doubtnut
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CHEMISTRY

BOOKS - BRILLIANT PUBLICATION

POLYMERS, BIOMOLECULES AND CHEMISTRY IN EVERYDAY LIFE

Level I

1. If polymer becomes more crystalline, then

A. it becomes harder

B. it becomes denser

C. it becomes more resistant to heat

D. All of the above properties are held true

Answer: D

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2. Chain-transfer agent is

A. CCl_4

B. CBr_4

C. CH_4

D. Both (A) and (B)

Answer: D

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3. Which of the following is a biodegradable polymer?

A. Cellulose

B. Polythene

C. Polyvinyl chloride

D. Nylon-6

Answer: A

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4. A petrol pump hose pipe for delivery of petrol is made up of

A. natural rubber

B. vulcanised rubber

C. neoprene

D. butadiene rubber

Answer: D

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5. The monomers of Buna -s rubber are

A. vinyl chloride and sulphur

B. butadiene

C. styrene and butadiene

D. isoprene and butadiene

Answer: C

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6. The catalyst used for olefin polymerization is

A. Ziegler-Natta catalyst

B. Wilkinson catalyst

C. Raney nickel catalyst

D. Merrified resin

Answer: A

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

A. HNO_3

B. $AlCl_3$

C. $BuLi$

D. $LiAlH_4$

Answer: B

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8. Which one of the following is used to make non-stick cookware?

A. PVC

B. Polystyrene

C. Polyethylene terephthalate

D. Polytetrafluoroethylene

Answer: D

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9. The monomer used to produce orlon is

A. $CH_2 = CHF$

B. $CH_2 = CCl_2$

C. $CH_2 = CHCl$

D. $CH_2 = CH - CN$

Answer: D

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10. Which one is classified as a condensation polymer?

A. Acrylonitrile

B. Dacron

C. Neoprene

D. Teflon

Answer: B

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11. Which of the following organic compounds polymerizes to form the polyester Dacron?

A. Propylene and para $HO-(C_6H_4)-OH$

B. Benzoic acid and ethanol

C. Terephthalic acid and ethylene glycol

D. Benzoic acid and para $HO-(C_6H_4)-OH$

Answer: C

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12. Glyptal polymer is obtained from glycerol by reacting it with

A. malonic acid

B. phthalic acid

C. maleic acid

D. acetic acid

Answer: B

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13. Novolac, the linear polymer used in paints is

A. a copolymer of 1,3-butadiene and styrene

B. obtained by the copolymerization of methyl methacrylate

C. initial product obtained in the condensation of phenol and formaldehyde

D. copolymer of melamine and formaldehyde

Answer: C

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14. Natural rubber has

A. alternate cis-and trans-configuration

B. random cis-and trans-configuration

C. all cis-configuration

D. all trans-configuration

Answer: C

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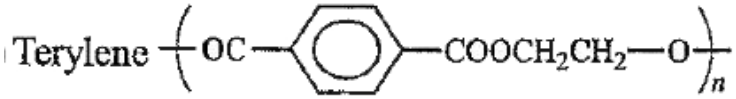
15. Structures of some common polymers are given. Which one is not correctly represented?

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

B. Terylene 

C. Nylon6, 6 $\left[- \ - NH(CH_2)_6 NHCO(CH_2)_4 - CO - \ - \right]_n$

D. Teflon $(- \ - CF_2 - CF_2 - \ -)_n$

Answer: A

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16. Polymer used in bulletproof glass is

A. PMMA

B. Lexan

C. Nomex

D. Kevlar

Answer: B

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

A. buna-N

B. nylon 6, 6

C. nylon-2-nylon-6

D. PHBV

Answer: C

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18. Which of the following is not a semisynthetic polymer?

A. cis-Polyisoprene

B. Cellulose nitrate

C. Cellulose acetate

D. Vulcanised rubber

Answer: A

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19. 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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20. Which of the following is a chain-growth polymer?

A. Nylon

B. Dacron

C. Glyptal

D. Polypropylene

Answer: D

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21. Interparticle forces present in Nylon-6,6 are

A. H-bonds

B. Covalent bonds

C. Ionic bonds

D. Coordinate bonds

Answer: A

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22. The turbidity of a polymer solution measures:

A. Light absorbed by the solution.

B. Light transmitted by the solution

C. Light scattered by the solution

D. None of the above

Answer: C

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23. Synthetic human hair wigs are made from a copolymer of vinyl chloride and acrylonitrile, which is called:

A. PVC

B. Polyacrylonitrile

C. Cellulose

D. Dynel

Answer: D

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24. Soft drinks and baby feeding bottles are generally made up of

A. Polyurea

B. Polyurethane

C. Polyester

D. Polystyrene

Answer: D

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25. Which of the following statements is not true?

A. Glucose and fructose both are monosaccharides

B. The natural glucose and fructose are D-forms

C. The solution having equal molecules of D-glucose and D-fructose is termed as invert sugar

D. Aldohexoses exist in 2 optical forms

Answer: D

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26. The glycosidic linkage involved in linking the glucose units in amylose part of starch is

A. $C_1 - C_4\beta$-linkage

B. $C_1 - C_6\beta$-linkage

C. $C_1 - C_6\alpha$-linkage

D. $C_1 - C_4\alpha$-linkage

Answer: D

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27. Denaturation of protein leads to loss of its biological activity by

A. formation of amino acids

B. loss of primary structure

C. loss of both primary and secondary structure

D. loss of both secondary and tertiary structures

Answer: D

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28. Which of the following statements is not correct?

A. Proteins are polyamides formed from amino acids

B. Except glycine, all other amino acids show optical activity.

C. Natural protein are commonly made up of L-isomer of amino acids.

D. In a -amino acids, $-NH_2$ and $-COOH$ groups are attached to different carbon atoms.

Answer: D

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29. The peptide linkage formed between glycine (NH_2CH_2COOH) and alanine $\left(NH_2\underset{CH_3}{\underset{|}{C}}H-COOH \right)$ to give glycylalanine can be shown as

A. $NH_2-CH_2-NH-\underset{CH_3}{\underset{|}{C}}H-COOH$

B. $NH_2 - CH_2 - CONH - \underset{\underset{CH_3}{|}}{C}\ H - COOH$

C. $H_2NCOCH_2 - \underset{\underset{CH_3}{|}}{C}\ H - CONH_2$

D. $HOOC - CH_2 - NH - NH - \underset{\underset{CH_3}{|}}{C}\ H - COOH$

Answer: B

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30. The melting points of amino acids are higher than the corresponding halo-acids because

A. amino acids exist as zwitter ions resulting in strong dipole-dipole attraction

B. amino acids are optically active

C. due to higher molecules mass of $-NH_2$ group molecular mass of amino acids is higher.

D. they interact with water more than halo-acids and have salt like structure.

Answer: A

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31. Consider the following reagents,

I. Br_2 water

II. Tollen's reagent

III. Fehling's solution

Which can be used to make distinction between an aldose and a ketose?

A. I, II and III

B. II and III

C. Only I

D. Only II

Answer: C

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32. Which shows mutarotation?

A. Glucose

B. Fructose

C. Both

D. None

Answer: C

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33. Which pair is different for reaction with Fehling's solution?

A. Glucose, fructose

B. HCHO, CH_3CHO

C. CH_3COCH_3, C_6H_5CHO

D. Glucose, sucrose

Answer: D

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34. Glucose on treatment with hydrogen chloride in methanol forms

A. pentamethyl glucose

B. a-methyl glucoside

C. B-methyl glucoside

D. a mixture of a and B-methyl glucosides

Answer: D

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35. Which is the correct statement?

