CHEMISTRY

BOOKS - G.R. BATHLA & SONS CHEMISTRY (HINGLISH)

POLYMERS

Example

1. In a polymer sample, 30% molecules have molecular mass 20000, 40% have molecular mass 30000 and the rest 30% have 60000. Calculate their number average and mass average molecular masses.

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2. A sample of a polymer contains 200 molecules of molecular mass 10^3 each, 300 molecules of molecular mass 10^4 each and 500 molecules each having 10^5 as molecular mass. Calculate $\overline{M}_N$ and $\overline{M}_W$ for the sample

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Problems For Practise

1. Write the structures of the monomers of the following polymers:

(i) Natural rubber (ii) Synthetic rubber(Buna-S) (iii) Nylon-6,6 (iv) Polythene (v) PVC (vi) Teflon (viii) Bakelite (ix) Polyropylene (x) Neoprene (x) Neoprene (xi) Plexiglass (xii) Buna-N

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2. How will you synthesise?

(a) Polyvinyl chloride (PVC) from acetylene

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3. Describe how the following polymers are synthesised?

(i) Nylon-6,6 (ii) Thiokol (iii) Buna-S (iv) Baketite (v) Terylene (vi) Melamine (vii) Nylon-6

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4. Write the free radical mechanism for the polymersation of ethene.

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5. How does the presence of benzoquinone inhibit the free radical polymerisation of a vinyl derivative?

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6. How does the presence of double bonds in rubber molecules influence their structure and reactivity?

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Level A

1. Which of the following is natural polymer ?

A. Proteins

B. Polythene

C. Buna-S

D. bakelite

Answer: A

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Set Ii

1. Which of the following polymers involves cross-linkages?

A. Polythene

B. Bakelite

C. Melamine

D. Vulcanized rubber

Answer: A::B::C

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Passage

1. (A) Polypropylene is an addition polymer.

(R) Polypropylene is polythene.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: C

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Matrix

1. Match the following

Column I	Column II
(a) Cellulose	(p) Natural polymer
(b) Nylon-6,6	(q) Synthetic polymer
(c) Protein	(r) Amide linkage
(d) Sucrose	(s) Glycoside linkage

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2. Match the following

Column I	Column II
(a) Glyptal resin	(p) Polyester
(b) Perlon-L	(q) Copolymer
(c) Nylon-6,10	(r) Homopolymer
(d) PHBV	(s) Polyamide

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3. Match the following

Column I	Column II
(a) *cis*-Polyisoprene	(p) Thermosetting
(b) Neoprene	(q) Thermoplastic
(c) Bakelite	(r) Condensation
(d) Polyester	(s) Biodegradable

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4. Match the following

Column I	Column II
(a) Synthetic rubber	(p) *cis*-Polyisoprene
(b) Natural rubber	(q) Ziegler-Natta catalyst
(c) Condensation	(r) Dacron
(d) Addition	(s) Buta-1,3-diene

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Passage 1

1. Polymers are made up of small molecules called monomers. Polymer which are formed by one type of monomer is called homopolymer and which are formed by more than one type of monomers are called co-polymers. Natural polymers are biodegradable whereas synthetic polymers may or may not be. Addition or chain growth polymerization involves the repeated addition of monomers to the polymer chain. The monomers are unsaturated compounds and this type of polymerization takes place by ionic (cationic or anionic) as well as free radical mechanism. Condensation or step growth polymerization involves a series of condensation reactions between twomonomers. Each monomer normally contains two functional groups. Branch chain polymers may be condensation or addition but cross linked polymers are

always condensation polymers.

Which of these are natural polymers?

A. Proteins

B. Starch

C. Nucleic acid

D. All of these

Answer: D

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Which one of the following polymers is prepared by condensation polymerization?

A. Dacron

B. Teflon

C. Styrene

D. Rubber

Answer: A

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well as free radical mechanism. Condensation or step growth polymerization involves a series of condensation reactions between twomonomers. Each monomer normally contains two functional groups. Branch chain polymers may be condensation or addition but cross linked polymers are always condensation polymers.

Which one of the following is biodegradable polymer?

A. Nuylon6,6

B. Glyptal

C. Cellulose

D. PVC

Answer: C

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4. Polymers are made up of small molecules called monomers. Polymer which are formed by one type of monomer is called homopolymer and which are formed by more than one type of monomers are called co-polymers. Natural polymers are biodegradable whereas synthetic polymers may or may not be. Addition or chain growth polymerization involves the repeated addition of monomers to the polymer chain. The monomers are unsaturated compounds and this type of polymerization takes place by ionic (cationic or anionic) as well as free radical mechanism. Condensation or step growth polymerization involves a series of condensation reactions between twomonomers. Each monomer normally contains two functional groups. Branch chain polymers may be condensation or addition but cross linked polymers are always condensation polymers.

