EXERCISE-I

Classification of Polymer

1. Which of the following is an example of condensation polymer
(A) Nylon
(B) Bakelite
(C) Urea-formaldehyde resin
(D) All of these

2. Which of the following is a natural polymer
(A) Polyester (B) Glyptal
(C) Starch (D) Nylon-6

3. Which is a naturally occuring polymer
(A) Polythene (B) PVC
(C) Acetic acid (D) Protein

4. Which of the following is a branched polymer
(A) Low density polymer
(B) Polyester
(C) High density polymer
(D) Nylon

5. Which is the monomer of polypeptide
(A) Propene (B) Butadiene
(C) Adipic acid (D) Amino acid

6. Which of the following is an addition polymer
(A) Glucose (B) Polyethylene
(C) Ethylene (D) Terylene

7. Which one of the following is a linear polymer
(A) Amylopectin (B) Glycogen
(C) Starch (D) Amylose

8. Which of the following polymer is an example of fibre
(A) Silk (B) Dacron
(C) Nylon-66 (D) All of these

9. Natural rubber is which type of polymer
(A) Condensation polymer
(B) Addition polymer
(C) Co-ordination polymer
(D) None of these

10. Polyethylene is
(A) Random copolymer
(B) Homo polymer
(C) Alternate copolymer
(D) Crosslinked copolymer

11. Bakelites are
(A) Rubber (B) Rayon
(C) Resins (D) Plasticisers

12. Which of the following is a step-growth polymer
(A) Polyisoprene (B) Polythene
(C) Nylon (D) Polyacrylonitrile

13. An example of chain growth polymer is
(A) Nylon-66 (B) Bakelite
(C) Terylene (D) Teflon

14. Which of the following is synthetic rubber
(A) Buna-S (B) Neoprene
(C) Both (A) and (B) (D) None of these

15. Which of the following is a linear polymer
(A) Nylons
(B) Bakelite
(C) Low density polythene
(D) Melamine-formaldehyde polymer

16. Which of the following is not an example of natural polymer
(A) Wool (B) Silk
(C) Leather (D) Nylon

17. Which of the following is a chain growth polymer
(A) Nylon-6 (B) Dacron
(C) Glyptal (D) Polypropylene

18. Natural rubber is a
(A) Polyester (B) Polyamide
(C) Polyisoprene (D) Polysaccharide

19. Which of the following is not a synthetic polymer
(A) Polyethylene (B) *PVC*
(C) Nylon (D) Cellophane

20. Nylon-66 is a
(A) Natural polymer
(B) Condensation polymer
(C) Addition polymer
(D) Substitution polymer

General Methods of Preparation and Mechanism of Polymerisation

21. The alkyd resins are condensation polymers obtained from dibasic acids and
(A) Phenol (B) Glycol
(C) Glycerol (D) Formaldehyde

22. Celluloid is
(A) A thermoplastic material obtained from caprolactam and urea
(B) A thermoplastic material obtained from cellulose nitrate and camphor
(C) A thermosetting material obtained from urea and formaldehyde
(D) A thermosetting material obtained from glycerol and phthalic anhydride

23. The product of addition polymerisation reaction is
(A) PVC (B) Nylon
(C) Terylene (D) Polyamide

24. Example of condensation polymer is
(A) Formaldehyde $\rightarrow$ meta-formaldehyde
(B) Acetaldehyde $\rightarrow$ para-aldehyde
(C) Acetone $\rightarrow$ mesityl oxide
(D) Ethene $\rightarrow$ polyethene

25. Complete hydrolysis of cellulose gives
(A) D-fructose (B) D-ribose
(C) D-glucose (D) L-glucose

26. Which of the following can be polymerised to polythene
(A) Ethylene
(B) Ethylene chlorohydrin
(C) Ethyl acetate
(D) Ethylmethyl ketone

27. Polypropylene can be obtained by polymerisation of
(A) $CH \equiv CH$ (B) $CH_2 = CH_2$
(C) $CH_3 - CH = CH_2$ (D) $CH_3 - C \equiv CH$

28. When heated with zinc chloride, lactides forms a linear polymer which may be
(A) Polystyrene (B) Polyamide
(C) Polyester (D) Polythene

