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SB-2703

M. Sc. (Sem. II) (Regular & Eve.) Examination

March / April – 2011

Chemistry : Paper-III

(Physical Chemistry)

Time : **3** Hours] [Total Marks :

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **M. Sc. (Sem. 2) (Regular & Eve.)**

Name of the Subject :

☛ **Chemistry - 3**

☛ Subject Code No. : **2 7 0 3** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Attempt all questions.

(3) Figures to the right indicate full marks.

1 Answer **any three** of the following : **18**

(a) Derive relation between thermodynamic dissociation constant and dissociation function.

(b) What is over voltage ? Describe Tafel theory of hydrogen overs voltage.

(c) Describe debye-Huckel theory of interionic attraction.

(d) Explain the terms electrolytic polarization, concentration polarization and decomposition potential.

2 Answer **any three** of the following : **18**

(a) The fundamental vibrational frequency of ICI molecule is $384cm^{-1}$. Calculate reduced mass and force constant of ICI molecule. (At Wt of I = 127 and CI = 35.45; $c = 3 \times 10^{10}$ ms^{-1}, $N = 6.023 \times 10^{23}$).

(b) Explain the principle and working of gas ionization detector.

(c) Describe selection rules for rotational spectra in molecular spectroscopy.

(d) What is meant by rediotracers ? Explain the use of radiotracers ? in reaction mechanism with a suitable example.

3 Answer **any three** of the following: **18**

(a) Describe in short the DLVO theory of colloid stability.

(b) Describe thermodynamics of micellization.

(c) What are surfactants ? Give one example of each type. Explain their adsorption and micelle formation from solution.

(d) How can we determine surface area/molecule using Gibb's adsorption isotherm ? Explain.

4 Answer **any three** of the following: **16**

(a) Discuss the basic principle and classification of scintillators.

(b) Write an account on determination of dissociation constant of monobasic acid by conductance method.

(c) Write a note on microemulsion and solubilization.

(d) Explain the terms: micelles, reverse micelles, hydrophobic interaction.