Which of the following is a chain growth polymer?

A. Polystryrene

B. PTFE

C. Polybutadiene

D. All of these

Answer: D

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Which one of the following monomer is most reactive for anionic polymerization?

A. $C_6H_5 - CH = CH_2$

B. $C_6H_5 - \underset{\underset{C_6H_5}{|}}{C} = CH_2$

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

D. $H_2C = CH_2$

Answer: B

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Passage 2

1. A large number of polymers are quite resistant to the environment degradation process and are thus, accumulation of polymeric solid waste material. Certain new biodegrdable synthetic polyermer have been designed and development. Among these the most important ar aliphatic polyeters and polyamides.

PHBV is a copolymer of:

A. glycine and 6-aminohexanoic acid

B. 3-hydroxy butanoic acid and 3-hydroxy pentanoic acid

C. glycollic acid and lactic acid

D. buta-1-3, diene and acrylonitrile

Answer: B

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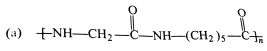
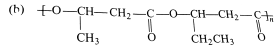
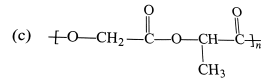
2. A large number of polymers are quite resistant to the environment degradation process and are thus, accumulation of polymeric solid waste material. Certain new biodegrdable synthetic polyermer have been designed and development. Among these the most important ar aliphatic

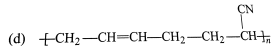
polyeters and polyamides.

Nylon-2-nylon-6

A. 

B. 

C. 

D. 

Answer: A

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3. A large number of polymers are quite resistant to the environment degradation process and are thus, accumulation of polymeric solid waste material. Certain new biodegrdable synthetic polyermer have been designed and

development. Among these the most important ar aliphatic polyeters and polyamides.

Monomer of dextron is:

A. formaldehyde and melamine

B. ethylene glycol and ethylene di isocyanate

C. glycollic acid and lactic acid

D. glycine and 6-aminihezanoic acid

Answer: C

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4. A large number of polymers are quite resistant to the environment degradation process and are thus, accumulation of polymeric solid waste material. Certain new

biodegrdable synthetic polyermer have been designed and development. Among these the most important ar aliphatic polyeters and polyamides.

In the manufacture of homopolymer HDPE, it is a:

A. polymer of ethylene

B. the catalyst

C. used in Ziegler-Natta catalyst,

D. translucent polymer

Answer: D

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5. A large number of polymers are quite resistant to the environment degradation process and are thus,

accumulation of polymeric solid waste material. Certain new biodegrdable synthetic polyermer have been designed and development. Among these the most important ar aliphatic polyeters and polyamides.

In the manufacture of LDPE, it is a:

A. polymer of ethylene

B. temperature 473K, at 1500 atm,

C. transparent polymer,

D. All of these

Answer: D

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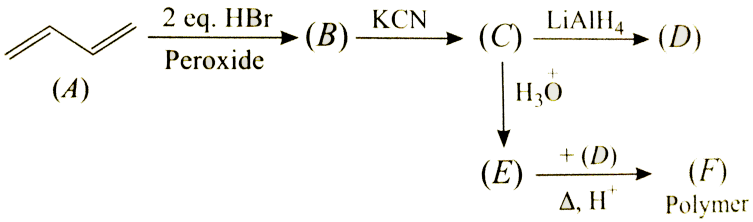
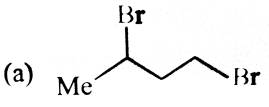
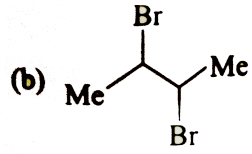
Passage 3

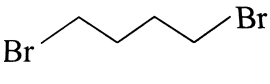
1. What are the products in the following sequence of reaction



Compound (B) is:

A. 

B. 

C. 

D. all of these

Answer: C

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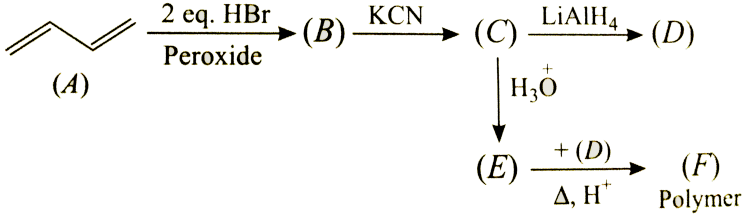
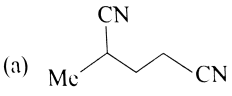
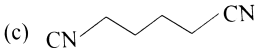
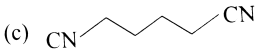
2. What are the products in the following sequence of reaction



Compound (C) is

A. 

B. 

C. 

