doubtnut
India's Number 1 Education App

CHEMISTRY

BOOKS - MTG CHEMISTRY (ENGLISH)

POLYMERS

Mcqs

1. Glycogen , a naturally occurring polymer stored in animals is a

A. monosaccharide

B. disaccharide

C. trisaccharide

D. polysaccharide

Answer: D

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2. Identify the type of polymer

(i) $-A-A-A-A-A-A-$

(ii) $-A-B-B-A-A-A-B-A-$

A. (i) Homopolymer, (ii) Copolymer

B. (i) Natural polymer (ii) Synthetic polymer

C. (i) Linear polymer , (ii) Branched polmer

D. (i) Fibre , (ii) Elastomer

Answer: A

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3. Which of the following is a homopolymer ?

A. Bakelite

B. Nylon 6,6

C. Neoprene

D. Buna-S

Answer: C

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4. Which of the following sets contain only addition homopolymers ?

A. Polythene , natural rubber , cellulose

B. Nylon , polyester , melamine resin

C. Neoprene , PVC , polythene

D.

Answer: D

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5. Teflon and neoprene are

A. copolymers

B. monomers

C. homopolymers

D. condensation polymers.

Answer: C

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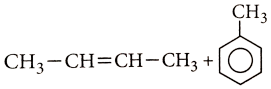
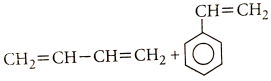
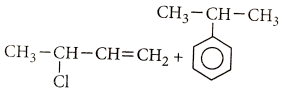
6. The monomer of Buna-S are :

A. 

B. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH = CH_2 + CH_2 = CH - CN$

C. 

D. 

Answer: C

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7. The S in buna-S refers to

A. sulphur

B. styrene

C. sodium

D. salicylate .

Answer: B

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8. Which factor imparts the crytalline nature to a polymer like nylon?

A. Strong intermolecular forces like hydrogen bonding between chains.

B. van der Waals forces between the polymeric chain

C. Close packing of the chains due to ionic bonding between the chains .

D. Three- dimensional network of chains.

Answer: A

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9. Arrange the following polymers in an increasing order of intermolecular forces , fibre, plastic , elastomer .

A. Elastomer $<$ Fibre $<$ Plastic

B. Elastomer $<$ Plastic $<$ Fibre

C. Plastic $<$ Elastomer $<$ Fibre

D. Fibre $<$ Elastomer $<$ Plastic

Answer: B

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10. Which of the following is not true for themoplastic polymers ?

A. Thermoplastics are linear polymers .

B. They soften and melt on heating .

C. Molten polymer can be remoulded into any shape .

D. they cannot be remoulded into different shape

Answer: D

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11. Which of the following are thermoplastic polmers ?

A. Polythene , urea-formaldehyde , polyvinyls

B. Bakelite , polythene, polystyrene

C. Polythene, polystyrene, polyvinyls

D. Urea-formaldehyde, polystyrene, bakelite

Answer: C

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12. Which of the following is not a characteristics of thermosetting polymers-

A. Linear or slightly branched long chain polymers

B. Heavivly branched and cross - linked polymers

C. Become infusible on moulding .

D. Cannot be remoulded or resused on heating

Answer: A

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13. Bakelite is an example of

A. elastomer

B. fibre

C. thermoplastic

D. thermosetting .

Answer: D

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14. Fill up the blanks with suitable reagents to show synthesis of polyvinyl chloride .

$$CH \equiv CH \xrightarrow{X} CH_2 \equiv CHCl \xrightarrow{Y} \left(- \ - CH_2 - CJCl - \overset{Cl}{\overset{|}{C}}H - \ - \right)_n$$

A. $X = HCl$, $HgCl_2$,Y=Polymerisation,peroxide

B. $X = Cl_2$, $FeCl_3$,Y=Polymerisation,heat

C. $X = HCl$, $CuCl$,$Y = H_2O$, H^+

D. $X = HCl$, $HgCl_2$, Y=Pt,high pressure

Answer: A

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15. Which of the following is not an example of addittion polymer ?

A. Polythene

B. Polystyrene

C. Neoprene

D. Nylon 6,6

Answer: D

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16. Which of the following sets contains only addition polymers?

A. Polythylene , polypropylene , terylene

B. Polyethlene , PVC, acrilan

C. Buna-S, nylon , polybutadiene

D. Bakelite , PVC, polyethylene

Answer: B

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17. Which of the following polymers have vinylic monomer units

A. Acrilan

B. Nylon

C. Polystyrene

D. Neoprene

Answer: B

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18. The monomers used in addition polymerisation through free radical should be every pure because

A. the traces of impurities act like inhibitors resulting in short chain polymers

B. the impurities result in formation of different products

C. the polymer formed is impure

D. catalyst does not function in presence of impurities .

Answer: A

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19. During addition polymerisation of ethene molecules , the initiator like benzoyl peroxide , acetyl peroxide , tert-butyl peroxide , etc ., are added . Their function is to

A. ensure anti-Markownikoff's addition of molecules to form polymer

B. give cations during the reaction which join together to form bigger molecules

C. decrease the temperature of the reaction mixture

D. generate free radical which adds to the monomer to give bigger free radical .

Answer: D

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20. Low density polythene (LDP) is used in the insulation of electricity carrying wires and manufacture of flexible pipes and squeeze bottles because

A. it is tough , hard and rigid

B. it is chemically inert , tough , flexible and poor conductor of electricity

C. it is very tough , good conductor of electricity and flexible

D. it is chemically inert , very soft , water absorbent and poor conductor of heat .

Answer: B

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21. High density polythene is obtained by

A. polymerisation of ethene in a hydrocarbon solvent in the presence of Ziegler - Natta catalyst

B. polymerisation of ethene under high pressure and temperature

C. free radical polymerisation of ethene at low temperature in presence of peroxide

D. polymerisation of ethene in presence of carbon tetrachloride

Answer: A

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22. High density polymer is not

