

Subject: Engineering Chemistry

Topic: Polymer, Types of Polymerizations and its Classifications:

Multiple Choice Questions “Bank”

1. The most commonly used polyester is known as
(a) Terylene (b) nylon (c) fat (d) protein
2. The characteristics of condensation polymerization are given below-
I. only $-C-C-$ linkages present in the polymer structure
II. use of bifunctional or polyfunctional monomers
III. elimination of a small byproduct molecule
Which of the following is true?
(a) I, II, III (b) II and III
(c) I and II (d) Only III
3. Which of the following monomers are unsuitable for condensation polymerization?
(a) propanoic acid and ethanol
(b) butane-dioic acid and glycol
(c) diamines and dicarboxylic acids
(d) hydroxy acids
4. The ease of anionic polymerization is dependent only on the catalyst system used for a given monomer. State true or false.
(a) true
(b) false
5. Which of the following is true for the resultant polymer product formed, when molecules of phthalic acid react with molecules of glycerol?
(a) branch polymer
(b) cross-link polymer
(c) linear polymer
(d) none of the mentioned
6. Which of the following kind of polymers are known for their high crystallinity?
(a) isotactic (b) syndiotactic
(c) atactic (d) none of the mentioned
7. What kind of substituent groups should be attached to the monomer, readily undergoing anionic polymerization?

- (a) electron accepting
- (b) electron releasing
- (c) all of the mentioned
- (d) none of the mentioned

8. Which of the following nature of solvent can inhibit the growth of polymer in anionic polymerization?

- (a) acidic
- (b) basic
- (c) neutral
- (d) none of the mentioned

9. The polymer in which steric placements of the substituent are arranged in such a way to give alternate d and l configurations, is known as _____

- (a) isotactic polymer
- (b) atactic polymer
- (c) syndio-tactic polymer
- (d) none of the mentioned

10. Which of the following byproduct is released when an ester reacts with alcohol?

- (a) alcohol
- (b) water
- (c) ether
- (d) no elimination

11. Which of the following monomer has highest reactivity towards cationic polymerization?

- (a) isobutylene
- (b) isoprene
- (c) vinyl ethers
- (d) styrene

12. Recycle bottles of plastic are made from

- (a) Terylene
- (b) nylon
- (c) caprolactum
- (d) polyvinyl chloride

13. Consider the following statements for condensation polymerization-

- I. Bifunctional or polyfunctional monomers
- II. Loss of each kind of functional group in each step for bifunctional species
- III. Always accompanied by the release of a byproduct molecule
- IV. Monofunctional or polyfunctional monomers

Which of the following are true?

- (a) I and II
- (b) I, II and III
- (c) I and III
- (d) III and IV

14. How the termination in anionic polymerization most probably does take place?

- (a) unimolecular termination
- (b) bimolecular

- (c) termination by solvent transfer
- (d) all of the mentioned

15. Which of the following polymer type is not classified on the basis of its application and properties?

- (a) rubbers
- (b) plastics
- (c) fibres
- (d) synthetic

16. Which among the following polymers have lowest solubility?

- (a) polyethylene
- (b) polystyrene
- (c) nylon 6
- (d) epoxy resin

17. Which of the following type of termination is not possible in ionic polymerization?

- (a) bimolecular termination
- (b) unimolecular termination
- (c) termination through transfer to monomer or solvent
- (d) none of the mentioned

18. How does degree of polymerization affected with increase in temperature of cationic polymerization reaction?

- (a) increases
- (b) decreases
- (c) no change
- (d) cannot be determined

19. What is true about the degree of cationic polymerization when termination occurs by monomer transfer?

- (a) constant
- (b) proportional to monomer concentration
- (c) proportional to catalyst concentration
- (d) proportional to square of monomer concentration

20. In the condensation of polymerization, monomers are involved which contain functional groups of

- (a) same kind
- (b) different kind
- (c) all groups
- (d) none of above

21. Which of the following monomer has highest reactivity towards cationic polymerization?

- (a) isobutylene
- (b) isoprene

- (c) vinyl ethers
- (d) styrene

22. What does the effectiveness of the catalyst in the initiation process of anionic polymerization depend on?

- (a) acidity of the monomer
- (b) basicity of the catalyst
- (c) all of the mentioned
- (d) none of the mentioned

23. Which of the following is an initiator molecule in the free radical polymerisation?

- (a) Benzoyl peroxide
- (b) Sulphuric acid
- (c) Potassium permanganate
- (d) Chromium oxide

24. Which of the following polymer is not classified under the category of configuration?

- (a) Syndiotactic
- (b) Atactic
- (c) Cross-linked
- (d) Isotactic

25. Which of the following happens in initiation step of the free radical polymerisation?

- (a) Decomposition of initiator
- (b) Renewal of inhibitor
- (c) Addition of monomer molecules to the growing chains
- (d) Disproportionation

