



PAU-003-1015022

Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

October / November - 2018

IC-502 : Polymer Chemistry & Analytical Techniques

Faculty Code : 003

Subject Code : 1015022

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :**
- (1) Question paper carries total 5 questions.
 - (2) All the questions are compulsory and carry 14 marks each.
 - (3) Draw labeled diagram wherever necessary.
 - (4) Assume suitable data.

- 1 (a) Answer the following questions : 4
- (1) _____ is example of synthetic polymer.
 - (2) _____ is example of natural polymer.
 - (3) Give structure of alternating copolymer.
 - (4) Styrene undergoes _____ polymerization.
- (b) Answer in brief : (any one out of two) 2
- (1) Define : monomer.
 - (2) What is repeating unit of polymer ?
- (c) Answer in detail : (any one out of two) 3
- (1) Explain elongation at break and compressive strength of polymer.
 - (2) Describe crystallinity in polymer with processes.
- (d) Write a note on : (any one out of two) 5
- (1) Explain weight average and number average molecular weight in detail.
 - (2) Explain classification of polymer in detail.

- 2 (a) Answer the following questions : 4
- (1) "Propagation is second stage of addition polymerization" (True or False)
 - (2) Zeigler Natta catalyst is used in _____ polymerization process.
 - (3) Give full form of ABS polymer.
 - (4) Metal oxide is used as _____ agent for polymer.
- (b) Answer in brief : (any one out of two) 2
- (1) Give examples of condensation polymers.
 - (2) Define : Addition polymerization
- (c) Answer in detail : (any one out of two) 3
- (1) Explain polymer compounding in detail.
 - (2) Explain condensation mechanism for polymerization.
- (d) Write a note on : (any one out of two) 5
- (1) Explain extrusion molding process with diagram.
 - (2) Write a note on transfer molding process.
- 3 (a) Answer the following questions : 4
- (1) Give structure of isoprene.
 - (2) Give structure of polycarbonate.
 - (3) Write uses of ABS.
 - (4) _____ is used in vulcanization process for semi synthetic rubber manufacturing.
- (b) Answer in brief : (any one out of two) 2
- (1) Explain epoxy resin in detail.
 - (2) Write types of neoprene polymer.
- (c) Answer in detail : (any one out of two) 3
- (1) Explain manufacturing of polyisoprene in detail.
 - (2) Explain manufacturing of Nylon-6 in detail.

- (d) Write a note on : (any one out of two) 5
- (1) Explain addition polymerization mechanism, use and properties of Polypropylene.
 - (2) Explain addition polymerization mechanism, use and properties of PVC.
- 4 (a) Answer the following questions : 4
- (1) Potentiometric titration method utilizes indicator electrode and _____ electrode.
 - (2) Nicol-prism can be used in Polarimeter. True/False ?
 - (3) The study of refraction of light due to difference in the _____ of two mediums.
 - (4) Colorimetric analysis works on _____ law.
- (b) Answer in brief : (any one out of two) 2
- (1) Discuss principle of conductometric titration.
 - (2) Write applications of polarimeter.
- (c) Answer in detail : (any one out of two) 3
- (1) Draw only diagram of colorimeter.
 - (2) Write advantages of conductometer.
- (d) Write a note on : (any one out of two) 5
- (1) Discuss Refractometry method with diagram.
 - (2) Explain colorimetric method in detail.
- 5 (a) Answer the following questions : 4
- (1) For collection of inert gases _____ containers are preferred.
 - (2) Give full form of FID.
 - (3) Mass spectrometry is used to detect functional group present in hydrocarbon. True/False?
 - (4) The range of light source for UV spectroscopy is _____ nm to _____ nm.

- (b) Answer in brief : (any one out of two) **2**
- (1) Write principle of gas chromatography.
 - (2) Draw only diagram of thermal conductivity detector.
- (c) Answer in detail : (any one out of two) **3**
- (1) Discuss sampling of liquid in brief.
 - (2) Explain atomic emission detector with diagram.
- (d) Write a note on : (any one out of two) **5**
- (1) Explain NMR spectroscopy in detail.
 - (2) Discuss IR spectroscopy with neat diagram.
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