A. a. Tough

B. b. Hard

C. c. Inert

D. d. Highly branched

Answer: D

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23. The difference in the densities of low density polymer (LDP) and high density polymers (HDP) is due to the fact that

A. a. LDP are highly branched structures while HDP consists of closely packed linear molecules

B. b. LDP are linear chains while HDP are branched chains of polythene

C. c. both LDP and HDP are unbranched linear chains with different lengths

D. d. at high temperature , the density of polymer is reduced .

Answer: A

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24. Composition of Ziegler-Natta catalyst is

A. $(Et_3)_3Al \cdot TiCl_2$

B. $(Me)_3Al \cdot TiCl_2$

C. $(Et)_3Al \cdot TiCl_4$

D. $(Et)_3Al \cdot PtCl_4$

Answer: C

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25. Which of the following polymers is not correctly matched ?

A. Formation of dacron-Step growth polmerisation

B. Formation of polytetrafluoroethene- step growth polymerisation

C. Formation of polythene-Chain growth polymerisation in presence of benzoyl peroxide

D. Formation of polyacylonitrile - Chain growth polymerisation in presence of peroxide

Answer: B

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26. Terylene is a condensation polymer of ethylene glycol and

A. bernzoic acid

B. phthalic acid

C. tetraphthalic acid

D. salicylic acid .

Answer: C

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27. Nylon 6,6 is obained by condensation polymerisation of

A. adipic acid and ethylene glycol

B. adipic and hexamethylenediamine

C. terephtalic acid and ethylene glycol

D. adipic acid and phenol.

Answer: B

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28. Synthetic polymer prepared by using caprolactam is known as

A. terylene

B. teflon

C. nylon 6

D. Neoprene

Answer: C

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29. Which of the following is a condensation polymer ?

A. Teflon

B. PVC

C. Polyester

D. Neoprene

Answer: C

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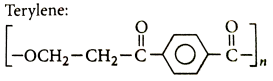
30. Which of the following is not correctly matched ?

A. Neoprene : $\left[-CH_2 - \underset{Cl}{C} = CH - CH_2 - \right]_n$

B. Nylon-6,6: $\left[-NH-(CH_2)_6-NH-CO(CH_2)_4-\overset{O}{\overset{\|}{C}}- \right]_n$

C. Terylene: 

D. Teflon: $[- \ - CF_2 - CF_2 - \ -]_n$

Answer: C

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31. Formation of nylons and polyesters are called step growth polymerisation because

A. the polymers are formed by adding a monomer step by step

B. the polymers are formed by condensation and monomers are joined by loss of simple molecules like water

C. the monomers used for condensation are unsaturated molecules

D. the polymers are formed by addition of a large number of free readicals formed by monomers .

Answer: B

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32. Polymer which has amide linkage is

A. nylon-6,6

B. terylene

C. teflon

D. bakelite

Answer: A

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33. Dacron is an example of:

A. polyamides

B. polypropenes

C. polyacrylonitrile

D. polyesters .

Answer: D

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34. Which of the following polymers does not involve cross-linkages ?

A. Vulcanised rubber

B. Bakelite

C. Melamine

D. Teflon

Answer: D

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35. Which among the following is a cross-linked polymer ?

A. Polyesters

B. Glycogens

C. Melamine-formaldehyde

D. Polyvinyl chloride

Answer: C

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36. Novolac on heating with formaldehyde undergoes _____ to form an infusible solid mass called _____ .

A. a. polymerisation , melamine

B. b. vulcanisation , resin

C. c. cross-linking, bakelite

D. d. condensation, polystyrene

Answer: C

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37. Natural rubber is a polymer of

A. a. 1,1-dimethylbutadiene

B. b. 2-methyl-1,3-butadiene

C. c. 2-chlorobuta-1,3-diene

D. d. 2-chlorobut-2-ene.

Answer: B

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38. Which of the following is not an example of rubber ?

A. Polychloroprene

B. Buna-N

C. Butadiene-styrene copolymer

D. Polyacrylonitrile

Answer: D

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39. Why does cis-polyisoprene exhibit elasticity ?

A. it is soft and soluble in no - polar solvent

B. it is unsaturated and porous

C. it has a coled stucture and chains held together by weak van der Waals forces

D. it has a fibrous sturcture and reactive sites at various double bonds.

Answer: C

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40. Heating rubber with sulphur is known as

A. galvanisation

B. bessmerisation

C. vulcanisation

D. sulphonation .

Answer: C

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41. In vulcanization 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 .

Answer: B

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42. Which of the following represents chloroprene , the monmer of neoprene ?

A. $CH_2 = CH - CH = CH_2Cl$

B. $CH_2 = \underset{\underset{CH_3}{|}}{C} - CH = CHCl$

C. $CH_2 = \underset{\underset{Cl}{|}}{C} - CH = CH_2$

D. $CH_2 = \underset{\underset{CH_3}{|}}{C} - \underset{\underset{Cl}{|}}{C} = CH_2$

Answer: C

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43. Which one of the following statements is wrong ?

A. PVC stand for polyvinyl chloride .

B. PTFE stands for teflon .

C. PMMA stands for polymethyl methyl acrylate .

D. Buna-S stands for natural rubber .

Answer: D

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44. Buna-N is used in making oil seals and tank linings, etc. because

A. it is resistant to the action of lubricating oil and organic sovlents

B. it is more elastic than natural rubber

C. it can be stretched twice its length .

D. it does not melt at high temperatures.

Answer: A

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45. Which of the following is not ture about polymers ?