D. all of these

Answer: C

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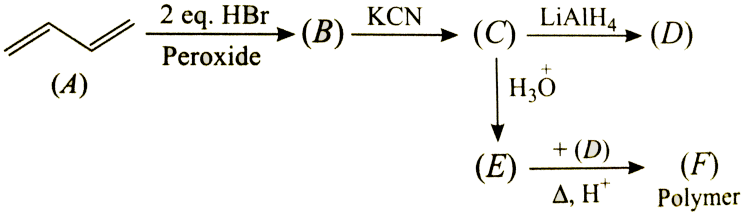
3. What are the products in the following sequence of reaction



Compound (D) is

A. $H_2N(CH_2)_4NH_2$

B. $H_2N(CH_2)_6NH_2$

C. $OHC(CH_2)_4CHO$

D. $OHC(CH_2)_6CHO$

Answer: B

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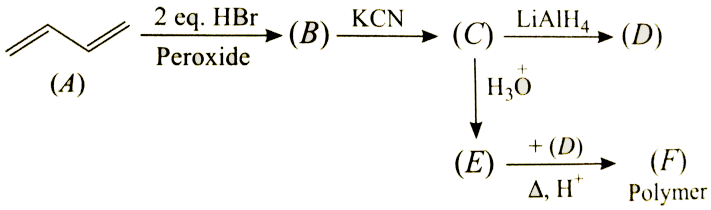
4. What are the products in the following sequence of reaction



Compound (E) is

A. $OHC(CH_2)_4COOH$

B. $OHC(CH_2)_6CHOOH$

C. $HOOC(CH_2)_6COOH$

D. $HOOC(CH_2)_4COOH$

Answer: D

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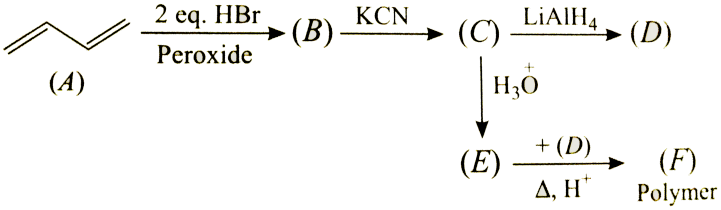
5. What are the products in the following sequence of reaction



Poly (F) is:

A. Nylon-6,6

B. Nylon-6,10

C. Nylon-6

D. Nylon-5

Answer: A

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Others

1. The monomers used in the manufacture of nylon-6,6 are

A. sebacic acid and hexamethylene diamine

B. adipic acid and butadiene

C. seback acid and butadiene

D. seback acid and butadiene

Answer: D

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2. PVC polymer can be prepared by which of the monomers'?

A. $CH_3CH = CH_2$

B. $C_6H_5CH = CH_2$

C. $H_2C = CHCl$

D. $H_2C = CH_2$

Answer: C

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

A. Polyethylene, polypropylene, terylene

B. Polyethylene, PVC, acrilon

C. Buna-S, nylon, polybutadine

D. Bakelite, PVC, polyethylene

Answer: B

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4. Which of the following fibres is not made up of polyamides?

A. Artificial silk

B. Natural silk

C. Wool

D. Nylon

Answer: A

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5. Nylon is:

A. polyester fibre

B. polyamide fibre

C. polythene derivative

D. polyethylene methyl acrylate fibre

Answer: B

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6. Which one of the following statements is wrong?

A. PVC stands 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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7. Repesting unit of polystyrene is

A. $C_2H_5CH = CH_2$

B. $CH_2 = CHCl$

C. $C_6H_{\%}CH = CH_2$

D. $CH_2 = CHCHO$

Answer: C

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8. Which of the following statements is not correct?

A. Caprolactum is the monomer of nylon-6

B. Terylene is a polyester polymer

C. Phenol formaldehyde resin is known as bakelite

D. The monomer of natural rubber is butadiene

Answer: D

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9. Which one of the following is an example of co-polymer?

A. Teflon

B. Buna-S

C. PVC

D. Polypropylene

Answer: B

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10. Natural rubber is a polymer of

A. neoprene

B. isoprene

C. chloroprene

D. butadiene

Answer: B

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11. The process involving heating of rubber with sulphur is called:

A. galvanisation

B. bessemerisation

C. vulcanisation

D. sulphonation

Answer: C

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12. Synthetic polymer which resembler natural rubber is:

A. chloroprene

B. neoprene

C. nylon

D. gyptal

Answer: B

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13. Natural polymer among the following is :

A. nylon

B. cellulose

C. glyptal

D. terylene

Answer: B

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14. 1,3-Butadine and styrene on polymerisation give:

A. buna-S

B. terylene

C. teflon

D. bakelite

Answer: A

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15. Dacron is an example of:

A. polyamide

B. polypropylene

C. polyurethane

D. polyester

Answer: D

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16. Orlon has monomeric unit:

A. isoprene

B. acrolein

C. glycol

D. vinylcyanide

Answer: D

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17. Teflon is a polymer of the monomer:

A. $CHF = CH_2$

B. $CHF = CHCl$

C. $CHCl = CHCl$

D. $F_2Cl = CF_2$

Answer: D

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18. The fibre obtained by the condensation of hexamethylen, diamine and adipic acid is

A. dacron

B. nylon-6,6

C. rayon

D. teflon

Answer: B

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19. Which one of the following is a thermosetting polymer?

