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કુલ સમય :– : ૬૦ મીનીટ **કુલ પ્રશ્નો : ૫૦** **વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫**

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

1. Which Property is not suitable for Bakelite?
   (A) Thermosetting (B) Homo-polymer (C) Cross-linking polymer (D) Co-polymer
2. The T_g of a polymer is influenced by its _____.
   (A) Length of polymers (B) Molecular Size (C) No. of atoms (D) Molecular Weight
3. Which Polymer is non-biodegradable?
   (A) Poly hydroxy Butyretco β-Hydroxi velrate. (B) Nylone-2 Nylone-6 (C) Niyoprene (D) Poly Glycolic acid
4. Which one of following determine by light scattering methods?
   (A) Number average molecular weight (B) Weight average. Molecular weight (C) Monodispercity index (D) Polydispercity index
5. Match the Correct pair.
   (1) Free radial Polymerization (P) Polystyrene
   (2) Cationic Polymerization (Q) Butyl rubber
   (3) Anionic Polymerization (R) Teflon
   (A) (1,R) (2,P) (3,Q) (B) (1,P) (2,R) (3,Q) (C) (1,Q) (2,R) (3,P) (D) (1,R) (2,Q) (3,P)
6. Which chromatographic mode method is used to determine molecular weight of polymers?
   (A) High performance liquid chromatographic (B) Size exclusion chromatographic
   (C) Gel permeation chromatographic (D) All of the above
7. ___is the property of recovering original shape after the removal of deforming strain?
   (A) Bulk modulus (B) Rigidity modulus (C) Young's modulus (D) Elasticity
8. The vulcanized rubber has_____
   (A) High water absorption, resistance to oxidation and good elasticity.
   (B) Low water absorption, resistance to oxidation and good elasticity.
   (C) High water absorption, susception to oxidation and no elasticity.
   (D) Low water absorption, susception to oxidation and good elasticity.
9. Which order kinetics obeys a strong acid catalyzed polystorification reaction follow?
   (A) 1 (B) 2 (C) 3 (D) 4
10. The Ziglar-Natta catalyst is formed between _____
    (A) Triethyl aluminium and titanium halide (B) Triethyl aluminium and Silver halide.
    (C) Triethyl aluminium and Platinum halide. (D) Triethyl aluminium and Carbon halide.
11. Match the correct answer.
    (1) PMMA (P) Polyester
    (2) Terylene (Q) PTEF
    (3) Teflon (R) Synthetic Rubber
    (4) Neoprene (S) Polyacrylate
    (A) (1-S), (2-R), (3-P), (4-Q) (B) (1-R), (2-S), (3-Q), (4-P) (C) (1-P), (2-R), (3-S), (4-Q) (D) (1-S), (2-P), (3-Q), (4-R)
12. What does the intensity of active radiation absorbed in uncatalyzed photo –polymerization notdepend on?
    (A) Intensity of incident radiation (B) Thickness of reaction mixture
    (C) Monomer concentration (D) None of the above
13. What is the relation between T_g and T_m for unsymmetrical polymer?
    (A) $T_g = {}^3/_2 T_m$ (B) $T_g = {}^1/_2 T_m$ (C) $T_g = {}^2/_3 T_m$ (D) $T_g = 2\ T_m$
14. The concentration of polymer sample is 0.5 gm/dl. What is the value of η_{red} ?
    [η_r = 1.453 dl/gm].
    (A) 4.906 dl/gm (B) 0.906 dl/gm (C) 2.906 dl/gm (D) 0.2265 dl/gm
15. Flow time of solvent and solution is 40 sec and 96 sec respectively. What would be the inherent viscosity of solution? Concentration of solution is 0.4 M.
    (A) 2.189 dl/gm (B) -2.189 dl/gm (C) 0.457 dl/gm (D) -0.457 dl/gm
16. Which of the following monomer has the least reactive towards anionic polymerization?
    (A) Acrylonitrile (B) Methyl methylate (C) Methacrylonitrile (D) Butadiene
17. Which of the following is the best definition of a polymer?
    (A) A very long covalent molecule constructed from a repeating unit. (B) A very long molecule with no platter to its structure.
    (C) A giant lattice of carbon atoms in repeting pattern. (D) A very long molecule.
18. A Polymer of butadiene and acrylonitrile is called _____
    (A) Buna–B (B) Buna-S (C) Buna-N (D) Buna – A
19. Which types of polymer will be formed if the substituent group is – C_6H_5?
    (A) Polystyrene (B) Polythene (C) Polypropylene (D) Polyvinyl chloride.
20. Mechanism if polymerization is classified into types?
    (A) Two (B) Three (C) Four (D) Five
21. Match the correct answer.
    (1) Nylon – 2, Nylon – 6 (P) Di-methyl Terpthelet + Ethylene Glycose
    (2) Dacron (Q) Acrylonitrile + 1, 3 Butadiene
    (3) Buna – S (R) Glycine + Amino Caproic Acid
    (4) Buna – N(S) Styrene + 1, 3 Butadiene
    (A) (1-S), (2-R), (3-P), (4-Q) (B) (1-R), (2-S), (3-Q), (4-P) (C) (1-P), (2-R), (3-S), (4-Q) (D) (1-R), (2-P), (3-S), (4-Q)
22. Select the correct option for True and False of the following statements
    (1) Dextron is a biodegradable polymer. (2) Carbon black is a antioxidant.
    (3) PHBV is of polyamide group. (4) Nylon-2 - Nylon-6 is group of polyester.
    (A) TFTF (B) FTTF (C) TTFF (D) FTFT