29. Which of the following has been used in the manufacture of non-inflammable photographic films
(A) Cellulose nitrate
(B) Cellulose acetate
(C) Cellulose xanthate
(D) Cellulose perchlorate

30. The phenol-formaldehyde resins are formed by polymerisation of phenol and formaldehyde by
(A) Addition polymerisation
(B) Condensation polymerisation
(C) Both (A) and (B)
(D) None of these

31. Terylene is
(A) An addition polymer with a benzene ring in every repeating unit
(B) A condensation polymer with a benzene ring in every repeating unit
(C) An addition polymer with two carbon atoms in every repeating unit
(D) A condensation polymer with two nitrogen atoms in every repeating unit

32. Teflon is a polymer of the monomer **or** Teflon is obtained by the polymerisation of
(A) Monofluoroethene
(B) Difluoroethene
(C) Trifluoroethene
(D) Tetrafluoroethene

33. The catalyst used in the manufacture of polyethene by Ziegler method is
(A) Titanium tetrachloride and triphenyl aluminium
(B) Titanium tetrachloride and trimethyl aluminium
(C) Titanium dioxide
(D) Titanium isopropoxide

34. Acetate rayon is prepared from
(A) Acetic acid (B) Glycerol
(C) Starch (D) Cellulose

35. The compound required for the formation of a thermosetting polymer with methanol is
(A) Benzene (B) Phenyl amine
(C) Benzaldehyde (D) Phenol

36. Which polymer is formed by chloroethene
(A) Teflon (B) Polyethene
(C) PVC (D) Nylon

37. The starting material for the preparation of styrene is
(A) Ethane (B) Ethene
(C) Ethyne (D) Vinyl chloride

38. The catalyst used for the polymerisation of olefins is
(A) Ziegler Natta catalyst
(B) Wilkinson's catalyst
(C) Pd-catalyst
(D) Zeise's salt catalyst

39. Rayon yarns are obtained from
(A) Polymethylene (B) Polyesters
(C) Cellulose (D) Styrene

40. Which one of the following monomers gives the polymer neoprene on polymerization
(A) $CF_2 = CF_2$
(B) $CH_2 = CHCl$
(C) $CCl_2 = CCl_2$
(D) $CH_2 = \overset{Cl}{\overset{|}{C}} - CH = CH_2$

Composition, Properties and Uses of Polymer

41. The mass average molecular mass & number average molecular mass of a polymer are respectively 40,000 and 30,000. The polydispersity index of polymer will be
(A) < 1 (B) > 1
(C) 1 (D) 0

42. In the process of forming 'mercerised cellulose' the swelling of cellulose is caused by
(A) Water (B) Na_2CO_3
(C) Aq. NaOH (D) Aq. HCl

43. 'Rayon' is
(A) Natural silk
(B) Artificial silk
(C) Natural plastic or rubber
(D) Synthetic plastic

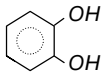
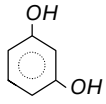
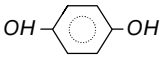
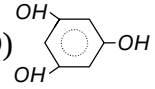
44. As the molecular weight increases the tensile strength of polymers
(A) Increases (B) Decreases
(C) Remains unchanged (D) Uncertain

45. Triethyl aluminium titanium chloride used in plastic industry is a
(A) Vulcaniser
(B) Plasticiser
(C) Ziegler-Natta catalyst
(D) Telomer

46. Glyptals are chiefly employed in
(A) Toy making
(B) Surface coating
(C) Photofilm making
(D) Electrical insulators

47. The sterile gauze (or cotton) used in medicine is obtained by oxidising cellulose with
(A) Nitrogen
(B) $KMnO_4$
(C) Nitrogen dioxide
(D) Potassium chlorate

48. Ethylene-propylene rubber (EPR) is
(A) Unsaturated, stereoregular
(B) Saturated, stereoregular
(C) Atactic, unsaturated
(D) Syndiotactic, unsaturated

49. The monomeric units of terylene are glycol and which of the following
(A) 
(B) 
(C) 
(D) 

50. Neoprene, a synthetic rubber contains which of the following element besides *C* and *H*
(A) *N* (B) *O*
(C) *Cl* (D) *F*

