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SB-3512

M. Sc. (Part - II) Examination

March / April – 2011

Physical Chemistry : Paper - II

Time : **3** Hours] [Total Marks :**70**

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 - II)**

Name of the Subject :

☛ **PHYSICAL CHEMISTRY : PAPER - II**

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

Seat No. :

Student's Signature

(2) Attempt all the **six** questions.

(3) Figures to the **right** indicate full marks.

SECTION – I

1 (a) Derive Ilkovic equation for the instantaneous current. **4**

(b) Describe the dead stop end point titrations. **4**

(c) Write a note on pulse polarography. **4**

OR

1 (a) Discuss the polarity of the maxima of the first kind and the influence of cations and anions on them. **4**

(b) What is the basic principle of emperometric titrations ? Discuss the various titrations using dropping mercury electrode as cathode. **4**

(c) Discuss square wave polarography method and mention its limitations. **4**

2 (a) Describe the construction and working of ECD used in GC. **4**

(b) Describe the basic principle of GC. **4**

(c) Compare LSC and GSC. **4**

OR

2 (a) Describe van Deemter equation. Describe the constant A, B and C used in the equation in brief. 4

(b) Discuss electrochemical detectors used in LC. 4

(c) Explain molecular sieves or porous polymer used as solid support in GSC. 4

3 (a) Write a note on cyclodextrins as supramolecules. 4

(b) Give brief idea on ferro fluids. 3

(c) What are Supramolecules ? Give host guest chemistry and application of Supramolecules. 4

OR

3 (a) Give brief idea about Scanning Electron Microscopy (SEM). 4

(b) Explain block copolymer nanoaggregates. 4

(c) Write a note on calixarenes. 3

SECTION – II

4 (a) Describe known addition method for concentration measurements in ISE. 4

(b) What is meant by ion selective electrode ? Classify them. Describe lanthanum fluoride ion selective electrode. 4

(c) Describe the construction and working of a glass electrode. 4

OR

4 (a) Describe methods of evaluating selectivities of an ion-selective electrodes. 4

(b) Describe the construction and working of silver halide ISE. 4

(c) Write a note on gas sensing electrode. 4

5 (a) Describe the hollow cathode lamp used in AAS. 4

(b) Describe the electrical methods used as source in AES. 4

(c) Discuss various interferences in FES. 4

OR

5	(a)	Describe the various interferences in AAS.	**4**
	(b)	Compare FES with AAS.	**4**
	(c)	Describe RF plasma used as a source in AES.	**4**
6	(a)	Explain Refractories and Composites.	**4**
	(b)	Write a note on smectic liquid crystals.	**3**
	(c)	Give applications of liquid crystals.	**4**

OR

6	(a)	Explain LB films and High TC materials.	**4**
	(b)	Give an account of ceramics and clays.	**4**
	(c)	Elaborate the classification of liquid crystals.	**3**