A. Starch is polymer of α -glucose

B. Amylose is a component of cellulose

C. Proteins are composed of only one type of amino acid

D. In cyclic structure of fructose, there are four carbons and one oxygen atom

Answer: A

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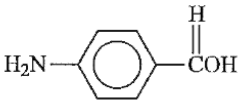
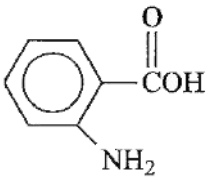
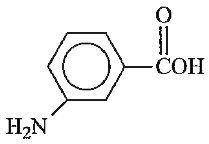
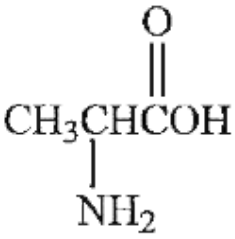
36. A component of folic acid (vitamin) is

A. 

B. 

C. 

D. 

Answer: A

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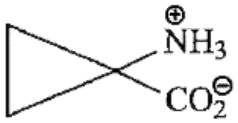
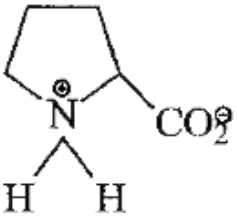
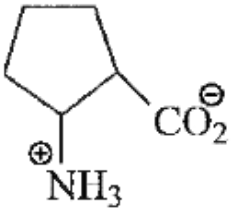
37. Which is α-amino acid?

A. 



B.



C.

D. Both (A) and (B)

Answer: D

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38. Which is netural amino acid?

A. Serine

B. Glutamic acid

C. Lysine

D. Histidine

Answer: A

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39. The beta-pleated sheet is an example of

A. primary structure

B. secondary structure

C. tertiary structure

D. quaternary structure

Answer: B

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40. The secondary structure of aprotein refers to

A. mainly denatured proteins and structures of prosthetic groups

B. linear sequence of amino acid residues in the polypeptide chain

C. regular folding patterns of continuous portions of the polypeptide chain

D. three-dimensional structure, specially the bond between amino acid residues that are far apart from each other in polypeptide chain

Answer: C

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41. The two functional groups present in a typical carbohydrate are

A. $-OH$ and $-COOH$

B. $-CHO$ and $-COOH$

C. $>C=O$ and $-OH$

D. $-OH$ and $-CHO$

Answer: C

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42. Synthesis of each molecule of glucose in photosynthesis involves 10 molecules of ATP 8 molecules of ATP 6 molecules of ATP 18 molecules of ATP

A. 10 molecules of ATP

B. 8 molecules of ATP

C. 6 molecules of ATP

D. 18 molecules of ATP

Answer: D

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43. Methyl- α-D-glucoside and methyl β-D-glucoside are : epimers, anomers, enantiomers, conformational diastereomers

A. epimers

B. anomers

C. enantiomers

D. conformational diastereomers

Answer: B

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44. Biuret test is not given by

A. proteins

B. carbohydrates

C. polypeptides

D. urea

Answer: B

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45. The hormone which controls the processes of burning of fats, proteins and carbohydrates and liberates energy in the body is

A. thyroxine

B. adrenaline

C. insulin

D. cortisone

Answer: C

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46. The human body does not produce

A. enzymes

B. DNA

C. vitamin A

D. hormones

Answer: C

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47. The reason for double helical structure of DNA is the operation of

A. electrostatic attractions

B. van der Waals forces

C. dipole-dipole interactions

D. hydrogen bonding

Answer: D

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48. Which of the following statements about RNA is not correct?

A. It has a single strand

B. It does not undergo replication

C. It does not contain any pyrimidine base

D. It controls the synthesis of proteins

Answer: C

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49. Sucrose on hydrolysis gives

A. 2 molecules of glucose

B. 2 molecules of glucose + 1 molecule of fructose

C. 1 molecule of glucose + 1 molecule of fructose

D. 2 molecules of fructose

Answer: C

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50. Which of the following statements is not true about glucose?

A. It is an aldohexose

B. On heating with HI it forms n-hexane

C. It is a ketohexose

D. It does not give 2,4-DNP test.

Answer: C

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51. Use of chemicals for therapeutic effect is called

A. chemotherapy

B. biochemistry

C. biotherapy

D. chemolysis

Answer: A

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52. Pain killers are drugs that belong to the category

A. antiseptics

B. antibiotics

C. analgesics

D. antipyretics

Answer: C

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53. In human body, allergy is caused by

A. noradrenaline

B. serotonin

C. pepsin

D. histamine

Answer: D

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54. The biomolecule crucial to communication system of the body are

A. enzymes

B. receptors

C. nucleic acids

D. carrier proteins

Answer: B

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55. When an enzyme hold the substrate to its active site the type of interaction not usually observed in

A. ionic bonding

B. hydrogen bonding

C. hydrogen bridge bonding

D. vanderwaals interactions

Answer: C

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56. An enzyme is permanently blocked by a drug when drug and enzyme are bonded through

A. co-valent bond

B. hydrogen bond

C. vander waals forces

D. dipole-dipole interaction

Answer: A

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57. In human body message between neuron to neuron and neuron to muscle are communicated through chemicals known as

A. steroids

B. hallucinogens

C. sedatives

D. chemical messengers

Answer: D

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58. Drugs that inhibit the natural functioning of receptors by binding to their active site are called

A. blockers

B. terminators

C. antagonists

D. retro receptors

Answer: C

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59. Drugs that turn on the functioning of receptors by mimicking the natural chemical messenger are known as

A. activators

B. agonists

C. initiators

D. promoters

Answer: B

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60. Which among the following do not contain sulphur in it

A. histamine

B. cimetidine

C. ranitidine

D. prontosil

Answer: A

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61. The antacid among the following that is more preferred since it do not increase the pH of stomach above neutrality is

A. sodium bicarbonate

B. magnesium bicarbonate

C. calcium bicarbonate

D. magnesium hydroxide

Answer: D

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62. The antacid cimetidine (Tegamet) interact with

A. histamine

B. histamine receptors

C. pepsin produced in stomach

D. HCl in stomach

Answer: B

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63. The best available antihistamine antacid among the following is

A. sodium bicarbonate

B. mixture of aluminium and magnesium hydroxides

C. cimetidine

D. ranitidine

Answer: D

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64. Not an antihistamine among the following is

A. tegamet

B. terfenadine

C. brompheniramine

D. norethindrone

Answer: D

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65. Not a tranquilizer among the following is

A. equanil

B. valium

C. nardil

D. dimetapp

Answer: D

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66. The barbiturate hypnotic among the following is

A. valium

B. serotonin

C. chlordiazepoxide

D. veronal

Answer: D

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67. Not an opiate among the following is

A. valium

B. morphine

C. heroin

D. codeine

Answer: A

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68. Which of the following is not an antacid?

A. Phenelzine

B. Ranitidine

C. Aluminium hydroxide

D. cimetidine

Answer: A

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69. Which of the following is employed as antihistamine?

A. Omeprazole

B. Chloromphenicol

C. Diphenylhydramine

D. Norethindrone

Answer: C

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70. Which one fo the following is employed as a tranquilizer?

A. Equanil

B. Naproxen

C. Tetracycline

D. Dimetane

Answer: A

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71. Which of the following can possibly be used as analgesic without causing addiction and habit forming?

