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RF-3336

M. Sc. (Part - I) Examination

April / May – 2010

Industrial / Pharmaceutical / Environmental Chemistry (Self Finance) : Paper - III

(Physical Chemistry)

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

Instruction :

(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 :

☛ **Indu. / Pharm. / Enviro. Che. (Self Fina.) : P. - 3**

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

Seat No. :

Student's Signature

(2) Attempt two sections in separate answer books.

(3) Figures to the right indicate full marks.

SECTION - I

1 (a) Define partial molar property. Describe any one method to determine partial molar property. **5**

(b) Define partition functions. Give an account of vibrational partition function. **4**

OR

1 (a) Define and explain Maxwell-Boltzmann law. **5**

(b) Explain ideal and non-ideal solutions with illustration. **4**

2 (a) Write a short note on Flash photolysis. **4**

(b) Explain Michaelis-Menton kinetics in enzyme catalysis. **4**

OR

2 (a) Explain magnetic resonance method. **4**

(b) Compare continuous and stopped flow technique. **4**

3	(a)	Describe the determination of molecular weight of polymers by viscosity method.	5
	(b)	Distinguish between addition and condensation polymerization. Write mechanism for free radical addition polymerization.	4

OR

3	(a)	Discuss average molecular weight of polymers. Write equation for number and weight average molecular weight.	5
	(b)	Define and explain glass transition temperature and living polymerization.	4

SECTION - II

4	(a)	Describe the various types of nuclear reactions. Write a note on nuclear fusion reactions.	5
	(b)	Explain principle and working of G.M. Counter.	4

OR

4	(a)	Write a note on Breeder reactor.	5
	(b)	What are radio isotopes and give their applications.	4
5	(a)	What are surface active agents? Give their classification with examples. Explain their micelle formation.	4
	(b)	Explain the terms : Krafft point, Cloud point, HLB and CMC.	4

OR

5	(a)	What is nanotechnology and why it is so important.	4
	(b)	Explain homogenous and heterogenous catalysis with examples.	4
6	(a)	Define:- activity, activity coefficient, corrosion, inhibitor and ionic strength.	5
	(b)	Write a note on fuel cell.	4

OR

6	(a)	Mention various steps for preventing corrosion.	4
	(b)	Describe solubility method for the determination of activity coefficient of an electrolyte.	5