51. $F_2C = CF_2$ is the monomer of
(A) Nylon-6 (B) Buna-S
(C) Glyptal (D) Teflon

52. Molecular mass of a polymer is
(A) Small (B) Very small
(C) Negligible (D) Large

53. Which of the following has cross-links
(A) Vulcanised rubber
(B) Nylon
(C) Phenol-formaldehyde resins
(D) Both (A) and (C) are correct

54. Orlon is a polymer of
(A) Styrene
(B) Tetrafluoro ethylene
(C) Vinyl chloride
(D) Acrylonitrile

55. Caprolactam is the monomer of
(A) Nylon-6 (B) Glyptal
(C) P.T.F.E. (D) Melamine

56. Which of the following intermolecular forces are present in 'nylon – 66'
(A) Vander Waals
(B) Hydrogen bonding
(C) Dipole-dipole interaction
(D) None of these

57. *Neoprene* is a polymer of
(A) Propene (B) Vinyl chloride
(C) Chloroprene (D) Butadiene

58. Polyvinyl chloride is
(A) An isomer of vinyl chloride
(B) An addition product of vinyl chloride
(C) An allotrope polymer of vinyl chloride
(D) A polymer of hydrated vinyl chloride

59. Which of the following polymers are hard
(A) Linear (B) Cross-linked
(C) Branched chain (D) Thermoplastic

60. Which of the following has the largest molecular mass
(A) Monomer (B) Dimer
(C) Polymer (D) Oligomer

61. Synthetic fibres like nylon-66 are very strong because
(A) They have high molecular weights and high melting points
(B) They have a high degree of cross-linking by strong $C-C$ bond
(C) They have linear molecules consisting of very long chains
(D) They have linear molecules interlinked with forces like hydrogen bonding

62. Natural rubber contains several thousand units of *X* linked together in the polymer chain. *X* is
(A) Neoprene (B) Isoprene
(C) Chloroprene (D) Styrene

63. Natural rubber is basically a polymer of **or** The monomer of natural polymer rubber is
(A) Neoprene (B) Isoprene
(C) Chloroprene (D) Butadiene

64. What is not true about polymers
(A) Polymers do not carry any charge
(B) Polymers have high viscosity
(C) Polymers scatter light
(D) Polymers have low molecular weight

65. The synthetic polymer which resembles natural rubber is
(A) Neoprene (B) Chloroprene
(C) Glyptal (D) Nylon

66. Which one is a polymer compound
(A) SO_2 (B) CO_2
(C) CH_4 (D) *PVC*

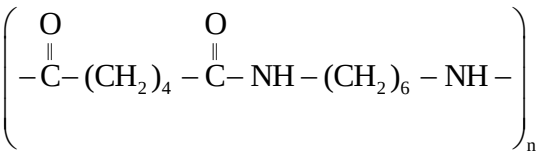
67. Which one of the following in used to make 'non-stick' cookware
(A) *PVC*
(B) Polystyrene
(C) Polyethylene terephthalate
(D) Polytetrafluoroethylene

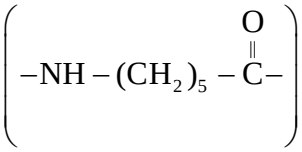
68. The polymer used for making contact lenses for eyes is
(A) Polymethylmethacrylate
(B) Polyethelene
(C) Polyethylacrylate
(D) Nylon-6

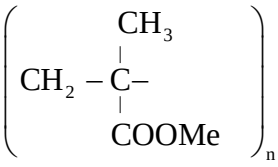
69. Which polymer is used for making magnetic recording tapes
(A) Dacron (B) Acrilan
(C) Glyptal (D) Bakelite

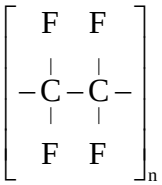
70. Characteristic property of Teflon is
(A) 2000 poise viscosity
(B) High surface tension
(C) Non-inflammable and resistant to heat
(D) Highly reactive

71. Nylon – 66 is

(A) 

(B) 

(C) 

(D) 