A. Morphine

B. N-Acetyl-para-aminophenol

C. Codeine

D. Hydromorphine

Answer: B

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72. Tincture of iodine is

A. aqueous solution of I_2

B. solution of I_2 in aqueous KI

C. aqueous alcoholic solution of KI containing dissolved I_2

D. aqueous solution of KI

Answer: C

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73. The sweetest artificial sweetener among the following is

A. aspartame

B. sucrolose

C. alitame

D. sucrose

Answer: C

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74. Butylated hydroxytoluene as a food additive acts as

A. antioxidant

B. flavouring agent

C. colouring agent

D. emulsifier

Answer: A

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75. Which of the following drugs reduces fever?

A. Analgesic

B. Antipyretic

C. Antibiotic

D. Tranquilizer

Answer: B

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76. Cetyl trimethyl ammonium bromide is a

A. soap

B. anionic detergent

C. cationic detergent

D. none of these

Answer: C

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77. Which of the following is not a surfactant?

A. $CH_3 - (CH_2)_{15} - N^+(CH_3)_3Br^-$

B. $CH_3 - (CH_2)_{14} - CH_2NH_2$

C. $CH_3 - (CH_2)_{16} - CH_2OSO_2Na^+$

D. $OHC - (CH_2)_{14} - CH_2 - COO^-Na^+$

Answer: B

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Level Ii

1. Which of the following properties is/are true for thermoplastics?

A. The intermolecular forces of attraction are intermediate between elastomers and fibres

B. They have cross-linking between them

C. They cannot be moulded by heating

D. All of the above

Answer: A

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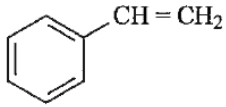
2. Which cannot form addition polymers?

A. $CH_2 = CH_2$

B. 

C. $HO\overset{O}{\overset{||}{C}}(CH_2)_4\overset{O}{\overset{||}{C}}OH$

D. $CH_2 = CH - CH = CH_2$

Answer: C

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3. Condensation polymers are formed from monomers

A. which have bifunctional groups

B. which have multiple $(C = C)$ or $(C \equiv N)$ or $(C \equiv C)$ bonds

C. in which elimination can take place

D. in which addition can take place

Answer: A

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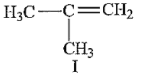
4. Arrange the following in increasing order of reactivity towards cationic addition polymerisation, initiated by H^+



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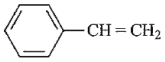
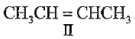
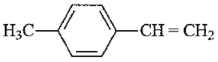


(III)



II



(IV)

A. $I < II < III < IV$

B. $II < I < IV < III$

C. $II < I < III < IV$

D. $III < IV < II < I$

Answer: C

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5. Natural rubber is not used in making footwear for polar regions because

A. natural rubber becomes soft at temperature lower than $10^{\circ} C$

B. natural rubber becomes brittle at temperature lower than $10^{\circ} C$

C. natural rubber melts at temperature lower than $10^{\circ} C$

D. natural rubber becomes stronger at temperature lower than $10^{\circ} C$

Answer: B

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6. Arrange the following polymers in the increasing order of their intermolecular forces.

Buna-S, Polythene, Nylon 6,6

A. $II < I < III$

B. $III < II < I$

C. $I < II < III$

D. $II < III < I$

Answer: D

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7. The monomer of the polymer $\left(- - CH_2 - \overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}} - - \right)_n$

A. $CH_3CH = CHCH_3$

B. $CH_3CH = CH_2$

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

D. $H_2C = C(CH_3)_2$

Answer: D

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8. Among cellulose, polyvinyl 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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9. 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. Its synthesis requires dioxygen or a peroxide initiator as a catalyst

D. It is used in the manufacture of buckets, dustbin, etc.

Answer: D

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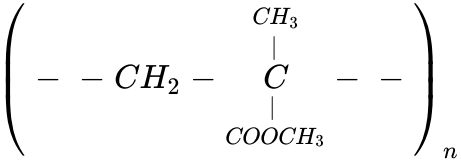
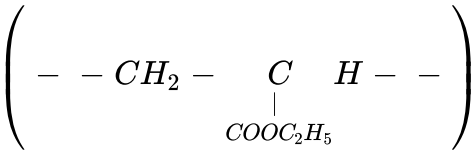
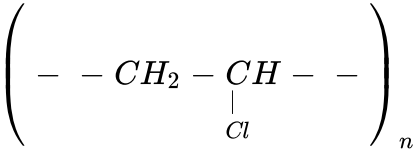
10. Acrilan is a hard, horny and a high melting material. Which of the following represents its structure?

A. $\left(- - CH_2 - \underset{CN}{\underset{|}{C}}H - - \right)_n$

B. 

C. 

D. 

Answer: A

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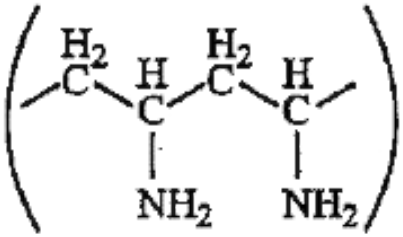
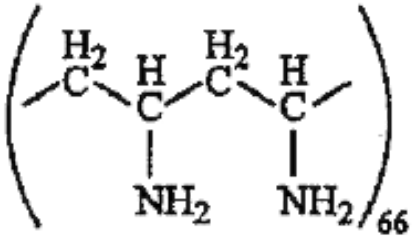
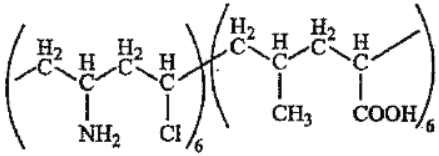
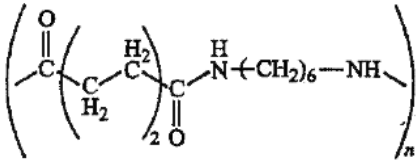
11. Which one of the following structures represents nylon 6,6 polymer?

A. 

B. 

C. 

D. 

Answer: D

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12. On complete hydrogenation, natural rubber produces

A. ethylene-propylene copolymer

B. vulcanised rubber

C. polypropylene

D. polybutylene

Answer: A

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13. Which among the following is monomer of neoprene?

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

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

C. $CH_2 = CH - C \equiv CH$

D. $CH_2 = CH - CH = CH_2$

Answer: A

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

A. Buna-S is a copolymer of butadiene and styrene

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

C. In vulcanization, the formation of sulphur bridges between different chains makes rubber harder and strongen

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

Answer: D

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15. Buna-N synthetic rubber is a copolymer of

A. $H_2C = CH - CH = CH_2$ and $C_6H_5CH = CH_2$

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

C. $H_2C = CH - CN$ and $H_2C = CH - \underset{\underset{CH_3}{|}}{C} = CH_2$

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

Answer: B

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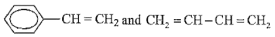
16. Which one of the following sets forms the biodegradable polymer? :

$CH_2 = CH - CN$ and $CH_2 = CH - CH = CH_2$,

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

A. `HO - CH_2 - CH_2 - OH and (#BRL_JEE_MN_ADV_CHE_XII_V03_C04_E02_016_001.png" width="30%">

B. 

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

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

Answer: D

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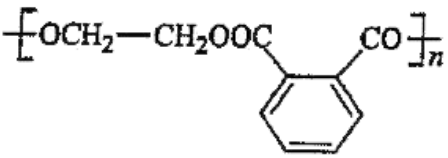
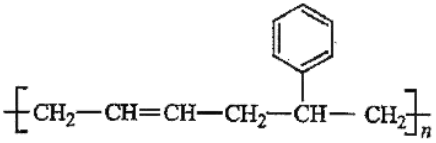
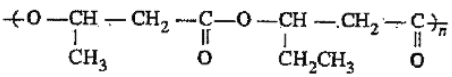
17. In which of the following polymers, ethylene glycol is one of the monomer units?

A. 

