V.P. & R.P.T.P. SCIENCE COLLEGE, VALLABH VIDYANAGAR
B.Sc. (SEMESTER –V) INTERNAL EXAMINATION
Monday, 9th October 2017
11.00 am – 12.30 pm
PHYSICAL CHEMISTRY: US05CCHE06

Marks-25

Q -1 Select one most appropriate response out of the four provided to you. (03)

(i) How many phases are present in $CaCO_{3(s)} \rightarrow CaO_{(s)} + CO_{2(g)}$?

(a) 0　　　　　(b) 1　　　　　(c) 2　　　　　(d) 3

(ii) Removal of adsorbate from the surface of adsorbent is

(a) sorption　　　(b) desorption　　　(c) adsorption　　　(d) none

(iii) In polarography, quantitative determination can be done by measuring

(a) half wave potential (b) limiting diffusion current (c)applied voltage (d) residual current

Q-2 Give answers of any two questions given below. (04)

(i) Define degree of freedom and polymorphism

(ii) Differentiate : physisorption and chemisorption.

(iii) Describe polarographic maxima.

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

OR

Q-3 Derive Gibbs phase rule thermodynamically. (06)

Q-4 Starting with assumption,derive Langmuir adsorption isotherm. Discuss its various forms in different conditions. (06)

OR

Q-4 Discuss Freundlich adsorption isotherm. Give its limitations. (06)

Q-5 Enlist different components of current in a polarographic cell and discuss any two. (06)

OR

Q-5 (a) Write a note on direct comparison method. (03)

(b) A sample is to be analyzed for Zn^{+2} using 0.8 mM Pb^{+2} as a pilot ion. In a standard solution containing equal concentration of 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 content for a given sample. (03)