A. Polymers are high moleculars mass macromolecules .

B. Polymers may be of natural or synthetic origin .

C. Condensation polymers are made up to one type of monomers only.

D. They have high viscocity and do not carry any charge .

Answer: C

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46. Synthetic biopolymer , PHBV is made up to the following monomers ,

A. 3-hydroxybutanoic acid +3-hydroxypentanoic acid

B. 2-hydroxybutaoic acid +2-hydoxypropanoic acid

C. 3-chlorobutanoic acid +3-chloropentanoic acid

D. 2-chlorobutanoic acid +3-methylpentanoic acid.

Answer: A

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47. Which of the following is a biodegradable synthetic polymer ?

A. Aliphatic polyesters

B. PHBV

C. Nylon-2-nylon-6

D. All of these

Answer: D

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48. The monomers of biodegradable polymer , nylon 2-nylon 6 are

A. glycine + adipic acid

B. glycol +phthalic acid

C. phenol + urea

D. glycine + amino caproic acid .

Answer: D

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49. Choose the correct statements from the following .

A. Nylon 2-nylon 6 is a polyamide copolymer of alanine .

B. 3-Hydroxy pentanoic acid is a monomer of Nylon 2-nylon 6.

C. PHBV can never be used in the manufacture of orthopaedic devices.

D. None of these .

Answer: D

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50. Few polymers are matched with their uses. Point out the wrong match

.

A. a.Polyesters- Fabric , tyre cords , safety belts

B. b.Nylon 6- Ropes , tyre cords , fabrics

C. c.Bakelite -Packaging industry , lubricant

D. d.Teflon utensils - Oil seals , gaskets , non-stick

Answer: C

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51. Glyptal is a polymer of

A. malonic acid + ethylene glycol

B. phthalic acid + ethylene glycol

C. maleic acid + formaldehyde

D. acetic acid + phenol .

Answer: B

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52. Mark the incorrect used of the polymer.

A. High density polythene - Buckets , pipes

B. Nylon 6,6 -Ropes , bristles for brushes

C. Orlon - Synthetic wool , carpets

D. Glyptal - Electrical switches , combs

Answer: D

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Exemplar Problems

1. Which of the following polymers of glucose is stored by animals?

A. Cellulose

B. Amylose

C. Amylopectin

D. Glycogen

Answer: D

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2. Which of the following is not a semi-synthetic polymer ?

A. cis-Polyisoprene

B. Cellulose nitrate

C. Cellulose acetate

D. Vulcanised rubber

Answer: A

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3. The commercial name of polyacrylonitrile is

A. dacron

B. orlon (arilan)

C. PVC

D. bakelite .

Answer: B

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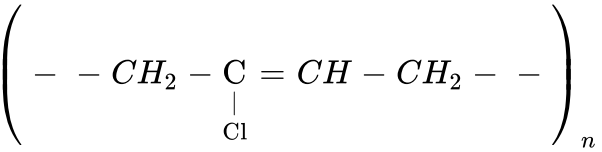
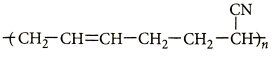
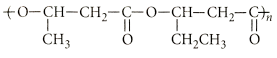
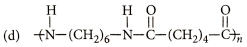
4. Which of the following polymers is biodegradable ?

A. 

B. 

C. 

D. 

Answer: C

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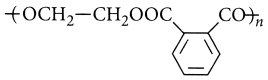
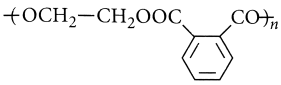
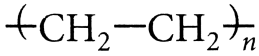
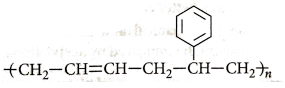
5. In which of the following polymers ethylene glycol is one of the monomer units ?

A. 

B. 

C. 

D. 

Answer: A

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6. Which of the following statements is not true about low density polythene ?

A. Tough

B. Hard

C. Poor conductor of electricity

D. Highly branched structure

Answer: B

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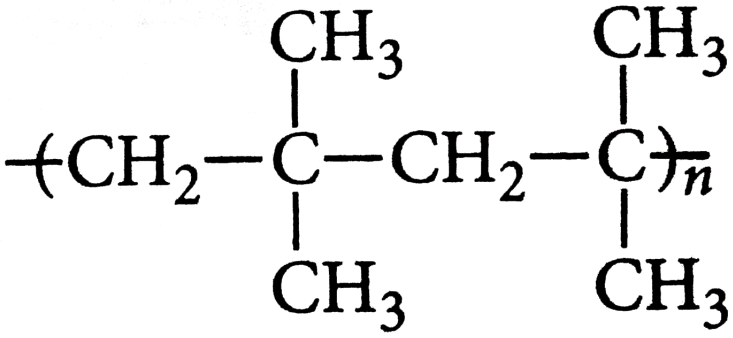
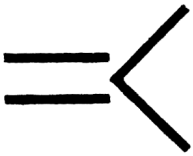
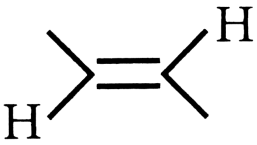
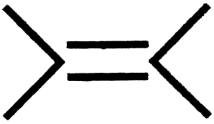
7. 

is a polymer having monomer units _____

A. 

B. 

C. 

D. 

Answer: A

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8. Which of the following polymers, need atleast one diene monomer for their preparation ?

A. dacron

B. Novolac

C. Neoprene

D. Teflon

Answer: C

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9. Which of the following polymers are used as fibre ?

A. Nylon

B. Polythetrafluoroethene

C. Terylene

D. Buna-S

Answer: A

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Assertion And Reason

1. Assertion : Buna-S is a copolymer .

Reason : Buna-S is formed by condensation reaction between two different monomers.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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2. Assertion : Thermoplastics become hard on heating and soft on cooling.

Reason : Themoplastics are cross - linked polymers which are soluble in many organic solvents.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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3. Assertion : Strong interparticle forces exist in thermosetting polymers.

Reason : Thermosetting polymers are heavily cross linked.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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4. Assertion : Low density polythene is used to make buckets , dustbins, bottles etc.

