M.Sc. (Chemistry) Sem-II : નોંધ : 19 AUG 2020 Subcode: 2952

૧. દરેક પ્રશ્નનો [a] અથવા [a(i)] અને [a(ii)] જ લખવાના રહેશે.
૨. પ્રશ્ન : ૧[a] અથવા ૧[a(i)] અને ૧[a(ii)] તથા ૨[a] અથવા ૨[a(i)] અને ૨[a(ii)] ના 14 માર્કસ ના બદલે ૧૮ માર્કસ રહેશે.
૩. પ્રશ્ન : ૩[a] અથવા ૩[a(i)] અને ૩[a(ii)] તથા ૪[a] અથવા ૪[a(i)] અને ૪[a(ii)] ના 14 માર્કસ ના બદલે ૧૬ માર્કસ રહેશે.
૪. દરેક પ્રશ્નનો પ્રશ્ન નં ૧(b), પ્રશ્ન નં ૨(b), પ્રશ્ન નં ૩(b) તથા પ્રશ્ન નં ૪(b) (ટુંકા પ્રશ્નો) વિદ્યાર્થીએ લખવાના નથી.

1 (A) Discuss the Basic methods of polymerization giving suitable examples. 14

OR

1 (A) (i) Explain in detail: The rise of polymer science and early industrial developments. 07

1 (A) (ii) Write note on nomenclature of polymer. 07

1 (B) Answer the following questions (Any **four** out of six) 04

(i) Define: Oligomer.
(ii) Write two examples of inorganic polymer.
(iii) Define the term 'Thermosetting'.
(iv) What is graft copolymer?
(v) Give difference between syndiotactic and atactic type polymers.
(vi) What are natural polymers? Give one example.

2 (A) What are retarders? Explain the kinetics of free radical polymerization. 14

OR

2 (A) (i) Give an account of kinetics of cationic polymerization. 07

2 (A) (ii) What is Ziegler – Natta catalyzed polymerization? Explain it. 07

2 (B) Answer the following questions (Any **four** out of six) 04

(i) Write one example of syndiotactic polymer.
(ii) Inhibitor for free radical polymerization reaction is:
a) Vinyl chloride b) p-benzoquinone c) Carbon tetrachloride d) All are inhibitors
(iii) Natural rubber is a polymer of:
a) Styrene b) Isoprene c) Butadiene d) Ethylene
(iv) What is Geometric isomerism?
(v) Low density polythene is prepared by _____ polymerization.
(vi) Ebonite is_____
a) Natural rubber b) Synthetic rubber c) Highly vulcanized rubber d) Polypropene

3 (A) Explain the mechanism of free-radical copolymerization in detail. 14

OR

3 (A) (i) Discuss the method available for the determination of reactivity ratio. 07

3 (A) (ii) Write note on emulsion polymerization technique. 07

3 (B) Answer the following questions (Any **three** out of five) 03

(i) Define block copolymer giving one example of it.
(ii) Write one disadvantages of solution polymerization technique.
(iii) Define the term reactivity ratio.
(iv) Write importance of copolymerization reaction.
(v) What are the criteria requires (r1 and r2) for the preparation of block copolymer?

4 (A) Enlist various thermal events. Describe the methodology of TGA with suitable example. Explain various factors affecting TG curve. 14

OR

4 (A) (i) Draw and discuss the TG curve of nylon-6, 6. 07

4 (A) (ii) Give comparison of various thermal techniques with respect to their methodology. 07

4 (B) Answer the following questions (Any **three** out of five) 03

(i) What is thermogram?
(ii) Give any one example of change in heating rate.
(iii) What is the principle of DTA?
(iv) Describe any two information's which yield from DSC.
(v) Draw the cross section of heat flux DSC.