B. 

C. 

D. 

Answer: A

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18. The method preferred for determining the molecular weight of polymer is:

A. Osmotic pressure

B. Gas density

C. Lowering of freezing point

D. Direct weighing of a single molecule

Answer: A

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19. SBR (GRS, Buna-S, Cold Rubber) is obtained by free radical copolymerisation of:

A. 1, 3-butadiene and phenyl ethene (styrene)

B. Chloroprene and styrene

C. Vinyl acetylene and styrene

D. Isoprene and 1,3-butadiene

Answer: A

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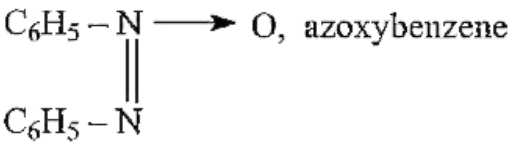
20. Free radical polymerisation requires a free radical initiator. The most commonly used free radical initiator is:

A. Ph-CO-O-O-COPh, benzoylperoxide

B. $(CH_3)_3C-O-O-C(CH_3)_3$, tert-butyl peroxide

C. 

D. CH_2N_2, diazomethane

Answer: A

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21. Which among the following statement is correct regarding polyurethanes (pu)?

A. It is a linear polymer

B. The monomers are diisocyanate and polyols

C. The monomers are connected through carbamate linkage

$$\left(- - NH - \overset{\overset{O}{||}}{C} - O - - \right)$$

D. All the above

Answer: D

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22. If $N_1, N_2, N_3, \ldots$ are the number of molecules with molecular masses $M_1, M_2, M_3, \ldots$ respectively, then mass average molar mass is expressed as:

A. $\frac{\sum NiMi^2}{\sum NiMi}$

B. $\frac{\sum NiMi}{\sum Ni}$

C. $\frac{\sum Mi^2}{\sum Ni}$

D. $\frac{\sum NiMi}{\sum Mi}$

Answer: A

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23. Which of the following polymers can be used for lubrication and as an insulator?

A. SBR

B. PAN

C. PTFE

D. PVC

Answer: C

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24. Which of the following sets contains only thermoplastics?

A. Glyptal, Melmac, PAN

B. Polythene, Bakelite, Nylon-6

C. PVC, PMMA, Polystyrene

D. Polypropylene, Urea-formaldehyde, Teflon

Answer: C

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25. Which of the following sets contains only copolymers?

A. SBR, Glyptal, Nylon-6,6

B. Polythene, Polyester, PVC

C. Nylon-6, Butyl rubber, Neoprene

D. Melmac, Bakelite, Teflon

Answer: A

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26. Which statement below does not occur during the formation of an addition polymer?

A. Free radicals initiate the process

B. Certain double bonds in monomers are replaced with single bonds

C. Propagation involves a reaction between two free radicals

D. Termination occurs when the free radicals are used up

Answer: C

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27. The incorrect statement regarding maltose is:

A. Maltose is composed of two a-D-glucose units

B. C-1 of glucose is linked to C-4 of other unit

C. It is a non-reducing sugar

D. It is a disaccharide

Answer: C

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28. Pick up the incorrect statement from the following.

A. Glucose exists in two different crystalline forms, α-D-glucose and β-D-glucose.

B. α-D-glucose and β-D-glucose have pyranose structure.

C. α-D-glucose and β-D-glucose are enantiomers.

D. Cellulose is a straight chain polysaccharide made up of only β - glucose units.

Answer: C

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29. Amino acids are classified as acidic, basic or neutral depending upon the relative number of amino and carboxyl groups in their molecule. Which of the following are acidic amino acids?

(i) $(CH_3)_2CH - \underset{\underset{NH_2}{|}}{C}H - COOH$

(ii) $HOOC - CH_2 - CH_2 - \underset{\underset{NH_2}{|}}{C}H - COOH$

(iii) $H_2N - CH_2 - CH_2 - CH_2 - COOH$

(iv) $HOOC - CH_2 - \underset{\underset{NH_2}{|}}{C}H - COOH$

A. (ii) and (iv)

B. (iii) and (iv)

C. (i) and (ii)

D. (ii) and (iii)

Answer: A

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30. Which type of interactions are responsible for making theα-helix structure stable?

A. Peptide bonds between$-NH_2$ and -CO groups of adjacent carbon chains.

B. Hydrogen bonds between$-NH$ of amino acid in one turn with -CO of amino acid to adjacent turn.

C. $-OH$ group of one amino acid with -CO group of other amino acid on the turn.

D. Hydrogen bonds between adjacent amino acids.

Answer: B

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31. On boiling, what structural changes take place in the egg white?

A. Globular protein becomes fibrous protein

B. 2° and 3° structures are destroyed but 1° structure remains intact

C. $1^\circ, 2^\circ$ and 3° structures are destroyed

D. A reversible change takes place which can be reversed by cooling

Answer: B

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32. Ketones do not reduce Tollen's reagents, but fructose with a keto group reduces it. It is attributed to

A. enolisation of keto group of fructose and then, its transformation into aldehyde group in presence of OH^- which is present in Tollen's reagent

B. $< CHOH$ group which is also oxidised to keto group

C. Both (A) and (B) statements are correct

D. None of the above statement is correct

Answer: A

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33. If α-D-glucopyranose is reacted with acetic anhydride at 373 K, the major product is the β-isomer of the penta acetate. It is attributed to

A. isomerisation of α -D into β-D-glucose at 373K

B. opening of glucopyranose ring

C. Both the statements are correct

D. None of the statement is correct

Answer: A

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34. Periodic acid splits glucose and fructose into formic acid and formaldehyde in the ratio:

A. 5/1 and 3/2

B. 5/1 and 5/1

C. 4/2 and 4/2

D. No reaction

Answer: A

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35. A tripeptide on complete hydrolysis gives glycine, alanine and phenylalanine. Using three-letter symbols, number of possible combinations are

A. 3

B. 4

C. 5

D. 6

Answer: D

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36. Consider the following statements concerning proteins

I. All natural amino acids which are constituents of proteins, are α-amino acids.

II. α-Amino acids are all optically active and have L-configuration.

III. α-Amino acids are connected by ester linkages.

IV. Favourable conformation for the peptide linkages in protein is the α-helix arrangement.

Of these statements

A. I and II are correct

B. II and III are correct

C. I and IV are correct

D. I, II, III and IV are correct

Answer: C

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37. Assume that a particular amino acid has an isoelectric point of 6.0. In a solution of pH 1.0, which of the following species will predominate?

A. $H_3\overset{+}{N}\overset{R}{\overset{|}{C}}HCO_2H$

B. $H_2N\overset{R}{\overset{|}{C}}HCO_2H$

C. $H_3\overset{\overset{+}{R}}{\underset{|}{C}}HCO_2^-$

D. $H_3N\overset{\overset{R}{|}}{C}HCO_2^-$

Answer: A

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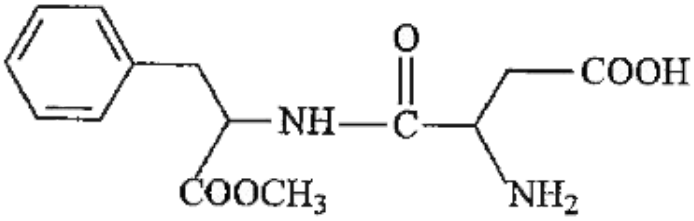
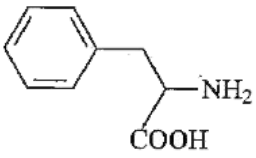
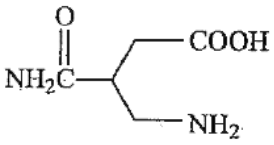
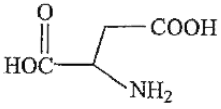
38. Aspartame, an artifical sweetener, is a peptide and has the following structure.



