POLYMERS

(1) The condensation polymer among the following is

(a) protein (b) PVC (c) polythene (d) Rubber

(2) The polymer of natural rubber is

(a) All trans isoprene (b) All cis isoprene

(c) All optical isoprene (d) None of these

(3) The repeating unit present in Nylon-6 is

(a) $-CO-NH-(CH_2)_6-$ (b) $-CO-(CH_2)_6-NH_2-$

(c) $-CO-(CH_2)_5-NH$ (d) $-CO-(CH_2)_4-NH-$

(4) The species which can serve as an initior for the cationic polymerisation is

(a) HNO_3 (b) $LiAlH_4$ (c) $NaBH_4$ (d) $AlCl_3$

(5) Which of the following is a linear polymers?

(a) Bakelite (b) Glycogen (c) PVC (d) LDP

(6)Which of the following is not true for thermo plastic polymers

(a) Thermo plastic are linear polymers

(b) The soft and melt on heating

(c) Molten polymer can be remoulded into any shape

(d) They have cross-linkages which break on heating

(7) Match the column I with column II and mark the appropriate choice

Column I	Column II
A. PVC	(i) Rubber
B. Condensation polymer	(ii) Thermo plastic
C. Polysacharide	(iii) Decron
D. Elastomer	(iv) Natural polymer

(a) A – (ii) , B- (iii), C- (iv) , D- (i)

(b) A – (i) , B- (ii), C- (iv) , D- (iii)

(c) A – (iii) , B- (iv), C- (i) , D- (ii)

(d) A – (iv) , B- (i), C- (iii) , D- (ii)

(8) Which of the following is not preparation by addition polymerization

(a) Polythene (b) Polystyrene (c) Neoprene (d) Nylon – 6,6

(9) Teflon and Neoprene are the examples of

(a) Co polymers (b) monomers (c) homo polymers (d) condensation polymers

(10) Which of the following is not true about high density polythene

(a) Tough (b) Hard (c) Inert (d) Highly branched

(11) Terylene is a condensation polymers of ethylene glycol and

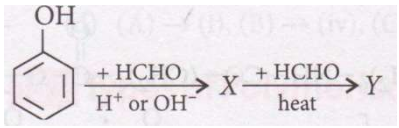
(a) benzoic acid (b) phthalic acid (c) Terephthalic acid (d) Salicyclic acid

(12) Novolac on heating with formaldehyde undergoes ---------- to form an infusible solid mass called ----------

(a) Polymerisation , melamine (b) Vulcanisation,resins

(c) Cross- linking, Bakelite (d) Condensation, polystyrene

(13) Identify X and Y in the given polymerizations reactions



(a) X= Bakelite, Y=Novolac (b) X= Novolac, Y=Melamine

(c) X= Bakelite, Y= Melamine (d) X= Novolac, Y= Bakelite

(14) In Vulcanisation of rubber

(a) Sulphur reacts to form a new compound

(b) Sulphur cross- links are introduced

(c) Sulphur forms a very thin protective layer over rubber

(d) All statements are correct

(15) Which of the following statements is wrong

(a) PVC stands for polyvinyl chloride

(b) PTFE stands for Teflon

(c) PMMA stands for polymethyl acrylate

(d) Buna-S stands for natural rubber

(16) If $N_1, N_2, N_3 - - - - - Ni$ are the numbers of molecules with molecular masses $M_1, M_2, M_3 - - - - - Mi$ respectively. Then the number average molecular mass $(\overline{M_n})$ is

(a) $\sum \frac{NiMi^2}{NiMi}$ (b) $\sum \frac{NiMi}{Ni}$ (c) $\sum \frac{Mi^2}{Ni}$ (d) $\sum \frac{NiMi}{Mi}$

(17) Poly dispersity index (PDI) is

(a) $\frac{\overline{M_w}}{\overline{M_n}}$ (b) $\frac{\overline{M_n}}{\overline{M_w}}$ (c) $\overline{M_n} \times \overline{M_w}$ (d) $\overline{M_w} - \overline{M_n}$

(18) Which of the following is / are a biodegradable synthetic polymers

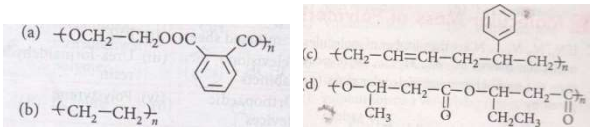
(a) Aliphatic polyesters (b) PHBV (c) $Nylon-2-Nylon-6$ (d) All of these

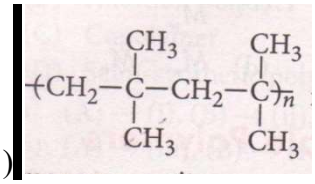
(19) Which of the following is not a semi- synthetic polymer

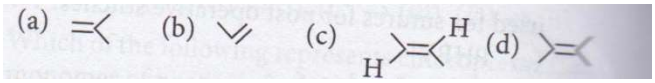
(a) Cis- polyisoprene (b) Cellulose nitrate

(c) Cellulose acetate (d) Vulcanised rubber

(20) In which of the following polymers ethylene glycol is one of the monomer units?