A. Nylon-6

B. Nylon-6,6

C. Bakelite

D. SBR

Answer: C

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20. The species which can best serve as an initiator for the cationic polymerization is:

A. HNO_3

B. $LiAlH_4$

C. $BuLi$

D. $AlCl_3$

Answer: D

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21. The repeating unit present in nylon-6 is:

A. $-\left[NH(CH_2)_6NHCO(CH_2)_4CO\right]-$

B. $-\left[CO(CH_2)_6NH\right]-$

C. $-\left[CO(CH_2)_5NH\right]-$

D. $-\left[CO(CH_2)_4NH\right]-$

Answer: C

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22. which of the following is chain growth polymer?

A. Polypropylene

B. Glyptal

C. Nylon-6,6

D. Nylon-6

Answer: A

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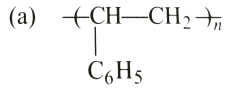
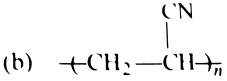
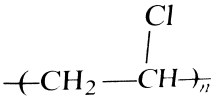
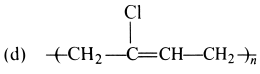
23. Which of the following structures represents neoprene polymer?

A. (a) 

B. (b) 

C. 

D. (d) 

Answer: D

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24. Which of the following is not a biopolymer?

A. Starch

B. Rubber

C. Proteins

D. Nucleus acid

Answer: B

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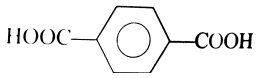
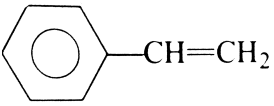
25. Which one of the following sets forms biodegradable polymer?

A. $H_2C = CH - CH$ and $H_2C = CH - CH = CH_2$

B. 

C.

$H_2N - CH_2 - COOH$ and $H_2N - (CH_2)_5 - COOH$

D. $H_2C = CH - CH = CH_2$ and 

Answer: C

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26. Arrangement the following polymers in increasing order of their intermolecular forces. Nylon $6, 6$ Buna-S, Polythene.

A. II, III,I

B. III, II, I

C. I, II, III

D. II, I, III

Answer: A

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27. Neoprene is a polymer of

A. isoprene

B. butadiene

C. styrene

D. chloroprene

Answer: D

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28. A polyamide synthetic polymer prepared by prolonged heating of caprolactum is:

A. nylon-6,6

B. nylon-6

C. nylon-6,10

D. glyptal

Answer: B

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29. The polymer containing strong intermolecular forces, e.g., hydrogen bonding is:

A. natural rubber

B. teflon

C. nylon-6,6

D. polystyrene

Answer: C

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30. Bakelite is formed by polymerization between :

A. acrylonitrile molecules

B. tetra fluoroethene molecules

C. urea and formaldehyde molecules

D. phenol and formaldehyde mo

Answer: D

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31. The polymer used in the manufacture of squeeze bottles is:

A. low density polythene

B. high density polythene

C. polypropene

D. polystyrene

Answer: A

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32. Which one of the following is used to make ' non – stick ' cookware ?

A. Polyvinyl chloride

B. Polytetra fluoroethylene

C. Polystyrene

D. Polyethylene terephthalate

Answer: B

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33. Biodegradable polymer which can be produced from glycine and aminocaproic acid.

A. Buna-N

B. Nylon-6,6

C. Nylon-2-nylon-6

D. PHBV

Answer: C

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34. Which polymer is used in the manufacture of paints and lacquers?

A. Polypropene

B. Polyvinyl chloride

C. Glyptal

D. Bakelite

Answer: C

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35. Which one of the following is a chain growth polymer?

A. Starch

B. Nucleic acid

C. Polystyrene

D. Protein

Answer: C

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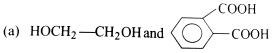
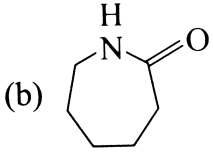
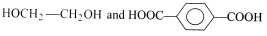
36. Dacron is polymer of

A. 

B. 

C. 

D. $F_2C = CF_2$

Answer: C

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37. Polymer with low degree of polymerisation is known as

A. higher polymer

B. oligomer

C. macromolecules

D. copolymer

Answer: B

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38. Of the following which one is classified as polyester polymer?

A. Bakelite

B. Nylon-6,6

C. Melamine

D. Terylene

Answer: D

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39. Which of the following is a polyamide ?

