

8-12-2017



DOON UNIVERSITY, DEHRADUN
End Semester Examination, December, 2017
School of Physical Sciences
Integrated M.Sc. Chemistry
Course: CYD-302: Polymer Chemistry

Time Allowed: 3 Hours.

Maximum Marks: 30

Note: Attempt All Questions

SECTION: A

Attempt All Questions.

(Marks: 4Q × 1 = 4)

1. State any two applications of polyurethanes.
2. Why it is necessary to study the morphology of polymers?
3. What is the relationship between extent of reaction and functionality?
4. Explain the role of surfactant and micelles in emulsion and suspension polymerization

SECTION: B

Attempt All Questions.

(Marks: 7Q × 2 = 14)

5. Explain kinetics of polymerization for polyesterification in presence of external catalyst.
6. Define glass transition temperature and explain factors affecting it.
7. What is solubility parameter and explain its physical and practical significances.
8. What is the catalyst used in coordination polymerization? Explain this polymerization taking suitable example.
9. What are thermodynamic considerations for polymer solubility.
10. What is HDPE and LDPE. How these two are different in their properties and applications.
11. Write name of monomers of the following polymers and classify them as addition or condensation polymers: Teflon, Bakelite, Nylon-6 and Natural rubber

SECTION: C

Attempt All Questions.

(Marks: 4 Q × 3 = 12)

12. Explain the steps involved in crystallization in polymers with the help of a labelled diagram.
13. Describe the polymerization of acrylamide and state applications of acrylamide and its co polymers.
14. Polycarbonate based on BPA is transparent as glass however on annealing at 150°C it loses its transparency. Why?
15. Write a note on free volume theory and WLF equation.