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Reg. No. : .....

Name : .....

Fourth Semester M.Sc. Degree Examination, July 2014
Branch : Polymer Chemistry
PC 241 : POLYMER CHEMISTRY – IV
(2008 Admission Onwards)

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer **any two** among (**a**), (**b**) and (**c**) from **each** question. **Each** sub-question carries **2** marks.

1. a) How will you calculate extruder output using computational methods ?
   b) Use computational methods for getting the residence time in extrusion dies.
   c) Suggest a programme for calculating flow profiles in a tube.

2. a) What is special in the clay structure to be used as a nanofiller ?
   b) Name the general methods used for producing polymer supported reagents.
   c) Give an example of a polymer supported reducing agent. Indicate the chemical reaction involving this.

3. a) What are the most common secondary structures of proteins ?
   b) Distinguish fibrous proteins and globular proteins.
   c) Give an instance of a polymer used as a drug carrier.

4. a) Define tack, peel strength, substrate and CASING.
   b) What do you mean by thermodynamic work of adhesion ?
   c) Define surface energy.

5. a) How do you synthesize polyphosphazenes ? Give the structure.
   b) Account for the fact that silicone polymers are generally liquids, gums or elastomers.
   c) What are the applications of polysilanes ?

(2×10=20 Marks)

P.T.O.

SECTION – B

Answer either (**a**) or (**b**) of **each** question. **Each** question carries **5** marks.

6. a) Discuss screw design by scale up method.
   b) Give a general view on computer aided design in polymer technology.
7. a) Discuss the intercalated and exfoliated nanocomposites.
   b) Compare and contrast conventional composites and nanocomposites.
8. a) Write about the general procedure employed in genetic engineering.
   b) Discuss the general methods of preparing polymer supported reagents.
9. a) Discuss and compare the different methods used for bonding substrates.
   b) Describe the different physical nature of adhesives.
10. a) Discuss the characteristic features of inorganic polymers.
    b) Classify inorganic polymers with suitable examples and explain their features.

(5×5=25 Mars

SECTION – C

Answer **any three** questions. **Each** question carries **10** marks.

11. Describe how computer aided design is applicable in control and design of injection moulding of polymers.
12. Write a detailed note on polymer supported reagents.
13. Describe the biomedical applications of polymers.
14. a) Discuss the mechanisms of adhesion.
    b) Write about pressure sensitive adhesives.
15. Describe the preparation, structure, properties and applications of polysiloxanes.

(3×10=30 Mark
