* R F - 3 5 7 5 - 7 6 / 1 0 0 *

RF-3575-76

M. Sc. (Part - II) Examination

April / May – 2010

Physical Chemistry : Paper - III

Time : 3 Hours] [Total Marks : 70

RF-3575

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 - 2)**

Name of the Subject :

☛ **Physical Chemistry : Paper - 3**

☛ Subject Code No. : **3 5 7 5** ☛ Section No. (1, 2,.....) : **1**

Seat No. :

Student's Signature

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

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

1 (a) Distinguish between various polymerization techniques. **(4)**
(b) Write a note on polydienes and polyamides. **(4)**
(c) Describe isomerism in chain polymerisation. **(4)**

OR

1 (a) Describe various methods of step polymerisation. **(4)**
(b) Explain various conformations in polymer chain. **(4)**
(c) Write a note on fluoropolymers. **(4)**

2 (a) Explain different morphologies in block copolymers. **(4)**
(b) Give predictions in copolymers based on reactivity ratios. **(3)**
(c) Describe the application of block copolymers. **(4)**

OR

2 (a) What are copolymers and how are they classified? **(3)**
(b) Describe kinetics of copolymerization. **(4)**
(c) How will you determine the reactivity ratios in copolymerisation? **(4)**

3 (a) Explain principle and working of thermal gravimetric analysis method. **(4)**
(b) Explain average dimensions, end-to-end distance and radius of gyration in polymer chain. **(4)**
(c) Explain dilute solution viscosity method for molecular weight of polymers. **(4)**

OR

3 (a) Write a short note on differential scanning calorimetry. **(4)**
(b) Give a brief account gel permeation chromatography. **(4)**
(c) Write expressions for number average and weight average molecular weight and polydispersity index. **(4)**

RF-3576

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 - 2)**

Name of the Subject :

☛ **Physical Chemistry : Paper - 3**

☛ Subject Code No. : **3 5 7 6** ☛ Section No. (1, 2,.....) : **2**

Seat No. :

Student's Signature

(2) Attempt all the **six** questions.
(3) Figures to the **right** indicate full marks.

4 (a) Explain intrinsic viscosity and unperturbed dimensions of polymer coil. **(4)**
(b) Explain solubility parameter, its uses and determination. **(4)**
(c) Explain Flory Huggins theory. **(4)**

OR

4 (a) Write a note on theta solvent for polymers. **(4)**
(b) Describe thermodynamics aspects for simple molecules. **(4)**
(c) Determine Flory interaction parameter from osmotic pressure measurents. **(4)**

5 (a) Explain Tg and give its physical significance. **(4)**
(b) Describe dilatometer method to determine degree of crystallinity in polymer. **(4)**
(c) Explain cross-linking in thermoplasts. **(4)**

OR

5 (a) Derive Avrami equation for polymer crystallization. **(4)**
(b) Explain degradation of polymers. **(4)**
(c) Discuss various factors affecting cyrstallinity in polymers. **(4)**

6 (a) Write short note on compression moulding. **(4)**
(b) Give account of Antioxidants, Fillers and Curing agents. **(4)**
(c) Discuss applications of biodegradable polymers. **(3)**

OR

6 (a) Write note on vulcanization of rubber. **(3)**
(b) Write note on plasticizers, flame retardants and colorants. **(4)**
(c) Describe injection moulding method for polymer processing. **(4)**
