RO-003-1015022 Seat No. _____

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

February - 2019

BS-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 & 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 natural polymer.

(2) _____ is example of synthetic polymer.

(3) _____ is also called polyamide.

(4) Propylene undergoes _____ polymerization.

(B) Answer in brief : (Any **one** out of two) **2**

(1) What is degree of polymerization?

(2) Define: Polymer.

(C) Answer in detail : (Any **one** out of two) **3**

(1) Describe crystalinity in polymer with processes.

(2) Explain abrasive resistance and coefficient of friction in detail.

(D) Write a note on : (Any **one** out of two) **5**

(1) Explain glass transition temperature in detail.

(2) Explain weight average and number average molecular weight in detail.

2 (A) Answer the following questions : **4**

(1) In mechanism of addition polymerization there are _____ stages.

(2) _____ is used as catalyst in addition polymerization.

(3) Give full form of PVC.

(4) _____ is used as coloring agent for polymer.

(B) Answer in brief : (Any **one** out of two) **2**

(1) Define: Addition polymerization

(2) Define: Condensation polymerization

(C) Answer in detail : (Any **one** out of two) **3**

(1) Explain condensation mechanism for polymerization.

(2) Explain compounding of polymer in detail.

(D) Write a note on : (Any **one** out of two) **5**

(1) Explain compression molding process with diagram.

(2) Write a note on blow molding process.

3 (A) Answer the following questions : **4**

(1) Give structure of bisphenol A.

(2) Give structure of polycarbonate.

(3) Write uses of polythene.

(4) Sulfur is used in _____ process for semisynthetic rubber manufacturing.

(B) Answer in brief : (Any **one** out of two) **2**

(1) Write types of isoprene polymer.

(2) Explain urea formaldehyde polymer in detail.

(C) Answer in detail : (Any **one** out of two) **3**

(1) Explain manufacturing of epoxy resin in detail.

(2) Explain manufacturing of Nylon-6,6 in detail.

(D) Write a note on : (Any **one** out of two) **5**

(1) Explain addition polymerization mechanism, use and properties of Polythene.

(2) Explain addition polymerization mechanism, use and properties of Polystyrene.

4 (A) Answer the following questions : **4**

(1) Potentiometric titration method can be used for coloured solution. True/False?

(2) Enlist types of conductance.

(3) _____ can be used as detector for most of the Polarimeters.

(4) Enlist various light sources used in colorimetric analysis.

(B) Answer in brief : (Any **one** out of two) **2**

(1) Write principle of conductometric titration.

(2) Discuss any one type of Potentiometric titration.

(C) Answer in detail : (Any **one** out of two) **3**

(1) Draw only diagram of Polarimeter.

(2) Write advantages of Potentiometric titration.

(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) _____ containers are used for the sampling gases like oxygen, nitrogen, methane etc.

(2) Give full form of TCD.

(3) NMR spectroscopy 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 chromatography.

(2) Draw only diagram of atomic emission detector.

(C) Answer in detail : (Any **one** out of two) **3**

(1) Discuss basic sampling rules for sampling technique.

(2) Explain flame ionization detector with diagram.

(D) Write a note on : (Any **one** out of two) **5**

(1) Enlist and explain classification of chromatographic method.

(2) Discuss IR spectroscopy with neat diagram.
