(Pages : 3) **C – 1385**

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2017
(First Degree Programme Under CBCSS and Career Related)
CHEMISTRY
Elective Course
CH 1661.3/IC 1661.3
Polymer Chemistry
(2013 Admission Onwards)

Time : 3 Hours Max. Marks : 80

All Saints' College Trivandrum

SECTION – A

Each question carries **one** mark

Answer **all** questions (Answer in **one** word/sentence) :

1. Name one free radical initiator.
2. The principal linkage in polyurethane is _____
3. Draw the structure of neoprene
4. Carboxymethyl cellulose is used as a _____ in textile additives.
5. _____ is prepared from caprolactam.
6. _____ is an example of a natural polyamide.
7. The density of a crystalline component of a polymer is _____ than it's amorphous content.
8. Hollow articles such as balls and dolls are produced by _____ casting.
9. _____ is used in laminated safety glass for automobile wind shields.
10. Glass transition temperature of a polymer _____ with increase in Molecular weight.

(10×1=10 Marks)

P.T.O.

SECTION – B

Short answer type (**not** to exceed **one** paragraph)

Answer **any eight** questions from the following. **Each** question carries **two** marks.

11. What is meant by condensation polymerisation ? Explain.
12. Why anionic polymerisation is termed as living polymerisation ?
13. What are the advantages of MF resin over UF resin ?
14. What is SAN ? Give it's structure and use.
15. Give any two applications of PVC.
16. What is gun cotton ? Give its use.
17. How will you prepare Polyvinyl alcohol ?
18. Explain the term poly dispersity index.
19. Write Carothers equation and explain the terms in it.
20. What is die casting ?
21. Explain the cause of low thermal stability of polyethylene oxide.
22. How will you express the degree of crystallinity of a polymer in terms of density ?

(8×2=16 Marks)

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SECTION – C

Short essay (**not** to exceed **120** words)

Answer **any six** questions from the following. **Each** question carries **four** marks.

23. Distinguish between plastic, elastomers and fibers giving suitable example for each.
24. Write in brief the effect of crystallinity on polymer properties.
25. Explain the chemistry of vulcanisation.
26. What is SBR ? How is it prepared ? Give it's use.

27. Give a brief note on any two derivatives of cellulose.

28. Illustrate the end group analysis for the determination of Molecular weight of polymers.

29. Write a note on suspension polymerization.

30. Describe the factors that effect the thermal stability of polymers.

31. Briefly discuss the structure, synthesis and properties of phenol-formaldehyde resin. **(6×4=24 Marks)**

SECTION – D

Answer **any two** questions from the following. **Each** question carries **fifteen** marks.

32. a) Discuss the technique and advantages of emulsion polymerisation.
    b) What is a poly amide ? Give the structure and synthesis of various Nylons.

33. Define glass transition temperature. What are the factors affecting Tg ? How is Tg related to molecular mass ?

34. a) Illustrate the mechanism of ionic polymerisation.
    b) Give an account of the compression moulding technique in polymer technology.

35. a) Briefly discuss wet spinning and dry spinning process in fiber technology.
    b) Illustrate the structure, synthesis and application of ABS, Teflon and PVC. **(15×2=30 Marks)**

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