Free amino acids obtained by the hydrolysis of aspartame is/are

A. 

B. 

C. 

D. Both (A) and (C)

Answer: D

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39. Complete hydrolysis of starch gives

A. glucose and fructose in equimolar amounts

B. glucose only

C. galactose and fructose in equimolar amounts

D. glucose and galactose in equimolar amounts

Answer: C

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40. Which one of the following statements is correct?

A. All amino acids except lysine are optically active

B. All amino acids are optically active

C. All amino acids except glycine are opitcally active

D. All amino acids except glutamic acid are optically active

Answer: C

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41. An amino acid that does not form an a-helix is

A. asparagine

B. tyrosine

C. tryptophan

D. proline

Answer: D

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42. Identify the correct statements regarding enzymes

A. Enzymes are specific biological catalysts that can normally function at very high temperature (T~1000 K)

B. Enzymes are specific biological catalysts that possess the well-defined active sites

C. Enzymes are specific biological catalysts that cannot be poisoned

D. Enzymes are normally heterogeneous catalysts that are very specific in their action.

Answer: B

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43. In both DNA and RNA, heterocyclic base and phosphate ester linkages are at

A. C_5' and C_2', respectively, of the sugar molecule

B. C_2', and C_5', respectively, of the sugar molecule

C. C_1' and C_5', respectively , of the sugar molecule

D. C_5' and C_1', respectively , of the sugar molecule

Answer: C

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44. Which statement is incorrect about peptide bond?

A. C-N bond length in proteins is longer than usual bond length of C-N bond in amines

B. Spectroscopic analysis shows planar structure of-CO-NH-group

C. C-N bond length in proteins is smaller than usual bond length of C-N bond

D. None of these

Answer: A

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45. Which of the following reactions of glucose can be explained only by its cyclic structure?

A. Glucose forms pentaacetate

B. Glucose reacts with hydroxylamine to form an oxime

C. Pentaacetate of glucose does not react with hydroxylamine

D. Glucose is oxidised by nitric acid to gluconic acid

Answer: C

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46. Starch is a mixture of two components, a water soluble component amylose (15-20%) and a water insolul component amylopectin (80-85%). The aqueous solution ofamylose gives a blue colour with iodine solution due to the formation of

A. amylose iodide

B. amylose iodate

C. inclusion complex

D. amylose tetraiodide complex

Answer: C

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47. Which of the following hormones is produced under the conditions of stress which stimulate glycogenolysis the liver of human beings?

A. Thyroxin

B. Insulin

C. Adrenaline

D. Estradiol

Answer: C

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48. The correct statement regarding RNA and DNA, respectively is

A. the sugar component in RNA is arabinose and the sugar component in DNA is ribose

B. the sugar component in RNA is 2'-deoxyribose and the sugar component in DNA is arabinose

C. the sugar component in RNA is arabinose and the sugar component in DNA is 2'-deoxyribose

D. the sugar component in RNA is ribose and the sugar component in DNA is 2'-deoxyribose

Answer: D

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49. Those low molecular mass chemicals that interact with macromolecular targets and produce biological response are called

A. medicines

B. drugs

C. analgesics

D. antibiotics

Answer: B

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50. Among the following which is not the function of enzyme in its catalytic action

A. receive the substrate at its active site

B. hold the substrate in suitable position so that it can be attacked by the reagent

C. provide functional groups to attack substrate

D. hold the product formed tightly to active site

Answer: D

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51. An enzyme inhibitor drug inhibit the catalytic activity of drug by

A. denaturing the enzyme protein

B. attaching itself to active site of the enzyme

C. creating an alternate active site in the enzyme

D. changing the shape of substrate so that it cannot be accepted by enzyme

Answer: B

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52. The site where the inhibitor drug attaches itself to enzyme to change the shape of its active site is known as

A. counter active site

B. coactive site

C. allosteric site

D. stereogenic site

Answer: C

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53. Messenger chemicals transfer message into the cell by

A. entering into the cell through receptor proteins

B. transferring specific chemicals through receptor proteins

C. changing the shape of receptor proteins

D. denaturing receptor proteins

Answer: C

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54. Secretion of pepsin and hydrochloric acid in the stomach is stimulated by the chemical

A. prostaglandins

B. histamine

C. noradrenaline

D. vasopressin

Answer: B

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55. Which among the following is not a function of histamine?

A. it is a potent vaso constrictor

B. it contracts the smooth muscles in branchi and gut and relaxes other muscles

C. it is responsible for nasal congestion associated with common cold

D. it is responsible for allergic response to pollen

Answer: A

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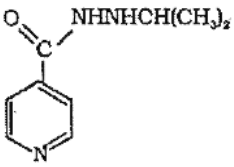
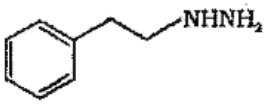
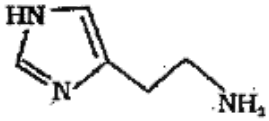
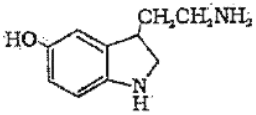
56. Which among the following is histamine?

A. 

B. 

C. 

D. 

Answer: C

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57. The drug iproniazid is a/an

(i) agonist (activator to noradrenaline receptor) (ii) tranquilizer (iii) enzyme inhibitor (iv) antidepressant

A. (i) and (ii)

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

C. (ii), (iii) and (iv)

D. (i), (iii) and (iv)

Answer: C

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58. Which statement regarding analgesic is not true? Analgesic reduce or abolish pain

A. by causing impairment of consciousness

B. without causing mental confusion

C. without causing incoordination or paralysis

D. without causing diturbances to nervous system

Answer: A

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59. The drug that inhibit the synthesis of prostaglandins in the body which stimulate inflamation in tissue leading to pain is

A. paracetamol

B. aspirin

C. codeine

D. veronal

Answer: B

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60. Aspirin do not function as

A. antidepressant

B. relieve skeletal pain in arthritis

C. chemical preventing platlet coagulation

D. antiblood clotting medicine

Answer: A

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61. Aspirin acts as an analgesic because it

A. inhibits the synthesis of prostaglandins which stimulate inflammation of the tissue

B. prevents the release of HCl in the stomach

C. prevents the interaction of histamine with its receptor

D. inhibits activities of enzymes

Answer: A

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62. Antiseptics and disinfectants either kill or prevent growth of micoorganisms. Identify which of the following statements is not true.

A. Dilute solutions of boric acid and hydrogen peroxide are strong antiseptics

B. Disinfectants harm the living tissues

C. A 0.2% solution of phenol is an antiseptic while 1% solution acts as a disinfectant

D. Chlorine and iodine are used as strong disinfectants

Answer: D

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63. The artificial sweetener containing chlorine that has the appearance and taste as that of sugar and is stable at cooking temperature is

A. aspartame

B. saccharin

C. sucrolose

D. alitame

Answer: C

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64. Antiseptics are different from disinfectants as

A. antiseptics merely inhibit the growth and disinfectant kill the microorganisms.

B. antiseptics are used against microorganisms while disinfectants are used against insects.

C. antiseptics are used only over skin while disinfectants can be taken orally also

D. antiseptics are used over living tissues while disinfectants cannot be used over living tissues

Answer: D

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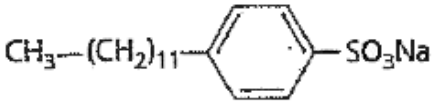
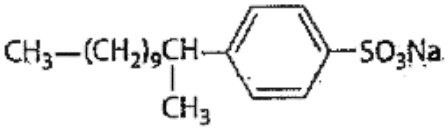
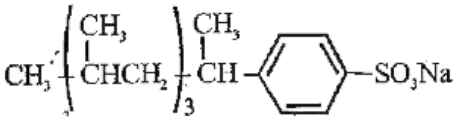
65. Which of the following is an example of non-biodegradable detergent?