Reason : Low density polythene consists of linear molecules and has close packing .

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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5. Assertion : Teflon is used to making oil seals, gaskets and non-stick surface coating .

Reason : Teflon is chemically inert and resistant to attack by corrosive reagents.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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6. Assertion : Dacron is formed by step growth polymerisation of monomer units .

Reason : Dacron fibre is crease resistant .

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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7. Assertion : The correct order of increasing molecular forces in the given polymres is : Buna-S, Polythene, Nylon -6,6

Reason : The properties of polymers depends upon the molecular forces.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

8. Assertion : Bakelite is a thermosetting polymer.

Reason : Bakelite is formed by cross- linking of novolac and formaldehyde

.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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9. Assertion (A) Network polymers are thermosetting

Reason (R) Network Polymers have high molecular mass

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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10. Assertion : The physical properties of natural rubber can be improved by vulcanisation .

Reason : Neoprene is the monomer of natural rubber .

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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11. Assertion : In vulcanisation of rubber , sulphur cross links are introduced.

Reason : Vulcanisation is a free radical intiated chain reaction.

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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12. Assertion : The monomer of neoprene is 1, 3- butadiene .

Reason : Neopren is highly inflammable .

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: D

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13. Assertion : Most of the synthetic polmers are non-biodegradable .

Reason : During polymerisation , the polymers become toxic and non-biodegradable .

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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14. Assertion : PHBV is a biodegradable polymer.

Reason : PHBV is an aliphatic polyester .

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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15. Assertion (A) Rayon is a semisynthetic polymer and is taken as a better choice than cotton fabric.

Reason (R) Mechanical and aesthetic properties of cellulose can be improved by Acetylation

A. If both assertion and reason are true and reason is the correct explanation of assertion .

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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Classification Of Polymers

1. Glycogen , a naturally occurring polymer stored in animals is a

A. monosaccharide

B. disaccharide

C. trisaccharide

D. polysaccharide

Answer: D

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2. Identify the type of polymer

(i) $-A-A-A-A-A-A-$

(ii) $-A-B-B-A-A-A-B-A-$

A. (i) Homopolymer, (ii) Copolymer

B. (i) Natural polymer (ii) Synthetic polymer

C. (i) Linear polymer , (ii) Branched polmer

D. (i) Fibre , (ii) Elastomer

Answer: A

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3. Which of the following is a homopolymer ?

A. Bakelite

B. Nylon 6,6

C. Neoprene

D. Buna-S

Answer: C

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4. Which of the following sets contain only addition homopolymers ?

A. Polythene , natural rubber , cellulose

B. Nylon , polyester , melamine resin

C. Neoprene , PVC , polythene

D.

Answer: D

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5. Teflon and neoprene are

A. copolymers

B. monomers

C. homopolymers

D. condensation polymers.

Answer: C

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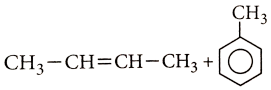
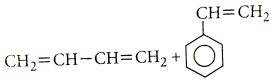
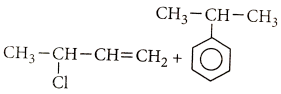
6. The monomer of Buna-S are :

A. 

B. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH = CH_2 + CH_2 = CH - CN$

C. 

D. 

Answer: C

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7. The S in buna-S refers to

A. sulphur

B. styrene

C. sodium

D. salicylate .

Answer: B

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8. Which factor imparts the crytalline nature to a polymer like nylon?

A. Strong intermolecular forces like hydrogen bonding between chains.

B. van der Waals forces between the polymeric chain

C. Close packing of the chains due to ionic bonding between the chains .

D. Three- dimensional network of chains.

Answer: A

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9. Arrange the following polymers in an increasing order of intermolecular forces , fibre, plastic , elastomer .

A. Elastomer $<$ Fibre $<$ Plastic

B. Elastomer $<$ Plastic $<$ Fibre

C. Plastic $<$ Elastomer $<$ Fibre

D. Fibre $<$ Elastomer $<$ Plastic

Answer: B

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10. Which of the following is not true for themoplastic polymers ?

A. Thermoplastics are linear polymers .

B. They soften and melt on heating .

C. Molten polymer can be remoulded into any shape .

D. they cannot be remoulded into different shape

Answer: D

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11. Which of the following are thermoplastic polmers ?

A. Polythene , urea-formaldehyde , polyvinyls

B. Bakelite , polythene, polystyrene

C. Polythene, polystyrene, polyvinyls

D. Urea-formaldehyde, polystyrene, bakelite

Answer: C

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12. Which of the following is not a characteristics of thermosetting polymers-

A. Linear or slightly branched long chain polymers

B. Heavivly branched and cross - linked polymers

C. Become infusible on moulding .

D. Cannot be remoulded or resused on heating

Answer: A

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13. Bakelite is an example of

A. elastomer

B. fibre

C. thermoplastic

D. thermosetting .

Answer: D

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14. Match the column I with column II and mark the appropriate choice .

Column I		Column II	
(A)	PVC	(i)	Rubber
(B)	Condensation polymer	(ii)	Thermoplastic
(C)	Polysaccharide	(iii)	Dacron
(D)	Elastomer	(iv)	Natural polymer

A. $(A) \rightarrow (ii)(B) \rightarrow (iii), (C) \rightarrow (iv), (D) \rightarrow (i)$

B. $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iv), (D) \rightarrow (iii)$

C. $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (ii)$

D. $(A) \rightarrow (iv), (B) \rightarrow (i), (C) \rightarrow (iii), (D) \rightarrow (ii)$

Answer: A

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15. Match the column I with column II and mark the appropriate choice .

