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RF-3455-56

M. Sc. (Part - I) Examination

April / May – 2010

Chemistry : Paper - III

(Physical Chemistry)

Time : **3** Hours] [Total Marks : **52**

RF-3455

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. (PART - 1)

Name of the Subject :

☛ CHEMISTRY - 3

☛ Subject Code No. : 3 4 5 5 ☛ Section No. (1, 2,.....) : 1

Seat No. :

Student's Signature

(2) Attempt two sections in separate answer books.

(3) Figures to the right indicate full marks.

1 (a) Describe the determination of molecular weight of polymers by solution viscometry. **4**

(b) Explain the mechanism of cationic polymerisation giving example. **3**

(c) Define errors and give their classification. **2**

OR

1 (a) Define the terms specific viscosity and intrinsic viscosity and give their units. How is intrinsic viscosity related to mol wt. of polymers? **4**

(b) Explain the terms with equation : Number and Weight average molecular weight. **3**

(c) Define and clearlydistinguish between accuracy and precision. **2**

2 (a) Derive equation for kinetics of reversible first order reaction. 4

(b) What are parallel reactons and photochemical reactions? give one example of each. 4

OR

2 (a) Describe kinetics and mechanism for the reaction between H_2 and Br_2. 4

(b) Derive equation for kinetics of consecutive reactions. 4

3 (a) Define the various laws of thermodynamics. 3

(b) Discuss excess functions for nonideal binary liquid mixture. 3

(c) Calculate translational partition function for H_2 molecule confined to 100 cm^3 at 25°C. 3

OR

3 (a) State and explain Boltzmann distribution law. 3

(b) Derive equation for the rotational partition function for diatomic molecules. 3

(c) What are partial molar properties? Explain one method for the determination of partial molar properties. 3

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Name of the Examination :

☛ **M. Sc. (PART - 1)**

Name of the Subject :

☛ **CHEMISTRY - 3**

☛ Subject Code No. : **3 4 5 6** ☛ Section No. (1, 2,.....) : **2**

Seat No. :

Student's Signature

(2) Attempt two sections in separate answer books.

(3) Figures to the right indicate full marks.

4 (a) Describe the determination of dissociation constant of monobasic acid by a suitable method. **4**

(b) Distinguish between electrolytic polarization and concentration polarization. **2**

(c) Explain the relation between thermodynamic dissociation constant and dissociation function. **3**

OR

4 (a) Describe the determination of activity coefficient by solubility method. **4**

(b) Define the terms: Activity, Activity coefficient and mean activity coefficient. **3**

(c) Calculate ionic strength of 0.2M $CaCl_2$. **2**

5 (a) Explain principle and working features of G.M. Counter. **4**

(b) Give an account of isotope dilution analysis. **4**

OR

5 (a) Write a note on gas ionization detector. **4**

(b) Explain Selection rule for rotational spectra. **4**

6 (a) Give one example with structure for anionic, cationic and non-ionic surfactant. Describe micelle formation. **4**

(b) Distinguish between : **2**
(i) Electrophoresis and electro-osmosis and
(ii) Micelles and Reverse micelles.

(c) Write a note on electrical double layer. **3**

OR

6 (a) Define and explain emulsions and microemulsions. **3**

(b) Explain the term: Zeta potential. How is it determined by electrophoresis? **3**

(c) Define critical micelle concentration, cloud point, solubilization. **3**