A. 

B. 

C. 

D. $CH_3(CH_2)_{10}CH_2OSO_3Na$

Answer: C

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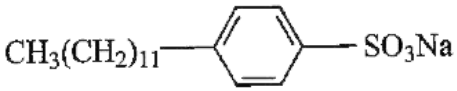
66. Which can cause minimum pollution?

A. $CH_3CH(C_4H_9) - CH_2CH_2CH(C_4H_9)(CH_2)_3CH(C_4H_9)CH_2CH_2S$

B. 

C. 

D. $C_{17}H_{35}COONa$

Answer: D

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67. Select the incorrect statement.

A. Equanil is used to control depression and hypertension

B. norethindrone is an antifertility drug

C. A 0.2% solution of phenol is an antiseptic while its 1.0% solution is a disinfectant

D. A drug which kills bacteria present in animal body is called bacteriostatic

Answer: D

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68. Which set has different class of compounds?

A. Tranquillizers: Equanil, heroin, valium

B. Antiseptics :Bithional, Dettol, boric acid

C. Analgesics : Naproxen, morphine, aspirin

D. Bactericidal:Penicillin, aminoglycosides, ofloxacin

Answer: A

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69. Why is use of aspartame limited to cold foods anddrinks?

A. it has very low boiling point

B. it gets dissociated at cooking temperature

C. it is sweetener at low temperature only

D. it is insoluble at higher temperatures

Answer: B

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70. Which of the following antibiotic contains NO_2group attached to aromatic nucleus in its structure? (1)penicillin (2)Streptomycin (3)Chloramphenicol (4)all of these

A. Penicillin

B. Streptomycin

C. Chloramphenicol

D. All of these

Answer: C

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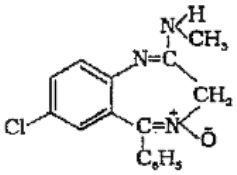
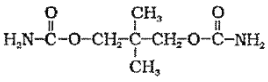
Level Iii Single Correct Answer Type

1. Equanil used in controlling depression and hypertension is

A. 

B. 

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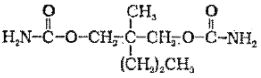
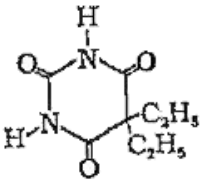


D.



Answer: B

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2. Consider the following statements about sucrose.

I. Hydrolysis of sucrose with dilute acid yields an equimolar mixture of D-glucose and D-fructose.

II. Acid hydrolysis of sucrose is accompanied by a change in optical rotation.

III. In sucrose, the glycosidic linkage is between C_1 of glucose and C_2 of fructose.

IV. Aqueous solution of sucrose exhibits mutarotation.

Which of the statements given above are correct?

A. I, II and III

B. I and IV

C. II and III and IV

D. II and IV

Answer: A

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3. The optical rotation of the a form of a pyranose is $+150, 7^{\circ}$, that of the B form is $+52.8^{\circ}$. In solution, an equilibrium mixture of the anomers has an optical rotation of $+80.2^{\circ}$. The percentage of the a-format equilibrium is

A. $28\ \%$

B. $32\ \%$

C. $68\ \%$

D. $72\ \%$

Answer: A

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4. Which of the following polymers have more than one monomer?

I:Nylone-6 II: Nylon-66 III: Teflon IV:Buna-S

A. I and II

B. II and IV

C. II and III

D. I, II and IV

Answer: B

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5. The copolymers formed by reaction of (I) Ethylene glycol and Terephthalic acid, (II) Butadiene and Acrylonitrile and (III) Hexamethylene

diamine and Adipic acid are

A. (I) Polyhexamethylene adipamide, (II) Polyacrylonitrile, (III) Polyethylene terephthalate

B. (I) Polyhexamethylene adipamide, (II) Polyacrylonitrile, (III) Polyvinyl chloride

C. (I)Polyethylene terephthalate, (II) Polyacrylonitrile, (III) Polyhexamethylene adipamide

D. (I) Polyacrylonitrile, (II) Polyhexamethylene adipamide, (III) Polyethylene terephthalate

Answer: C

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6. Buna-N synthetic rubber is a copolymer of

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

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

Answer: D

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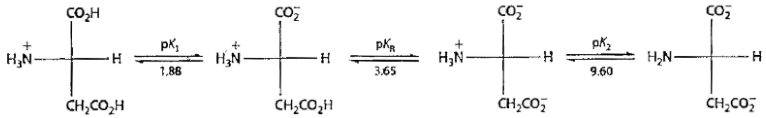
7. Consider the following sequence for aspartic acid :



The pI (isoelectric point) of aspartic acid is :

A. 3.65

B. 2.77

C. 5.74

D. 1.88

Answer: B

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8. Which of the following is a bactericidal antibiotic Ofloxacin Tetracycline Chloroamphenicol Erthromycin

A. Ofloxacin

B. Tetracycline

C. Chloroamphenicol

D. Erthromycin

Answer: A

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9. The artificial sweetner that has the highest sweetness value in comparison to cane sugar is sucralose aspartane saccharin alitame

A. sucralose

B. aspartane

C. saccharin

D. alitame

Answer: D

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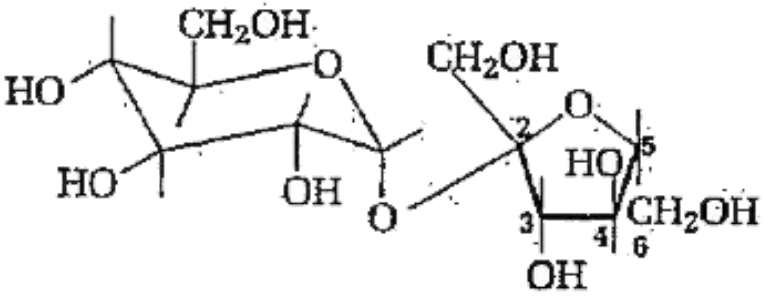
Level Iii Multiple Correct Answer Type

1. Consider the following structure of sucrose



Select the correct statement(s) about the structure.

A. There are two free anomeric OH

B. D-glucose and D-fructose are linked by their anomeric OH

C. The glucose unit and fructose unit both are pyranosides

D. Structure can be named as D-glucopyranosyl-β-D-fructofuranoside or α-D-fructofuranosyl-α-D-glucose pyranoside

Answer: B::D

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2. Which types of interactions are directly involved in maintaining tertiary structure?

A. Disulphide bridge

B. Hydrogen bonding

C. Peptide bonds

D. Hydrophobic interactions

Answer: B::D

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3. Which of the following can denature proteins without hydrolysis?

A. Enzyme treatment

B. Mechanical stress

C. Lowering of pH

D. Heavy metal ions

Answer: B::C::D

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4. What is/are incorrect regarding vulcanisation of rubber?

A. Rubber molecules are joined through S-S linkage at the ends

B. Rubber molecules are joined through S-S-linkage at the various parts of polymer backbone

C. Vulcanisation makes rubber perfectly crystalline

D. It converts rubber into a thermosetting polymer

Answer: A::C::D

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5. What is/are true for rayon?