Column I		Column II	
(A)	Buna-S	(i)	Thermosetting
(B)	Polyamides	(ii)	Fibres
(C)	Polyvinyls	(iii)	Elastomer
(D)	Urea-formaldehyde	(iv)	Thermoplastics

A. $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (i), (D) \rightarrow (ii)$

B. $(A) \rightarrow (ii), (B) \rightarrow (i), (C) \rightarrow (iii), (D) \rightarrow (iv)$

C. $(A) \rightarrow (iii), (B) \rightarrow (ii), (C) \rightarrow (iv), (D) \rightarrow (i)$

D. $(A) \rightarrow (i), (B) \rightarrow (iv), (C) \rightarrow (ii), (D) \rightarrow (iii)$

Answer: C

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Types Of Polymerisation Reaction

1. Fill up the blanks with suitable reagents to show synthesis of polyvinyl chloride .

$$CH \equiv CH \xrightarrow{X} CH_2 \equiv CHCl \xrightarrow{Y} \left(- - CH_2 - CJCl - \overset{Cl}{\overset{|}{C}}H - - \right)_n$$

A. $X = HCl, HgCl_2$,Y=Polymerisation,peroxide

B. $X = Cl_2, FeCl_3$,Y=Polymerisation,heat

C. $X = HCl, CuCl, Y = H_2O, H^+$

D. $X = HCl, HgCl_2$, Y=Pt,high pressure

Answer: A

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2. Which of the following is not an example of addittion polymer ?

A. Polythene

B. Polystyrene

C. Neoprene

D. Nylon 6,6

Answer: D

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3. Which of the following sets contains only addition polymers?

A. Polythylene , polypropylene , terylene

B. Polyethlene , PVC, acrilan

C. Buna-S, nylon , polybutadiene

D. Bakelite , PVC, polyethylene

Answer: B

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4. Which of the following polymers have vinylic monomer units

A. Acrilan

B. Nylon

C. Polystyrene

D. Neoprene

Answer: B

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5. The monomers used in addition polymerisation through free radical should be every pure because

A. the traces of impurities act like inhibitors resulting in short chain polymers

B. the impurities result in formation of different products

C. the polymer formed is impure

D. catalyst does not function in presence of impurities .

Answer: A

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6. During addition polymerisation of ethene molecules , the initiator like benzoyl peroxide , acetyl peroxide , tert-butyl peroxide , etc ., are added . Their function is to

A. ensure anti-Markownikoff's addition of molecules to form polymer

B. give cations during the reaction which join together to form bigger molecules

C. decrease the temperature of the reaction mixture

D. generate free radical which adds to the monomer to give bigger free radical .

Answer: D

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7. Low density polythene (LDP) is used in the insulation of electricity carrying wires and manufacture of flexible pipes and squeeze bottles because

A. it is tough , hard and rigid

B. it is chemically inert , tough , flexible and poor conductor of electricity

C. it is very tough , good conductor of electricity and flexible

D. it is chemically inert , very soft , water absorbent and poor conductor of heat .

Answer: B

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8. High density polythene is obtained by

A. polymerisation of ethene in a hydrocarbon solvent in the presence of Ziegler - Natta catalyst

B. polymerisation of ethene under high pressure and temperature

C. free radical polymerisation of ethene at low temperature in presence of peroxide

D. polymerisation of ethene in presence of carbon tetrachloride

Answer: A

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9. High density polymer is not

A. a. Tough

B. b. Hard

C. c. Inert

D. d. Highly branched

Answer: D

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10. The difference in the densities of low density polymer (LDP) and high density polymers (HDP) is due to the fact that

A. a. LDP are highly branched structures while HDP consists of closely packed linear molecules

B. b. LDP are linear chains while HDP are branched chains of polythene

C. c. both LDP and HDP are unbranched linear chains with different lengths

D. d. at high temperature , the density of polymer is reduced .

Answer: A

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11. Composition of Ziegler-Natta catalyst is

A. $(Et_3)_3Al \cdot TiCl_2$

B. $(Me)_3Al \cdot TiCl_2$

C. $(Et)_3Al \cdot TiCl_4$

D. $(Et)_3Al \cdot PtCl_4$

Answer: C

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12. Which of the following polymers is not correctly matched ?

A. Formation of dacron-Step growth polmerisation

B. Formation of polytetrafluoroethene- step growth polymerisation

C. Formation of polythene-Chain growth polymerisation in presence of benzoyl peroxide

D. Formation of polyacylonitrile - Chain growth polymerisation in presence of peroxide

Answer: B

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13. Terylene is a condensation polymer of ethylene glycol and

A. bernzoic acid

B. phthalic acid

C. tetraphthalic acid

D. salicylic acid .

Answer: C

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14. Nylon 6,6 is obained by condensation polymerisation of

A. adipic acid and ethylene glycol

B. adipic and hexamethylenediamine

C. terephtalic acid and ethylene glycol

D. adipic acid and phenol.

Answer: B

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15. Synthetic polymer prepared by using caprolactam is known as

A. terylene

B. teflon

C. nylon 6

D. Neoprene

Answer: C

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16. Which of the following is a condensation polymer ?

A. Teflon

B. PVC

C. Polyester

D. Neoprene

Answer: C

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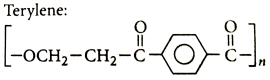
17. Which of the following is not correctly matched ?

A. Neoprene : $\left[-CH_2 - \underset{Cl}{C} = CH - CH_2 - \right]_n$

B. Nylon-6,6: $\left[-NH-(CH_2)_6-NH-CO(CH_2)_4-\overset{O}{\overset{||}{C}}- \right]_n$

C. Terylene: 

D. Teflon: $[\ -\ -CF_2-CF_2-\ -\ ]_n$

Answer: C

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18. Formation of nylons and polyesters are called step growth polymerisation because

A. the polymers are formed by adding a monomer step by step

B. the polymers are formed by condensation and monomers are joined by loss of simple molecules like water

C. the monomers used for condensation are unsaturated molecules

D. the polymers are formed by addition of a large number of free readicals formed by monomers .

Answer: B

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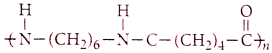
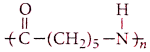
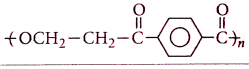
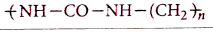
19. Match the polymers given in column I with the monomers in column II and mark the appropriate choice.