A. Polythene

B. Nylon-6.6

C. Terylene

D. Buna-S

Answer: B

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40. Buna-S is a polymer of :

A. butadiene only

B. butadiene and nitryl

C. styrene only

D. butadiene and styrene

Answer: D

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41. The monomer used in novolac, a polymer used in paints .

A. butadiene and styrene

B. butadiene and acrylonitrile

C. phenol and formaldehyde

D. melamine and fomaldehyde

Answer: D

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42. Which of the following is used in valcuization of rubber ?

A. SF_6

B. CF_4

C. Cl_2F_2

D. C_2F_2

Answer: A

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43. Structure of (monomer unit of) natural rubber is:

A. $H_2C = \overset{CH_3}{\underset{|}{C}} - CH = CH_2$

B. $H_2C = \overset{Cl}{\underset{|}{C}} - CH = CH_2$

C. $H_2C = \overset{C_6H_5}{\underset{|}{C}} - CH = CH_2$

D. $(- CH_2 - CH_2 -)_n$

Answer: A

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44. A thermoplastic among the following is:

A. bakelite

B. polystyrene

C. terylene

D. urea-fonrnldehyde resin

Answer: B

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45. Which of the following is a nitrogen containing polymer ?

A. bakelite

B. dacron

C. rubber

D. nylon-6,6

Answer: D

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46. In Buna-S symbol 'Bu' stands for:

A. n-butene

B. butadiene

C. 1-butene

D. 2-butene

Answer: B

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47. Which of the following is a biodegradable polymer ?

A. PVC

B. Nylon-6

C. Cellulose

D. Polythene

Answer: C

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48. Which of the following is not a biodegradable polymer?

A. Glyptal

B. Poly hydroxy butyrate-co-hydroxy valerate

C. PHBV

D. Nylon-2-nylon-6

Answer: A

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49. Which of the following rubber is not a polydiene?

A. Nitrile

B. Polyisoprene

C. Polychloroprene

D. Thiokol

Answer: D

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50. Which of the following is a cross-linked polymer?

A. Teflon

B. Orlon

C. Nylon

D. Bakelite

Answer: D

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51. 

A. thermosetting polymer

B. homopolymer

C. co-polymer

D. addition polymer

Answer: C

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52. Which one of the following is not a condensation polymer?

A. Neoprene

B. Melamine

C. Dacron

D. Glyptal

Answer: A

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53. Which of the following polymer can be used for lubrication and as an insulator?

A. SBR

B. PVC

C. PTFE

D. PAN

Answer: C

Watch Video Solution

54. Which one of the following polymers is prepared by condensation polymerization?

A. Buna-S rubber

B. Buna-N

C. Terylene

D. Neoprene

Answer: C

Watch Video Solution

55. Which of the following is a biodegradable polymer?

A. Polythene

B. PVC

C. Bakelite

D. PHBV

Answer: D

Watch Video Solution

56. The raw material used in nylon-6 is:

A. adipic acid

B. phthahc acid

C. ethylene glycol

D. caprolactum

Answer: D

Watch Video Solution

57. Which one is a chain growth polymer?

A. Teflon

B. Nylon-6

C. Nylon-6,6

D. bakelite

Answer: A

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58. Which of the following statements is false?

A. Artificial silk is derived from cellulose

B. Nylon-6,6 is an example of elastomer

C. The repeat unit in natural rubber is isoprene

D. Both starch and cellulose arc polymers of glucose

Answer: B

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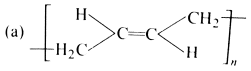
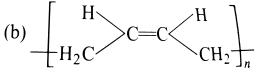
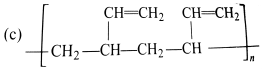
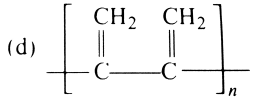
59. Mark out the most unlike form of polymerization of $H_2C = CH - CH = CH_2$

A. 

B. 

C. 

D. 

Answer: D

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60. Terylene is the polyester of:

A. hexamethylene diamine and adipic acid

B. vinyl chloride and formaldehyde

C. melamine and formaldehyde

D. ethylene glycol and terephthalic acid

Answer: D

Watch Video Solution

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

A. $H_2C = CHCH_3$

B. $H_2C = CHCl$

C. $H_2C = CHC_6H_5$

D. $H_2C = CHCO_2CH_3$

Answer: C

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62. Which of the following alkenes is most reactive towai cationic polymerization?

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63. Which one of the following statements is not true?