23. The hard brittle state of polymer below T_g is called _____.
(A) Amorphous state (B) Glassy state (C) Crystalline state (D) Viscoelastic state
24. _____ are normally used to protect polymeric products of bright colours.
(A) Filler (B) Antioxidants (C) Plasticizers (D) Photo stabilizers
25. Viscosity of solvent is 1.70dl/gm. What is the value of viscosity of solution?
[η_{sp} = 0.752 dl/gm].
(A) 2.716dl/gm (B) 1.166dl/gm (C) 0.384dl/gm (D) 2.332dl/gm
26. If 25g of a liquid occupies cm^3 in a measuring cylinder, what is the density of the liquid?
(A) 0.25 $g \cdot cm^{-3}$ (B) 0.8 $g \cdot cm^{-3}$ (C) 1.25 $g \cdot cm^{-3}$ (D) 5 $g \cdot cm^{-3}$
27. What is the name of the temperature above which a polymer is soft and flexible, but below which it is hard and brittle?
(A) The thermosetting temperature (B) The crystalline temperature
(C) The melting point (D) The glass transition temperature
28. What kind of substitution groups should be attached to the monomer, readily undergoing cationic polymerization?
(A) Electron accepting (B) Electron Releasing (C) Both of the above (D) None of the above
29. The polymer absorbs _____ and swell in size.
(A) Water (B) Ethyl Alcohol (C) Ether (D) Methanol
30. 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 above mentioned
31. _____ consists of individual polymers with varying molecular weights. The properties of the polymers depend on the distribution of molecular weighs.
(A) Cellulose chain (B) Polydisperse (C) Synthetic Polymer (D) Monodisperse
32. Match the correct answer.
(1) Self Condensation Polymerization (P) PHBV
(2) Additive Co – polymerization (Q) Nylon - 6
(3) Free radical Addition Homo – Polymerization (R) Malemine
(A) (1-Q), (2-R), (3-P) (B) (1-R), (2-P), (3-Q) (C) (1-P), (2-R), (3-Q) (D) (1-P), (2-R), (3-Q)
33. If the weight ratio is 0.2 : 0.5. What is the number ratio of polymer sample?
[$M_1 = 10^4$, $M_2 = 10^5$]
(A) 0.25 :0.1 (B) 0.8 : 0.2 (C) 0.2 : 0.5 (D) 0.02 : 0.5
34. The dazzling white synthetic garment yellowing is due to _____ phenomenon.
(A) Mechanical Degradation (B) Thermal Degradation (C) Photo Degradation (D) Oxidative Degradation
35. Oxidative degradation usually leads to _____.
(A) Hardening (B) Discoloration (C) Surface Changes (D) All of the above
36. Match the correct answer.
(1) Unbreakable Crockery (P) PHBV
(2) Non-Stick Equipments (Q) Nylon - 6
(3) Self-Condensation (R) Malemine
(4) Orthopedic Equipments (S) Teflon
(A) (1-S), (2-R), (3-P), (4-Q) (B) (1-R), (2-S), (3-Q), (4-P) (C) (1-P), (2-R), (3-S), (4-Q) (D) (1-S), (2-P), (3-Q), (4-R)
37. _____ protect polymers from deteriorating effects of light to considerable extent.
(A) Photo stabilizers (B) Photo vibrations (C) Photo synthesis (D) Photo sensitization
38. How many Molecules of ethene are join in polyethene? ($\overline{Mn}$ = 2,52,000)
(A) 12000 (B) 6000 (C) 9000 (D) 8000
39. What is the value of $\overline{M_n}$? ($\overline{M_w} = 75000$& PDI = 1.5.)
(A) 31250 (B) 50000 (C) 62500 (D) 75000
40. Melting point of symmetrical polymer is 33 ^{0}C. What is its T_g?
(A) -69 ^{0}C (B) 22 ^{0}C (C) 16.5 ^{0}C (D) -120 ^{0}C
41. What will be the behaviour of the polymer if their temperature is above T_g?
(A) Soft, Flexible & Viscoelastic (B) Hard, Brittle & Dimensional Stability
(C) Transparent, Brittle & Dimensional Stability (D) Transparent, Flexible & Viscoelastic
42. By adding which substance to polymerization, value of T_g is reduced?
(A) Filler (B) Antioxidants (C) Plasticizers (D) Stabilizers
43. Which of the following is not generally a difference between an addition polymer and a condensation polymer?
(A) Condensation polymers may occur naturally, addition polymers are synthetic.
(B) They both use monomers with a double bond.
(C) They use different types of starting monomers.
(D) During condensation polymerization two products are form while in addition polymerization only one product is formed.
44. Which of the following is not a property of polymers?
(A) Water soluble (B) Non conductive (C) Low density (D) Acid Reagent
45. Which of the following act as an initiator in free radical polymerization?
(A) Grignard Reagent (B) Lewis Acids (C) Benzonyl Peroxide (D) Potassium Amide
46. The co – polymers having branched structures in which the monomers segments on the backbone are branches differ are called _____.
(A) Alternate (B) Random (C) Block (D) Graft
47. _____ is one such vapour phase method that indirectly measures vapour pressure of polymer solutions.
(A) Symmetry (B) Osmometry (C) Isentropic (D) Adiabatic
48. As the crystallinity increases, the brittleness of the polymer _____.
(A) Increases (B) Decreases (C) Moderate (D) Remains Constant
49. The reverse of esterification is _____.
(A) Centrifugation (B) Condensation (C) Polymerisation (D) Hydrolysis
50. The site on chain carrier at which reaction occur is called _____.
(A) Active Center (B) End of polymer chain (C) No. of monomers (D) All of the above mentioned