72. Which of the following is currently used as a tyre cord

(A) Terelene (B) Polyethylene

(C) Polypropylene (D) Nylon - 6

73. PVC is polymer of

(A) $CH_2 = CH_2$

(B) $CH_2 = CH - Cl$

(C) $CH_2 = CH - CH_2Cl$

(D) $CH_3 - CH = CH - Cl$

74. Teflon is a polymer of

(A) Tetrafluoro ethane

(B) Tetrafluro propene

(C) Difluorodichloro ethane

(D) Difluoro ethene

75. Which of the following is used in vulcanization of rubber

(A) SF_6 (B) CF_4

(C) Cl_2F_2 (D) C_2F_2

76. PVC is used for ……..

(A) Manufacture of cosmetics

(B) Manufacture of tyres

(C) Manufacture of nonstick pans

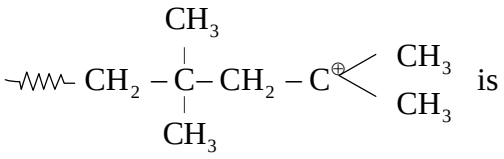
(D) Manufacture of plastic pipes

77. Polythene is a resin obtained by polymerisation of **or** The monomer unit in polythene is

(A) Butadiene (B) Ethylene

(C) Isoprene (D) Propylene

78. The monomer of the polymer

 is

(A) $H_2C = C(CH_3)_2$

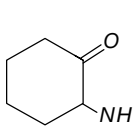
(B) $(CH_3)_2C = C(CH_3)_2$

(C) $CH_3CH = CHCH_3$

(D) $CH_3CH = CH_2$

79. The monomer of Nylon-6 is/are

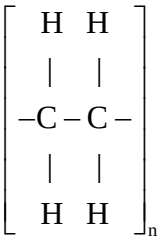
(A) $HO - CH_2 - CH_2 - OH$

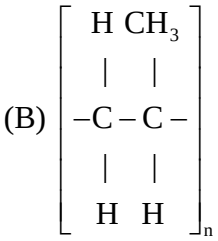
(B)  $+ H_2O$

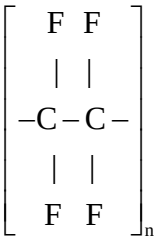
(C) $F_2C = CF_2$

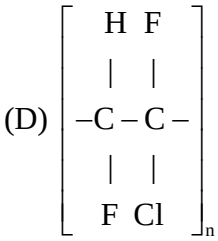
(D) $H_2C = CH_2$

80. Which of the following is **teflon**

(A) 

(B) 

(C) 

(D) 

81. The process of heat-softening, moulding and cooling to rigidness' can be repeated for which plastics

(A) Thermoplastics

(B) Thermosetting plastics

(C) Both (A) and (B)

(D) None of the above

82. In the trinitrocellulose each glucose unit contains how many $-OH$ groups

(A) 2 (B) 3

(C) 4 (D) 5

83. Shellac contains mainly

(A) Cellulose

(B) Polyhydroxy organic acids

(C) Polyamides

(D) Polyesters

84. In elastomer, intermolecular forces are

(A) Nil (B) Weak

(C) Strong (D) Very strong

85. Cellulose is a polymer of

(A) Fructose (B) Ribose

(C) Glucose (D) Sucrose

86. Which of the following polymer has ester linkage

(A) Nylon-66 (B) PVC

(C) Terylene (D) SBR

87. Acrilan is a hard, horny and a high melting material. Which of the following represents its structure

(A) $\left(-CH_2-\underset{\displaystyle Cl}{\underset{|}{CH}}-\right)_n$ (B) $\left(-CH_2-\underset{\displaystyle CN}{\underset{|}{CH}}-\right)_n$

(C) $\left(-CH_2-\underset{\displaystyle COOCH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-\right)_n$ (D) $\left(\underset{\displaystyle COOC_2H_5}{\underset{|}{CH}}-\right)_n$

88. Which of the following has amide links

(A) Protein (B) Nylon

(C) Peptide (D) All of these

89. Which of the following is a polyamide

(A) Teflon (B) Nylon –66

(C) Terylene (D) Bakelite

90. Which of the following is fully fluorinated polymer

(A) Neoprene (B) Teflon

(C) Thioskol (D) PVC