A. Buna-S is a co-polymer of butadiene and styrene

B. Natural rubber is a 1 ,4-polymer of isoprene

C. In vulcanization, the formation of sulphur bridge between different chains make rubber harder and stronger

D. Natural rubber has the trans-configuration at every double bond.

Answer: D

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64. In vulcanization, the formation of sulphur bridge between different chains make rubber harder ai stronger

A. $H_2C-CH-\overset{Cl}{\underset{|}{C}}=CH_2$ and $H_2C=CH-CH=CH_2$

B. $H_2C=CH-CH=CH_2$ and $H_5C_6-CH=CH_2$

C. $H_2C=CH-CN$ and $H_2C-CH-CH=CH_2$

D. $H_2C=CH-CN$ and $H_2C=CH-\overset{Cl}{C}=CH_2$

Answer: C

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65. Given th polymers,

$A =$ Nylon-6,6, $B =$ Buna-S, $C =$ Polythene

Arrange these in decreasing order of their intermolecular forces:

A. $C < B < A$

B. $B > C > A$

C. $B < C < A$

D. $C < A < B$

Answer: A

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66. The polymer of natural rubber is:

A. all trans isoprene

B. Buna-N

C. all cis isoprene

D. none of these

Answer: C

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67. The condensation polymer among the following is:

A. Proteins

B. PVC

C. polythene

D. Rubber

Answer: A

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68. The catalyst used for olefin polymerization is:

A. Ziegler-Nana catalyst

B. Wilkinson catalyst

C. Raney nickel catalyst

D. Merrifield resin

Answer: A

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

A. nylon

B. Polyvinyl chloride

C. cellulose

D. natural rubber

Answer: D

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70. Which of the following is currently used as a true cord?

A. Bakelite

B. Nylon-6

C. Polyethylene

D. Polypropylene

Answer: B

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71. Ziegler-Nana catalyst is used in the preparation of:

A. high density polythene

B. low density polythene

C. dacron

D. teflon

Answer: A

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72. Which one of the following is not a condensation polymer?

A. Nylon-6 6

B. Nylon-6

C. Dacron

D. Buna-S

Answer: D

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73. Under hydrolysis conditions, the compounds used for preparation of linear polymer and for chain termination, respectively are

A. CH_3SiCl_3 and $Si(CH_3)_4$

B. $(CH_3)_2SiCl_2$ and $(CH_3)_3SiCl$

C. $(CH_3)_2SiCl_2$ and CH_3SiCl_3

D. $SiCl_4$ and $(CH_3)_3SiCl$

Answer: B

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74. Which of the following statements about low density polythene is false ?

A. Its synthesis requires high pressure

B. It is a poor conductor of electricity

C. It is used in the manufacture of buckets, dust-bins, etc

D. It is used in the manufacture of a buckets produces:

Answer: D

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75. On complete hydrogenation, natural rubber produces

A. ethylene propylene copolymer

B. vulcanised rubber

C. polypropylene

D. polybutylene

Answer: A

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76. The formation of which of the following polymers involves hydrolysis reaction ?

A. Nylon-6,6

B. Terylene

C. Nylon-6

D. Bakelite

Answer: C

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77. Polyethylene is a/an :

A. random co-polymer

B. homopolymer

C. alternate co-polymer

D. cross-linked co-polymer

Answer: B

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78. $F_2C = CF_2$ is a monomer of

A. Polyethylene

B. Polyurethane

C. PVC

D. Teflon

Answer: D

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79. The abbreviation PDI refers to :

A. name of the polymer

B. polydispersity index

C. Planck's disposal index

D. polydiagonal index

Answer: B

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80. Eye lenses are manufactured by:

A. PMMA

B. teflon

C. PVC

D. Buna-N

Answer: A

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81. Which plastic is obtained from $CHCl_3$ as follows .

$$CHCl_3 \xrightarrow[SbF_3]{HF} X \xrightarrow{800^\circ C} Y \xrightarrow{\text{polymerisation}} Plastic\,.$$

A. Bakelite

B. Teflon

C. Polythene

D. Nylon-6,6

Answer: B

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82. For synthetic polymers:

A. $PDI = 1$

B. $PDI < 1$

C. $PDI \geq 1$

D. $PDI \leq 1$

Answer: C

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83. Which of the following are polyamide polymer ?

A. neoprene

B. PVC

C. acrilon

D. nylon-6,6

Answer: D

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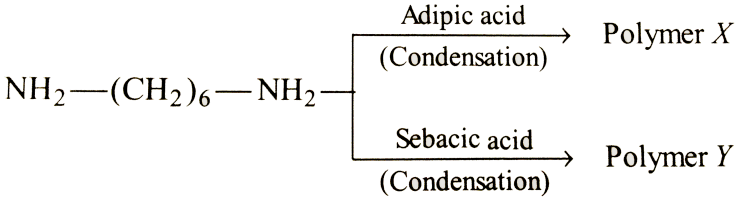
84.