	Column I		Column II
(A)		(i)	Ethylene glycol + terephthalic acid
(B)		(ii)	Urea + formaldehyde
(C)		(iii)	Hexamethylenediamine + adipic acid
(D)		(iv)	Caprolactam

A. $(A) \rightarrow (ii), (B) \rightarrow (i), (C) \rightarrow (iii), (D) \rightarrow (iv)$

B. $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (ii)$

C. $(A) \rightarrow (i), (B) \rightarrow (iii), (C) \rightarrow (ii), (D) \rightarrow (iv)$

D. $(A) \rightarrow (iv), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (i)$

Answer: B

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20. Polymer which has amide linkage is

A. nylon-6,6

B. terylene

C. teflon

D. bakelite

Answer: A

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21. Dacron is an example of:

A. polyamides

B. polypropenes

C. polyacrylonitrile

D. polyesters .

Answer: D

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22. Which of the following polymers does not involve cross-linkages ?

A. Vulcanised rubber

B. Bakelite

C. Melamine

D. Teflon

Answer: D

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23. Which among the following is a cross-linked polymer ?

A. Polyesters

B. Glycogens

C. Melamine-formaldehyde

D. Polyvinyl chloride

Answer: C

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24. Novolac on heating with formaldehyde undergoes _____ to form an infusible solid mass called _____ .

A. a. polymerisation , melamine

B. b. vulcanisation , resin

C. c. cross-linking, bakelite

D. d. condensation, polystyrene

Answer: C

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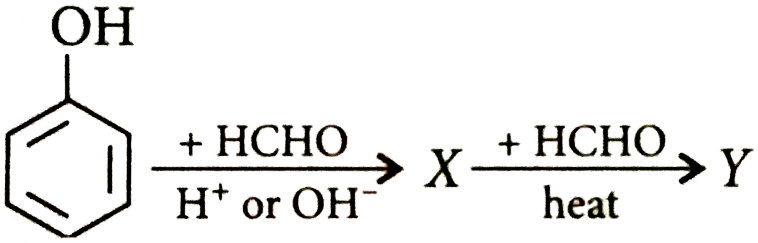
25. Identify X and Y in the given polymerisation reactions .



A. a.X=Bakelite, Y=Novolac

B. b.X=Novolac, Y=Melamine

C. c.X=Bakelite , Y=Melamine

D. d.X=Novolac, Y=Bakelite

Answer: D

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26. Natural rubber is a polymer of

A. a. 1,1-dimethylbutadiene

B. b. 2-methyl-1,3-butadiene

C. c. 2-chlorobuta-1,3-diene

D. d. 2-chlorobut-2-ene.

Answer: B

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27. Which of the following is not an example of rubber ?

A. Polychloroprene

B. Buna-N

C. Butadiene-styrene copolymer

D. Polyacrylonitrile

Answer: D

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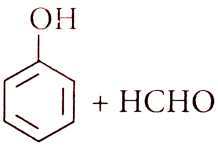
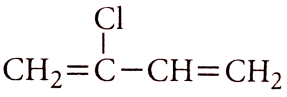
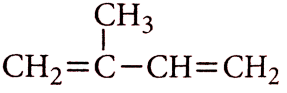
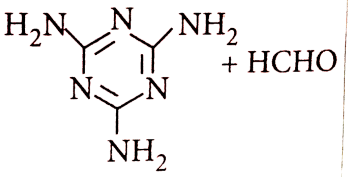
28. Match the polymers given in column I with monomers incolumn II and mark the appropriate choice.

	Column I		Column II
(A)	Melamine-formaldehyde polymer	(i)	
(B)	Bakelite	(ii)	
(C)	Neoprene	(iii)	
(D)	Natural rubber	(iv)	

A. $(A) \rightarrow (iv), (B) \rightarrow (ii), (C) \rightarrow (i), (D) \rightarrow (iii)$

B. $(A) \rightarrow (i), (B) \rightarrow (iii), (C) \rightarrow (iv), (D) \rightarrow (ii)$

C. $(A) \rightarrow (iv), (B) \rightarrow (i), (C) \rightarrow (ii), (D) \rightarrow (iii)$

D. $(A) \rightarrow (ii), (B) \rightarrow (iv), (C) \rightarrow (iii), (D) \rightarrow (i)$

Answer: C

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29. Why does cis-polyisoprene exhibit elasticity ?

A. it is soft and soluble in no - polar solvent

B. it is unsaturated and porous

C. it has a coled stucture and chains held together by weak van der Waals forces

D. it has a fibrous sturcture and reactive sites at various double bonds.

Answer: C

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30. Heating rubber with sulphur is known as

A. galvanisation

B. bessmerisation

C. vulcanisation

D. sulphonation .

Answer: C

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31. In vulcanization 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 .

Answer: B

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32. Match the column I with column II and mark the appropriate choice.

Column I		Column II	
(A)	Natural polymer	(i)	Rayon
(B)	Addition polymer	(ii)	Bakelite
(C)	Copolymer	(iii)	Silk
(D)	Semi-synthetic polymer	(iv)	Neoprene

A. $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iv), (D) \rightarrow (iii)$

B. $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (ii), (D) \rightarrow (i)$

C. $(A) \rightarrow (ii), (B) \rightarrow (iii), (C) \rightarrow (i), (D) \rightarrow (iv)$

D. $(A) \rightarrow (iv), (B) \rightarrow (i), (C) \rightarrow (iii), (D) \rightarrow (ii)$

Answer: B

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33. Which of the following represents chloroprene , the monmer of neoprene ?