26. Styrene acrylonitrile is an example of _____

- (a) Co-polymer
- (b) Homopolymer
- (c) Linear polymer
- (d) Amorphous polymer

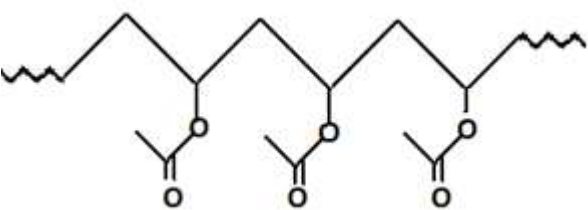
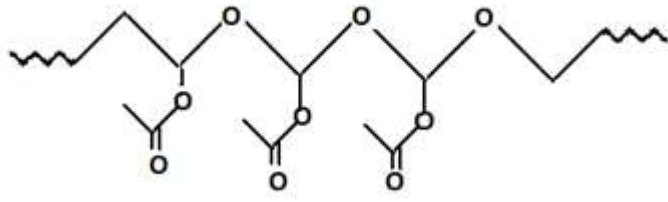
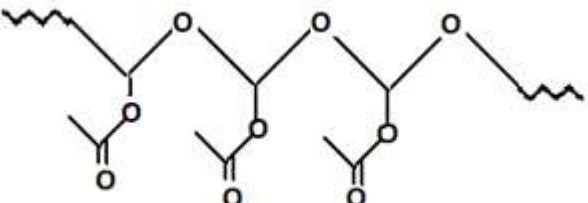
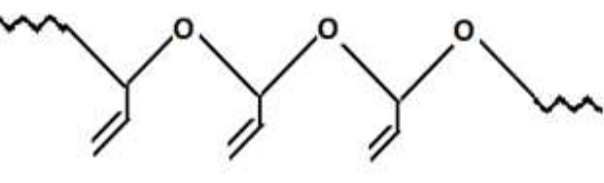
27. Which of the following reagents may be used to initiate radical polymerization of styrene?

- (a) HCl
- (b) Peroxides
- (c) Hydroxide ion
- (d) BF_3

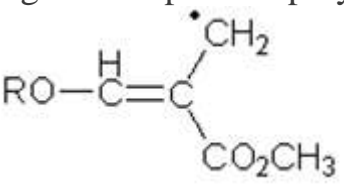
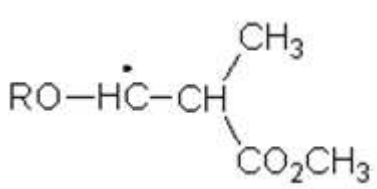
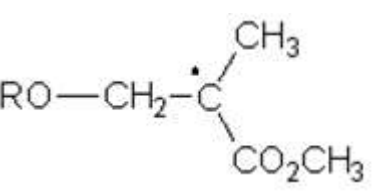
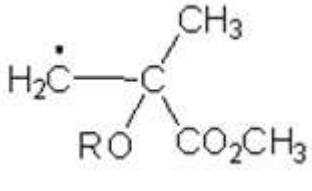
28. Select the incorrect statement from the following option.

- (a) Thermosets are formed by condensation polymerisation reactions
- (b) Thermosets have 3-D, cross-linked network structure
- (c) Thermosets soften on heating and stiffen on cooling
- (d) Thermosets are generally insoluble in any solvent

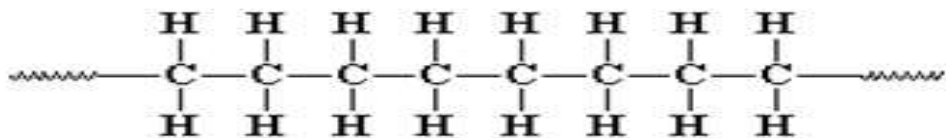
29. Which polymer will be formed when vinyl acetate reacts with peroxides?

- (a) 
- (b) 
- (c) 
- (d) 

30. Which of the following is the structure of the radical intermediate formed in the first propagation step of the polymerization of methyl methacrylate?

- (a) 
- (b) 
- (c) 
- (d) 

31. How many monomer units of ethylene are present in the given polyethylene formed by?



- (a) 1
 - (b) 2
 - (c) 3
 - (d) 4
32. Select the incorrect statement from the following options.
- (a) When in form ready for further working, polymers are called resins
 - (b) The chemical process leading to the formation of polymer is known as polymerisation
 - (c) The number of monomeric units contained in the polymer is called the degree of polymerisation
 - (d) Due to their small size, polymers are also called micro-molecules
33. Which one of the following is not an example of thermoplastic?
- (a) Polyvinyl chloride
 - (b) Nylon
 - (c) Polyesters
 - (d) Epoxy
34. Which of the following is not an example of semi-crystalline polymer?
- (a) HDPE
 - (b) Nylon
 - (c) Polyesters
 - (d) LDPE
35. Greater the hydrophilicity of the polymers _____ is the rate of biodegradation.
- (a) Larger
 - (b) Smaller
36. Select the incorrect statement from the following option.
- (a) Biodegradable polymers are not suitable candidates in the recycling of commingled plastics
 - (b) Biodegradable polymers are very expensive

- (c) Biodegradable polymers are an attractive option for addressing the solid waste and marine pollution
(d) Biodegradable polymers are easily available
37. Biodegradation will be more for _____
(a) More molecular weights and high crystallinity
(b) Low molecular weights and high crystallinity
(c) More molecular weights and less crystallinity
(d) Low molecular weights and less crystallinity
38. Which of the following monomers form biodegradable polymers?
(a) 3-hydroxybutanoic acid + 3-hydroxypentanoic acid
(b) Glycine + amino caproic acid
(c) Ethylene glycol + phthalic acid
(d) Caprolactum
39. PHB is used in _____
(a) Agricultural applications
(b) Medical applications
(c) Manufacture of shampoo bottles
(d) Adhesives
40. Which of the following polymers can have strong intermolecular forces?
(a) Nylon (b) Polystyrene (c) Rubber (d) Polyesters

Answer Keys:

(1)a (2)b (3)a (4)b (5)b (6)a (7)a (8)a (9)c (10)a (11)c (12)a (13)a (14)c (15)d (16)d
(17)a (18)b (19)a (20)b (21)c (22)c (23)a (24)c (25)a (26)a (27)b (28)c (29)a (30)c
(31)d (32)d (33)d (34)d (35)a (36)d (37)d (38) a,b (39)c (40)a,d