Polymers 'X' and 'Y' respectively are:

A. nylon-6, nylon-6,6

B. nylon-6,6, nylon-6

C. nylon-6, nylon-6, 10

D. nylon-6,6, nylon-6,10

Answer: D

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85. From the colligative properties of solution which one is the best method for the determination of mol.wt of proteins & polymers:

A. osmotic pressure

B. Victor-Meyer's method

C. elevation in boiling point

D. depression in freezing point

Answer: A

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86. Teflon ,styron,and neoprene are all:

A. co-polymers

B. Condensation polymers

C. homopolymers O

D. monomers

Answer: C

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87. Rubber is a:

A. conducting polymer

B. oriented polymer

C. elastomer

D. strong commercial fabric

Answer: C

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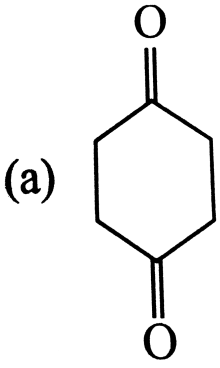
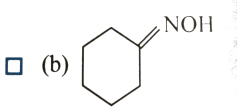
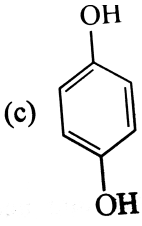
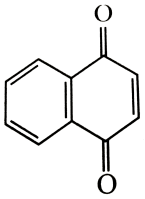
88. Caprolactum is monomer for the manufacture of nylon-6 and is obtained by Beckmann's rearrangement of:

A. 

B. 

C. 

D. (d) 

Answer: B

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89. Chain-growth polymerization may proceed by the following mechanism:

A. free radical polymerization

B. cationic polymerization

C. anionic polymerization

D. all of the above

Answer: D

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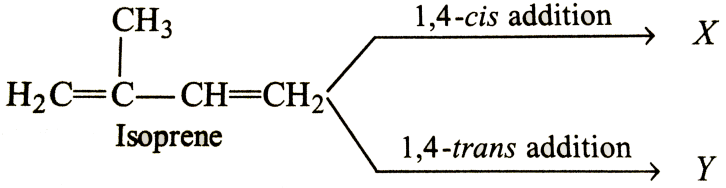
90.



X and Y are:

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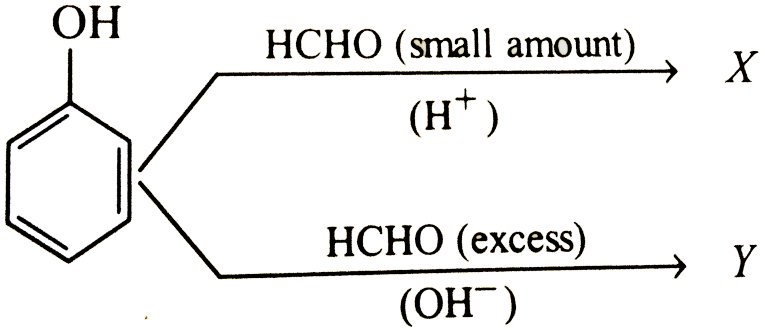
91. Phenol gives two polymers on condensation with formaldehyde



X and Y are:

X	Y
(a) bakelite	novolac
(b) novolac	bakelite
(c) bakelite	bakelite
(d) novolac	novolac

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92. Polypropylene is not used in :

A. clothes

B. ropes

C. heat resistant plastics

D. parachute ropes

Answer: C

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93. Acetate rayon is prepared from

A. starch

B. cellulose

C. phthalic acid

D. aphthalic acid

Answer: B

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94. Which of the following compounds can make clothes fire proof?

A. $MgSO_4$

B. $Al(SO_4)_3$

C. $FeSO_4$

D. Cu_2Cl_2

Answer: B

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95. Which of the following is a plasticizer?

A. Castor oil

B. Coconut oil

C. Coconut oil

D. Pine oil

Answer: A

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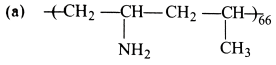
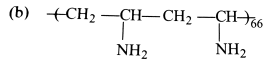
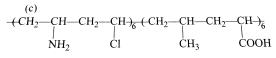
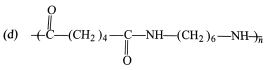
96. Which one of the following structures represents nylon-6,6 polymer?

A. 

B. 

C. 

D. 

Answer: D

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97. Glyptal polymer is obtained from glycerol on reacting with:

A. malonic acid

B. glycerol

C. maleic acid

D. ethylene glycol

Answer: B::D

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98. Terylene (Dacron) is prepared by condensing ethylen glycol with:

A. phthalic acid

B. isophthalic acid

C. terephthalic acid

D. dimethyl tercphthalate

Answer: C::D

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99. Synthetic fibres manufactured from cellulose are termed as:

A. rayon

B. nylon

C. dacron

D. artificial silk

Answer: A::D

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100. Which of' the following are homopolymers?

A. Polyvinyl chloride

B. Polyacrylonitrilc

C. Buna rnbber

D. Nylon-6,6

Answer: A::B::C

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101. Which of the following are co-polymers?

