/sec$. A dme with $m^{2/3}t^{1/6}$ of 1.86 $(mg/sec)^{2/3}(sec)^{1/6}$ was used to a natural water sample. The instantaneous diffusion current was 2.30 μ A .Calculate the concentration of dissolved oxygen in water. (03)