A. $CH_2 = CH - CH = CH_2Cl$

B. $CH_2 = \underset{\underset{CH_3}{|}}{C} - CH = CHCl$

C. $CH_2 = \underset{\underset{Cl}{|}}{C} - CH = CH_2$

D. $CH_2 = \underset{\underset{CH_3}{|}}{C} - \underset{\underset{Cl}{|}}{C} = CH_2$

Answer: C

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34. Match the column I with column II and mark the appropriate choice .

Column I (Polymers)		Column II (Monomers)	
(A)	Buna-N	(i)	Phthalic acid and ethylene glycol
(B)	Nylon-6,6	(ii)	Terephthalic acid and ethylene glycol
(C)	Dacron	(iii)	Hexamethylene diamine and adipic acid
(D)	Glyptal plastic	(iv)	Acrylonitrile and butadiene

A. $(A) \rightarrow (ii), (B) \rightarrow (iii), (C) \rightarrow (iv), (D) \rightarrow (i)$

B. $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iv), (D) \rightarrow (iii)$

C. $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (ii)$

D. $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (ii), (D) \rightarrow (i)$

Answer: D

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35. Which one of the following statements is wrong ?

A. PVC stand for polyvinyl chloride .

B. PTFE stands for teflon .

C. PMMA stands for polymethyl methyl acrylate .

D. Buna-S stands for natural rubber .

Answer: D

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36. Buna-N is used in making oil seals and tank linings, etc. because

A. it is resistant to the action of lubricating oil and organic sovlents

B. it is more elastic than natural rubber

C. it can be stretched twice its length .

D. it does not melt at high temperatures.

Answer: A

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37. Which of the following is not ture about polymers ?

A. Polymers are high moleculars mass macromolecules .

B. Polymers may be of natural or synthetic origin .

C. Condensation polymers are made up to one type of monomers only.

D. They have high viscocity and do not carry any charge .

Answer: C

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38. Synthetic biopolymer , PHBV is made up to the following monomers ,

A. 3-hydroxybutanoic acid +3-hydroxypentanoic acid

B. 2-hydroxybutaoic acid +2-hydoxypropanoic acid

C. 3-chlorobutanoic acid +3-chloropentanoic acid

D. 2-chlorobutanoic acid +3-methylpentanoic acid.

Answer: A

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39. Which of the following is a biodegradable synthetic polymer ?

A. Aliphatic polyesters

B. PHBV

C. Nylon-2-nylon-6

D. All of these

Answer: D

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40. The monomers of biodegradable polymer , nylon 2-nylon 6 are

A. glycine + adipic acid

B. glycol +phthalic acid

C. phenol + urea

D. glycine + amino caproic acid .

Answer: D

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41. Choose the correct statements from the following .

A. Nylon 2-nylon 6 is a polyamide copolymer of alanine .

B. 3-Hydroxy pentanoic acid is a monomer of Nylon 2-nylon 6.

C. PHBV can never be used in the manufacture of orthopaedic devices.

D. None of these .

Answer: D

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Polymers Of Commercial Importance

1. Few polymers are matched with their uses. Point out the wrong match .

A. a.Polyesters- Fabric , tyre cords , safety belts

B. b.Nylon 6- Ropes , tyre cords , fabrics

C. c.Bakelite -Packaging industry , lubricant

D. d.Teflon utensils - Oil seals , gaskets , non-stick

Answer: C

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2. Glyptal is a polymer of

A. malonic acid + ethylene glycol

B. phthalic acid + ethylene glycol

C. maleic acid + formaldehyde

D. acetic acid + phenol .

Answer: B

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3. Mark the incorrect used of the polymer.

A. High density polythene - Buckets , pipes

B. Nylon 6,6 -Ropes , bristles for brushes

C. Orlon - Synthetic wool , carpets

D. Glyptal - Electrical switches , combs

Answer: D

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4. Match the column I with Column II and makt the appropriate choice .

Column I		Column II	
(A)	Raincoats, hand bags	(i)	PHBV
(B)	Laminated sheets	(ii)	PVC
(C)	Television cabinets	(iii)	Urea-formaldehyde resin
(D)	Orthopaedic devices	(iv)	Polystyrene

A. a. $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (iv)$

B. b. $(A) \rightarrow (iv), (B) \rightarrow (i), (C) \rightarrow (ii), (D) \rightarrow (iii)$

C. c. $(A) \rightarrow (ii), (B) \rightarrow (iii), (C) \rightarrow (iv), (D) \rightarrow (i)$

D. d. $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (ii)$

Answer: C

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Higher Order Thinking Skills

1. Among cellulose, poly (vinyl chloride), nylon and natural rubber, the polymer in which the intermolecular force of attraction is weakest is

A. Nylon 2-nylon 6 is a polyamide copolymer of alanine .

B. poly(vinyl chloride)

C. cellulose

D. natural rubber .

Answer: D

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2. Which of the following alkenes is most reactive towards cationic polymerization?

A. a. $CH_2 = CHCH_3$

B. b. $CH_2 = CHCl$

C. c. $CH_2 = CHC_6H_5$

D. d. $CH_2 = CHCOOCH_3$

Answer: C

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3. Which of the following alkenes is least reactive towards anionic polymerisation ?