A. It is pure regenerated cellulose

B. It is obtained by dissolving wood pulp in alkaline CS_2

C. It is obtained by passing Na-salt of cellulose xanthate through spinneret into aqueous $NaHCO_3$ solution

D. It is extracted as fibers of cellulose

Answer: A::B::D

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6. Which of the following statements about detergent are incorrect?

A. Detergents containing branched hydrocarbon chains are biodegradable

B. Cationic detergents are quaternary ammonium salts of amines with acetates, chlorides or bromides as an ions

C. Anionic detergents are sodium salts of sulphonated long chain alcohols or hydrocarbons

D. Non-ionic detergents do not contain any ion in their constitution

Answer: B::C::D

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7. The correct functional group X and the reagent/reaction conditions Yin the following schemes are

[Math Processing Error]

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: C::D

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8. For 'invert sugar', the correct statement(s) is (are) (Given: specific rotations of (+) sucrose, (+) maltose, L-(-)-glucose and L-(+) - fructose. in aqueous solution are $+66^\circ, +140^\circ, -52^\circ$ and $+92^\circ$, respectively

A. invert sugar' is prepared by acid catalyzed hydrolysis of maltose

B. invert sugar'is an equimolar mixture of D-(+) glucose and D-(-)-fructose

C. specific rotation of invert sugar is -20°.

D. on reaction with Br_2 water, 'invert sugar' forms saccharic acid as one of the products.

Answer: B::C

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9. Which of the following statements are correct about a-amino acids

A. All the amino acids which constitute proteins have D-configuration

B. Isoelectric point of glycine is 6.1

C. Valine is an essential amino acid

D. In α -amino acids, the basic group is $\left(-COO^{\ominus}\right)$ and acidic group is $\left(-\overset{\oplus}{N}H_3\right)$

Answer: B::C::D

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10. Which of the following polymers is prepared by condensation polymerisation : Styrene, Nylon - 66, Teflon, Rubber

A. Dacron

B. Nylon-6, 6

C. Bakelite

D. Polyethene

Answer: A::B::C

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11. Which of the following statements are correct about phenol-formaldehyde resin?

A. Novolac is a linear polymer and is used in the manufacture of paints

B. Bakelite is a cross-linked polymer and is used in making switches and plugs

C. Novolac is prepared when (P/F) (phenol/formaldehyde) ratio is greater than 1, whereas bakelite is prepared when (P/F) ratio is less than 1.

D. Novolac is prepared when P/Flt1, and bakelite is prepared when P/Fgt1.

Answer: A::B::C

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Level Iii Numerical Type

1. Which of the following is employed as antihistamine?

A. Aspirin

B. Seldane

C. Promethazine

D. Terfenadine

Answer: B::C::D

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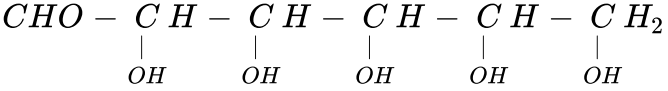
2. When the following aldohexose exists in its D-configuration, the total number of stereoisomers in its pyranos form, is



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3. A tetrapeptide has -COOH group on alanine. This produces glycine (Gly), valine (val), phenyl alanine (Phe) and alanine (Ala), on complete hydrolysis.

For this tetrapeptide, the number of possible sequencies (primary structures) with $-NH_2$ group attached to a chiral centre is.....

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4. How many N-atoms are present in monomer of Nylon-66?

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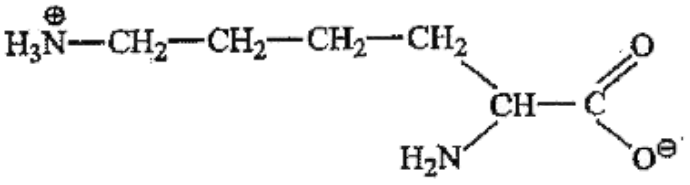
5. The total number of basic groups in the following form of lysine is



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6. A decapeptide (mol. wt. 796) on complete hydrolysis gives glycine (mol. wt. 75), alanine and phenylalanine .Glycine contributes 47.0% to the total

weight of the hýdrolyzed products. The number of glycine units present in the decapeptide is

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7. How many of the following are biodegradable polymers?

Cellulose, PVC, Polystyrene, glyptal, dextron, PHBV, nylon-2-nylon-6, nylon-6, 6, PAN.

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8. Amongst the following, non-narcotic analgesics are: morphine, paracetamol, aspirin, codeine, naproxen , ibuprofen, diclofenac sodium, heroin, luminal.

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9. The number of nitrogen atoms present in the monomer of urea-formaldehyde resin is

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Level Iii Matching Column Type

1. Match the following

Column I (Mixture)		Column II (Reagents for distinction)	
A	Glucose + fructose	p	Br_2 water
B	Glucose + sucrose	q	Tollen's reagent
C	Fructose + sucrose	r	Fehling solution
D	Benzaldehyde + acetaldehyde	s	Iodine/OH^-

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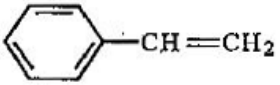
2. Match the following

Column I (Polymer)		Column II (Monomer)	
A	ABS	p	$CH_2 = CHCN$
B	SBR	q	$CH_2 = CH - CH = CH_2$
C	Polystyrene	r	
D	Orlon	s	$CF_2 = CF_2$
E	Teflon		

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3. Match the following columns and select the correct option from the codes given below.

Column I (Artifical sweetener)		Column II (Feature)	
A	Aspartame	p	Appearance and taste like sugar
B	Alitame	q	Difficult to control its sweetners while using it
C	Saccharin	r	Unstable at cooking temperature
D	Sucralose	s	Entirely inert and harmless when taken

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4. Match the polymer with its property

Column I	Column II
A) Nylon-2-nylon-6	p) Elastomer
B) Nylon-6, 6	q) Prepared by condensation polymerization
C) Natural rubber	r) Synthetic fiber
D) Melamine-formaldehyde	s) Biodegradable

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5. Match the following

Column I	Column II
Structure of protein	**Characteristic property**
A) 1° Structure	p) The structure is a result of the different conformations of polypeptide chain
B) 2° Structure	q) The structure is determined by any folding of chain in on itself
C) 3° Structure	r) The structure results when two or more polypeptide chains in some proteins are linked together by weak forces of attraction on their surface groups
D) 4° Structure	s) The manner and sequence in which various amino acids are joined to form polypeptide

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6. Match the modes of action with inter drugs .

Column I	Column II
A) Neurotransmitter	p) Aspirin
B) Non-narcotic analgesic	q) Bithional
C) Natural sweetener	r) Dopamine
D) Antiseptic	s) Sucrose

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Level Iii Statement Type

1. Statement 1: A solution of sucrose in water is dextrorotatory but on hydrolysis in presence of little hydrochloride acid, it becomes laevorotatory.

Statement 2: Sucrose on hydrolysis gives unequal amounts of glucose and fructose as a result of which change in sign of rotation is observed.

A. Statement 1 is True, Statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: C

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2. Statement 1 : The time of vulcanisation and temperature is increased by adding accelerators.

Statement 2 : By vulcanising, a material of high tensile strength can be obtained.

A. Statement 1 is True, Statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: D

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3. Statement 1 : Teflon has high thermal stability and chemical inertness.

Statement 2 : Teflon is a thermoplastic.

A. Statement 1 is True, Statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: B

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4. Statement 1 : Tetracycline is a broad spectrum antibiotic.

Statement 2: Tetracycline is effective against a number of types of bacteria, viruses and typhus fever.

