

M.Sc. (Previous) (Applied Chemistry) Examination, August/September 2010  
(Directorate of Distance Education)  
DEC. APP. CHEM. 1.04 : PHYSICAL CHEMISTRY

Time : 3 Hours

Max. Marks : 85

- Note : 1) Answer any ELEVEN subdivisions from Part – A, any THREE questions from Part – B and any THREE questions from Part – C.  
2) Marks are indicated at the right side.*

PART – A

Answer any ELEVEN questions :

(11×2=22)

1. a) What are surfactants ?
- b) Explain Electrochemical Cell.
- c) Explain Nuclear Fission.
- d) Define Polarisation.
- e) Define Over-voltage.
- f) Explain Galvanic cells.
- g) What are the types of batteries ?
- h) What are the types of Fuel cells ?
- i) Explain system and surrounding.
- j) Explain Arrhenius equation.
- k) What is Electrolyte and give examples ?
- l) State Coulombs law of electrochemistry.
- m) What is viscosity ?
- n) What are the factors which effect movement of ions ?
- o) Define entropy.

P.T.O.



## PART - B

Answer any **THREE** of the following :

(3×8=24)

2. a) Discuss the Collision theory of reaction rate.

b) Explain Breeder reactor.

(4+4=8)

3. a) Briefly explain the enthalpy.

b) Discuss the nuclear fusion.

(4+4=8)

4. a) Explain Debye-Huckel theory of strong electrolyte.

b) What is the significance of hydrogen over voltage ?

(4+4=8)

5. a) Write a note on Primary battery.

b) What are the limitations of Fuel cells ?

(4+4=8)

## PART - C

Answer any **THREE** of the following :

(3×13=39)

6. a) Discuss the construction and working of secondary cells.

b) What are the factors affecting polarization ?

c) Write a short note on Batteries.

(5+5+3=13)

7. a) Discuss the Debye-Huckel Bronsted equation.

b) What are the tests for Debye-Huckel theory ?

c) Explain significance of decomposition potential.

(5+5+3=13)

8. a) Discuss about classification of fuel cells.

b) Write a short note on Biosensors.

c) Explain the concept of entropy.

(5+5+3=13)

9. a) Discuss the measurement and detection of radioactivity by scintillation counters.

b) What are the applications of Radioactivity ?

c) Explain radioactive equilibrium.

(5+5+3=13)

10. a) Write a short note on Adsorption process.

b) State and explain the activated complex theory of rate of reaction.

c) Discuss the classification of surfactants.

(5+5+3=13)