A. a. $CH_2 = CHCH_3$

B. b. $CH_2 = CF_2$

C. c. $CH_2 = CHCN$

D. d. $CH_2 = CHC_6H_5$

Answer: A

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4. Formation of polyethylene from calcium carbide takes place as follows

$CaC_2 + 2H_2O \rightarrow Ca(OH)_2 + C_2H_2$

$C_2H_2 + H_2 \rightarrow C_2H_2$

$N(C_2H_4) \rightarrow (-CH_2 - CH_2-)_n$

The amount of polyethylene obtained from $64.1 kg CaC_2$ is

A. 7 kg

B. 14 kg

C. 21 kg

D. 28 kg

Answer: D

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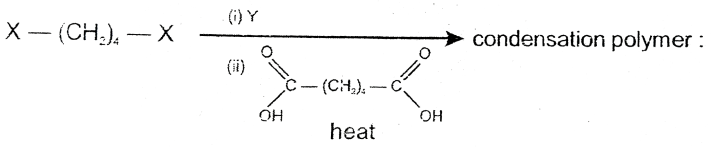
5. The correct functional group X and the reagent//reaction conditions Y in the following scheme are



A. (i) and (ii)

B. (i),(ii) and (iii)

C. (i) and (iii)

D. All of these .

Answer: D

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6. On complete hydrogenation, natural rubber produces

A. ethylene-propylene copolymer

B. vulcanised rubber

C. polyproylene

D. polybutylene .

Answer: A

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7. Natural rubber or raw rubber consists of basic material latex which is a dispersion of isoprene .During the treatement this isoprene forms a high molecular wiehg polymer of isoprene. Natural rubber can be obtained from five hundred different species of plants.

In the isoprene polymer all the isoprene have

A. trans-1,4 configuration

B. cis-1,4- configuration

C. both cis- and trans -1,4- configuration

D. none of these .

Answer: B

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8. Natural rubber or raw rubber consists of basic material latex which is a dispersion of isoprene .During the treatement this isoprene forms a high molecular wiehg polymer of isoprene. Natural rubber can be obtained from five hundred different species of plants.

Consider the following properties of rubber ,

(i) Tensils strength of vulcanised rubber is almost ten times more than raw rubber .

(ii) Elasticity of raw rubber is very high .

Choose the correct option .

A. (i) is true (ii) is false.

B. (i) is false (ii) is true.

C. Both (i) and (ii) are true .

D. Both (i) and (ii) are false.

Answer: C

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9. Natural rubber or raw rubber consists of basic material latex which is a dispersion of isoprene .During the treatement this isoprene forms a high molecular wiehg polymer of isoprene. Natural rubber can be obtained from five hundred different species of plants.

Which rubber is not polydiene ?

A. Polyisoprene

B. Polychloroprene

C. Thiokol rubber

D. Nitrile rubber

Answer: C

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Ncert Exemplar

1. Which of the following polymers of glucose is stored by animals?

A. Cellulose

B. Amylose

C. Amylopectin

D. Glycogen

Answer: D

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2. Which of the following is not a semi-synthetic polymer ?

A. cis-Polyisoprene

B. Cellulose nitrate

C. Cellulose acetate

D. Vulcanised rubber

Answer: A

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3. The commercial name of polyacrylonitrile is

A. dacron

B. orlon (arilan)

C. PVC

D. bakelite .

Answer: B

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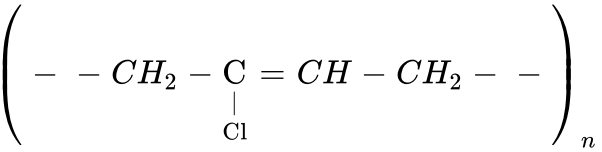
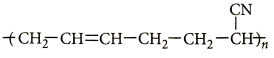
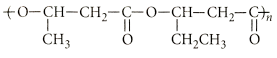
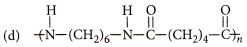
4. Which of the following polymers is biodegradable ?

A. 

B. 

C. 

D. 

Answer: C

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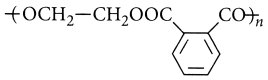
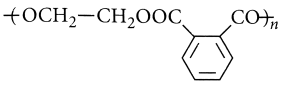
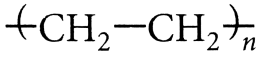
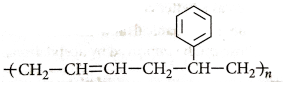
5. In which of the following polymers ethylene glycol is one of the monomer units ?

A. 

B. 

C. 

D. 

Answer: A

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6. Which of the following statements is not true about low density polythene ?

A. Tough

B. Hard

C. Poor conductor of electricity

D. Highly branched structure

Answer: B

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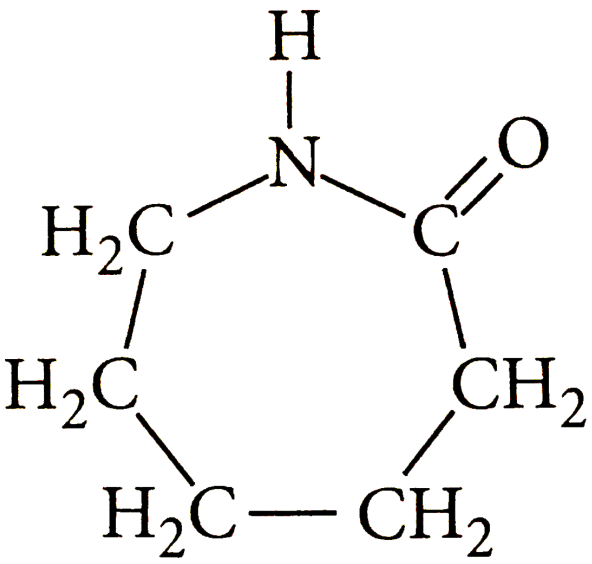
7. Which of the following polmers can be formed by using the following monomer unit ?



A. Nylon -6,6

B. Nylon-2-nylon-6

C. Melamine polymer

D. Nylon-6

Answer: D

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8. Which of the following polymers, need atleast one diene monomer for their preparation ?

A. dacron

B. Novolac

C. Neoprene

D. Teflon

Answer: C

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9. Which of the following polymers are used as fibre ?

A. Nylon

B. Polythetrafluoroethene

C. Terylene

D. Buna-S

Answer: A

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