A. Statement 1 is True, Statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: A

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5. Statement 1 : In a protein molecule, the adjacent alkyl-groups at a-positions occupies the alternate side of plane.

Statement 2 : Adjacent alkyl-groups in the same plane exert steric repulsion and lowers the stability of conformers.

A. Statement 1 is True, Statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: A

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6. Statement 1 : Chemical messengers are chemicals that enable communication of message between two neurons or between neurons and muscles.

Statement 2: Chemicals enter the cell through receptor.

A. Statement 1 is True, Statement 2 is True, Statement 2 is Correct explanation for Statement 1.

B. Statement 1 is True, Statement 2 is True, Statement 2 is NOT a correct explanation for Statement 1.

C. Statement 1 is True, Statement 2 is False.

D. Statement 1 is False, Statement 2 is True.

Answer: C

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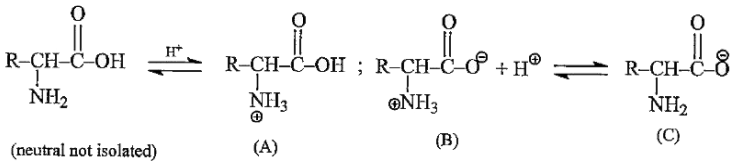
Level Iii Comprehension Type

1. Every amino acid has a carboxyl group and an amino group, and each group can exist in an acidic form or a basic form depending on the pH of the solution in which the amino acid is dissolved. The carboxyl groups of the amino acids have pK_a values of approximately 2, the protonated amino group have pK_a values near 9. Therefore, in a very acidic solution (pH near zero), both groups will be in their acidic forms. At a pH of 7, (which is greater than the pK_a of the protonated amino group), the carboxyl group will be in its basic form and the amino group will be in its acidic form. In a strongly basic solution (say pH=11), both groups will be in

the basic form.



Form A(cationic) of an amino acid exists in

A. fairly basic solution

B. fairly acidic solution

C. neutral solution

D. aprotic organic solvent

Answer: B

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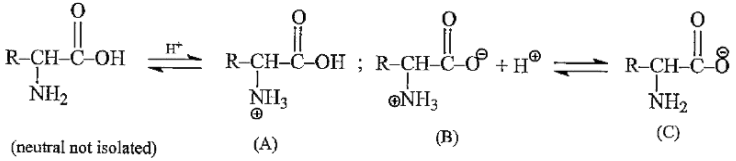
2. Every amino acid has a carboxyl group and an amino group, and each group can exist in an acidic form or a basic form depending on the pH of the solution in which the amino acid is dissolved. The carboxyl groups of the amino acids have pK_a values of approximately 2, the protonated

amino group have pK_a values near 9. Therefore, in a very acidic solution (pH near zero), both groups will be in their acidic forms. At a pH of 7, (which is greater than the pK_a of the protonated amino group), the carboxyl group will be in its basic form and the amino group will be in its acidic form. In a strongly basic solution (say pH=11), both groups will be in the basic form.



Form C(anionic) of an amino acid exists in

A. fairly basic solution

B. fairly acidic solution

C. neutral solution

D. aprotic organic solvent

Answer: A

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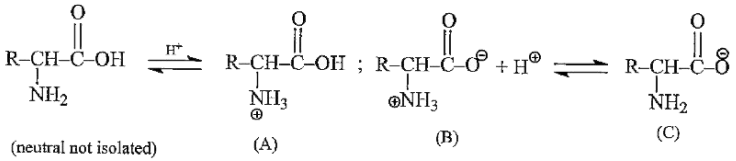
3. .



Form B is called

A. Lewis acid

B. Lewis base

C. amphoteric

D. Zwitter ion

Answer: D

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4. Monosaccharides containing an aldehyde group are called aldoses while those containing aketo group are called ketoses. The aldehyde group is always present at C_1 while the keto group is usually present at

C_2. All monosaccharides containing five and six carbon atoms have cyclic structures, furnaose (five membered) and pyranose (six membered). During ring formation, C_1 in aldoses and C_2 in ketoses becomes chiral and hence all these monosaccharides exist in two stereoisomeric forms called the α -anomer and the β-anomer while C_1 and C_2 are called glycosidic or anomeric carbon atoms. In contrast, stereoisomers, which differ in configuration at any other chiral carbon other than the glycosidic carbon are called epimers. Two molecules of the same or different monosaccharides combine together through glycosidic linkage to form disaccharides. All monosaccharides (aldoses and ketoses) and most disaccharides reduce Tollens'reagent and Fehling's solution, undergo mutarotation and form osazones.

Which of the following pairs give positive Tollens' test?

A. Glucose, sucrose

B. Glucose, fructose

C. Hexanal, acetophenone

D. Fructose, sucrose

Answer: B

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5. Monosaccharides containing an aldehyde group are called aldoses while those containing aketo group are called ketoses. The aldehyde group is always present at C_1 while the keto group is usually present at C_2. All monosaccharides containing five and six carbon atoms have cyclic structures, furnaose (five membered) and pyranose (six membered). During ring formation, C_1 in aldoses and C_2 in ketoses becomes chiral and hence all these monosaccharides exist in two stereoisomeric forms called the α -anomer and the β-anomer while C_1 and C_2 are called glycosidic or anomeric carbon atoms. In contrast, stereoisomers, which differ in configuration at any other chiral carbon other than the glycosidic carbon are called epimers. Two molecules of the same or different monosaccharides combine together through glycosidic linkage to form disaccharides. All monosaccharides (aldoses and ketoses) and most disaccharides reduce Tollens'reagent and Fehling's solution,

undergo mutarotation and form osazones.

Two forms of D-glucopyranose are called

A. enantiomers

B. anomers

C. epimers

D. diastereomers

Answer: B

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6. Monosaccharides containing an aldehyde group are called aldoses while those containing aketo group are called ketoses. The aldehyde group is always present at C_1 while the keto group is usually present at C_2. All monosaccharides containing five and six carbon atoms have cyclic structures, furnaose (five membered) and pyranose (six membered). During ring formation, C_1 in aldoses and C_2 in ketoses becomes chiral and hence all these monosaccharides exist in two stereoisomeric forms

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Which of the following pairs give the same osazone?

A. Glucose, Fructose

B. Glucose, Galactose

C. Maltose, Lactose

D. Sucrose, Fructose

Answer: A

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7. Vinyl chloride is the repeating unit in

A. polystyrene

B. neoprene

C. PVC

D. polyethene

Answer: C

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8. Which of the following are examples of thermoplastics?

A. Polyethene, Bakelite, nylon-6

B. Glyptal, Melmac, polyester

C. PVC, PMMA, polystyrene

D. Polypropylene, urea-formaldehyde resin, Teflon

Answer: C

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9. Which of the following are examples of homopolymers?

A. SBR, Glyptal, nylon-6,6

B. Nylon-6, butyl rubber, styrene rubber

C. Polyethene, polypropene, PVC

D. Melmac, Bakelite, Teflon

Answer: C

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10. Tranquillizers are drugs that reduce emotional instability, tension, fear, anxiety and induce sleep. They are also used in relieving stress, anxiety

and irritability. Which of the following tranquillizers is a derivative of barbituric acid?

A. Veronal

B. Equanil

C. Serotonin

D. Valium

Answer: A

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11. Which of the following are non-narcotic analgesics?

A. Aspirin

B. Acetamidophenol

C. Naproxen

D. All of these

Answer: D

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12. The bactericidal and bacteriostatic antibiotics, respectively, are

A. tetracycline and penicillin

B. penicillin and ofloxacin

C. penicillin and chloramphenicol

D. erythromycin and tetracycline

Answer: C

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