(21)  is a polymer having monomer units _____



(22) Among cellulose , polyvinyl chloride, nylon and natural rubber, The polymer in which the inner molecular force of attraction is weakest is

(a) Nylon (b) Polyvinyl chloride (c) cellulose (d) Natural rubber

(23) Assertion : Decron is formed by step growth polymerization of monomer units

Reason : Decron fibre is crease resistant

(a) If both assertion and reason are true and reason is correct explanation of assertion

(b) If both assertion and reason are true and reason is not correct explanation of assertion

(c) Assertion is true but reason is false

(d) If both assertion and reason are false

(24) On complete hydrogenation, natural rubber produces

(a) *ethylene – propylene* copolymer (b) vulconised rubber

(c) polypropylene (d) polybutylene

(25) The chemical name for melamine is

(a) 1,3,5 – triamino -2,4,6 – triazine

(b) 2,4,6 – triamino -1,3,5 – triazine

(c) 2- amino – 1,3,5- triazine

(d) 2,4 – diamino -1,3,5 – triazine

(26) Which is not classified as thermo plastics

(a) polyethylene (b) polystyrene (c) Bakelite (d) Neoprene

(27) Arrange the following monomers in order of decreasing ability to undergo cationic polymerization

(1) $CH_2 = CH - C_6H_4(NO_2)$ (2) $CH_2 = CH - C_6H_4(CH_3)$ (3) $CH_2 = CH - C_6H_4(OCH_3)$

(a) 1>2>3 (b) 2>1>3 (c) 3>2>1 (d) 1>3>2

(28) Which of the following is not a condensation polymer

(a) Melamine (b) Glyptal (c) Decron (d) Neoprene

(29) The number of condensation polymers among the following is

$Nylon-6,6$, Teflon , Decron, polyacrylonitrite, PMMA, Bakelite

(30) The number of copolymers among the following is ---------

PAN, Buna-S, Neoprene, Melmac, polybutadiene, $Nylon-6$, $Nylon-6,6$, Alkyd- resin

KEY

1-10	a	b	c	d	c	d	a	d	c	d
11-20	c	c	d	b	d	b	a	d	a	a
21-30	a	d	b	a	b	c	c	d	3	4

HINTS & SOLUTIONS

(1) Protein undergoes the condensation polymer

(2) $2-methyl-1,3-butadiene$

(3) caprolactam

(4) $Alcl_3$

(5) PVC

(6) Thermo plastic do not have any cross- linkages . Hence they are soft and can be remoulded after heating

(7) From the concept

(8) $Nylon-6,6$ is prepared from condensation polymerization

(9) Homo polymers

(10) High density polymer is not branched. It is made up of linear molecules which are closely packed

(11) Terephthalic acid

(12) From structure formation

(13)Phenol is condensed with HCHO in either, an acid (or) base form O-and P- hydroxyl methyl phenol to give Novolac. On further heating with HCHO novolac undergoes cross- linking to an infusible Bakelite

(14) S- cross-links are introduced

(15) Buna-S stands for styrene butadiene synthetic rubber

(16) $\overline{M_n} = \sum \frac{NiMi}{Ni}$

(17)

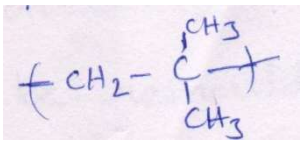
$$PDI = \frac{\overline{M_w}}{\overline{M_n}}$$

(18) All are biodegradable

(19) Cis-polyisoprene is natural rubber

(20) The repeating structural unit is

(21)

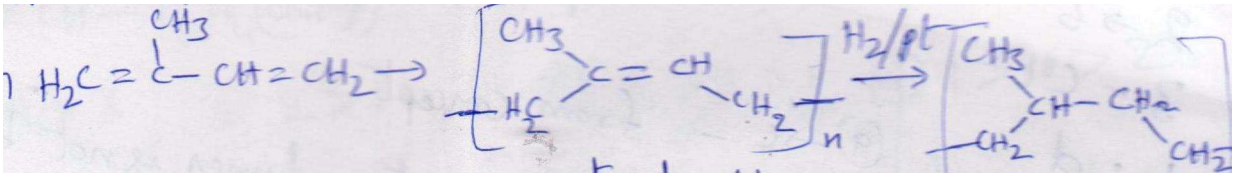


The monomer is  isobutylene

(22) Natural rubber has vanderwall force, Which are the weakest force

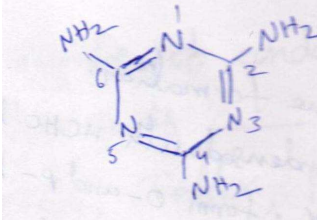
(23) From the concept

(24)



Natural rubber (cis polymer)

(25)



2,4,6 – Triamino -1,3,5- triazine

(26) Bakelite is thermosetting polymer

(27) Electron releasing group such as $-CH_3$, $-OCH_3$ activate the monomer towards cationic polymerization.

$-NO_2$ is a electron with drawing group.

(28) Neoprene is an additional polymer

(29) Teflon , polyacrylonitrite and PMMA are additional, nylon-6,6, Dacron and Bakelite are condensation

(30) Homopolymers – polyacrylonitrite , neoprene, polybutadine, Nylon-6