A. Bakelite

B. Melamine

C. Buna-S

D. Nylon-6,6

Answer: A::B::C::D

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102. Polymers can be classified on the basis of:

A. origin

B. structure

C. mechanism

D. synthesis

Answer: A::B::C::D

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103. Natural polymers are:

A. bakelite

B. polyisoprene

C. proteins

D. polyethylene

Answer: B::C

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104. Synthetic polymers are:

A. bakelite

B. polyvinyl chloride

C. polystyrene

D. natural rubber

Answer: A::B::C

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105. Chain growth addition polymerization is an important reaction of:

A. alkenes

B. conjugated dienes

C. polystyrene

D. natural

Answer: A::B

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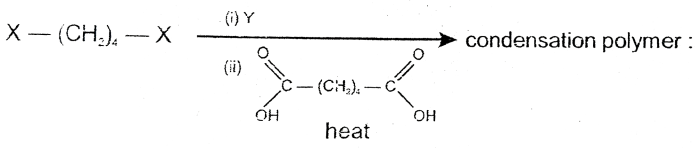
106. The correct functional group X and the reagent//reaction conditions Y in the following scheme are



A. $X = COOCH_3, Y = H_2 / Ni / \text{heat}$

B. $X = CONH_2, Y = H_2 / Ni / \text{heat}$

C. $X = CONH_2, Y = Br_2 / NaOH$

D. $X = CN, Y = H_2 / Ni / \text{heat}$

Answer: A::B::C::D

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107. Which is/are true about polymers?

A. Polymers have low molecular weight

B. Polymers do not carry any charge

C. Polymers have high viscosity

D. Polymers have low tensile strength

Answer: B::C

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108. Which of the following is/are example of addition polymer?

A. Polystyrene

B. Teflon

C. PVC

D. Polybutadiene

Answer: A::B::C::D

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109. Which one of the following is an example of chain growth polymer'?

A. Neoprene

B. PMMA

C. Buna-S

D. Bakelite

Answer: A::B::C

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110. Which of the following is not correct regarding terylene?

A. Step growth polymer

B. Condensation polymer

C. Synthetic fibre

D. Linear copolymer of ethylene glycol and terephth acid

Answer: A::B::C::D

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111. (A)Bakelite is co-polymer.

(R) Bakelite is a thermosetting material.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: B

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112. Statement-1 : Polybutadiene is an example of chain growth polymer.

Statement-2 : In chain growth polymers, the reactive particles

may be free radicals or ions (cations or anions) to which monomers get added by a chain reaction.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: A

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113. (A) Teflon has high thermal stability and chemical inertness.

(R)Teflon is a thermoplastic.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: B

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114. (A) Glyptal is obtained by the condensation polymerization, of ethylene glycol and terephthalic acid. (R) Glyptal is used in the manufacture of paints and lacquers.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: D

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115. Assertion : Buta $-1,3-$ diene is the monomer of Gutta Percha.

Reason: Gutta Percha is formed through cationic addition polymerisation.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: D

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116. Assertion : $1,3-$ Butadiene is the monomer for natural rubber.

Reason : Natural rubber is formed though anionic addition polymerization.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: C

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117. Statement 1:Plexiglas is the commerical name of $PMMA$

Statement 2:It is used in making contact lens.because it has an excellent lighr=transmission property.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: A

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118. Statement 1:Bakelite is hard and has high melting point

Statement 2:Intemolecular forces of attractions in it are H-bonding.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: C

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119. Statement 1:Novolac is soft and has a low melting poitn.

Statement 2:It is a highly crossed -linked polymer.

A. If both A and R are correct and R is the correct explanation of A.

B. If both A and R are correct and R is not the correct explanation of A.

C. If A is the correct but R is incorect.

D. If A is the incorrect but R is corect.

Answer: C

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120. Amogst the following the total number of thermoplastics is: Polythene, PVC, teflon, PAN, PMMA, polyster, bakelite, nylon 6, melamine formaldehyde.

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121. How many of the following are thermosetting polymers? Bakelite, polyester, polyvinyl acetate, SBR, polypropylene, nylon 6,6, thiokol, urea-formaldehyde resin, melamine formaldehyde resisn.

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122. Melmac is a condensation polymer of melamine and formaldehyde. How many nitrogen atoms are present in the

melamine monomer?

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123. How many of the following are biodegradable polymers?

PVC, PAN, polystyrene, cellulose, dextron, glyptal, PHBV, nylon 6,6, nylon-2-nylon-6.

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124. The total number of lone-pairs of electrons in melamine is.

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125. How many of the following are plasticizers?

Glycerol, DOP, Glyptal, Buna rubber, alkane, sulphonyl chloride, PHBV, LSD, Di isobutlyl pthalate, Alitame, Cresyltriphosphate.

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126. How many double bonds are present in the repeating structural units of polythene?

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