CHEMISTRY

JEE (MAIN AND ADVANCED) CHEMISTRY

PROTEINS AND NUCLEIC ACIDS

Level I Exercise

1. The functional group which found in amino acid is

A. $-COOH$ group

B. $-NH_2$ group

C. $-CH_3$ group

D. both 1 & 2

Answer: D

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2. The peptide linkage is

A. $-\overset{|}{C}H-COO-NH-$

B. $-\overset{|}{C}-CO-NH-$

C. $-\overset{|}{C}-CH_2-CO-NH_2$

D. $-\overset{|}{C}H-NH-NH-CO-$

Answer: B

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3. Which of the following contains nitrogen ?

A. Fats

B. Proteins

C. Carbohydrates

D. Hydrocarbons

Answer: B

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4. The building unit of all proteins are

A. monosaccharides

B. lipids

C. amino acids

D. primary amines

Answer: C

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5. A tripeptide contains _____ peptide links

A. 3

B. 2

C. 6

D. 4

Answer: B

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6. The structural feature which distinguishes proline from α - amino acids is

A. It is optically inactive

B. It contains aromatic group

C. It is a dicarboxylic acid

D. It is a secondary amine

Answer: D

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7. Which of the following amino acids possesses a non polar side chain

A. isoleucine

B. serine

C. cysteine

D. glutamic acid

Answer: A

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8. Which of the following amino acids contains a thiol group in the side chain

A. methaionine

B. cysteine

C. valine

D. serine

Answer: B

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9. The amino acid which contain a hydroxy group in the side chain

A. cysteine

B. glutamine

C. serine

D. leucine

Answer: C

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10. Essential amino acid among the following is

A. Glycine

B. Tryptophan

C. Alanine

D. Proline

Answer: B

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11. Imino acid among these compounds is

A. Serine

B. Proline

C. Tyrosine

D. Lysine

Answer: B

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12. The number of amino acids found in proteins that a human body can synthesize is

A. 20

B. 10

C. 5

D. 14

Answer: B

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13. Among the following the basic amino acid is

A. Glycine

B. Argenine

C. Proline

D. Cysteine

Answer: B

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14. Which of the following statement is not correct ?

A. proteins are polymides formed from amino acids

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

C. nature proteins are made up of L - isomers of amino acids

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

Answer: D

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15. For an aminoacid 'X', the isoelectric point is 6.1. Then 'X' is

A. Acidic amino acid

B. Basic amino acid

C. Neutral amino acid

D. Acidic or basic amino acid

Answer: C

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16. Which of the following statement is not correct ?

A. amino acid can exist as inner salt

B. each polypeptide has one C - terminal and other N - terminal

C. Enzymes are naturally occurring simple proteins

D. The union of two amino acids produces two peptide linkages

Answer: D

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17. The primary structure of a protein tells about

A. 3D arrangement of all atoms

B. shape of poly peptide chain

C. specific sequence of amino acids

D. a3D arrangement of oligo peptide chains

Answer: C

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18. The dipeptide glyclalanine contains

A. glycine as C-terminal residue

B. glycine as N - terminal residue

C. alanine as N - terminal residue

D. either (1) or (2)

Answer: B

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19. β - pleated structure of proteins is

A. Primary structure

B. Secondary structure

C. Tertiary structure

D. Quaternary structure

Answer: B

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20. The back bone for different segments in a protein is in the following form.

A. α - helix

B. α- pleated

C. coil

D. 1 or 3

Answer: D

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21. The helical structure of proteins is stabilized by

A. H - bonding

B. Van der Waals' forces

C. ionic bond

D. peptide bond

Answer: A

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22. Secondary structure of protein refers to

A. Mainly denatured proteins and structure of prosthetic groups

B. Three-dimensional structure, especially the bond between amino acid residues that are distinct from each other in the polypeptide chain

C. Linear sequence of amino acid residues in the polypeptide chain

D. Regular folding patterns of continuous portions of the polypeptide chain

Answer: D

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23. The bond that determines the secondary structure of a protein is

A. Co-ordinate bond

B. Covalent bond

C. Hydrogen bond

D. Ionic bond

Answer: C

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24. Which of the following is a globular protein ?

A. Collagen

B. Myoglobin and Haemoglobin

C. Myosin

D. Enzymes

Answer: B

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25. Tertiary structure of a protein will lead the polypeptide chains to get the following shapes

A. linear, octahedral

B. angular, tetrahedral

C. fibrous, globular

D. fibrous, planar

Answer: C

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26. Maximum possible hydrogen bonds are present in

A. 3.6_{13} Helix

B. Keratin

C. Silk fibroin

D. $\beta - D -$ fructose

Answer: A

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27. Mark the wrong statement about denaturation of proteins

A. The primary structure of the protein does not change

B. Globular proteins are converted into fibrous proteins

C. Fibrous proteins are converted into globular

D. The biological activity of the protein is cancelled

Answer: D

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28. The restriction of the biological nature and activity of proteins by heat or chemical agent is called

A. dehydration

B. denaturation

C. deamination

D. denitrogenation

Answer: B

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29. Addition of an electrolyte such as sodium dodecyl sulphate causes

A. renaturation of proteins since it stabilises hydrophobic interactions

B. denaturation of proteins since it disturbs hydrophobic interactions

C. renaturation of proteins since it maintains necessary isoelectric point

D. denaturation of proteins since it cause cleavage of $O = C - N - H$ bonds

Answer: B

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30. Which of the following is an example of "irreversible denaturation" of a protein ?

A. boiling egg

B. change of amino acid

C. enzymatic action

D. its synthesis

Answer: A

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31. Enzymes are

A. Complex nitrogenous substances produced in living cells

B. Steroids

C. Living organisms

D. Dead organisms

Answer: A

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32. The non-protein portion of a protein is called

A. Functional

B. Characteristic group

C. Prosthetic group

D. Enolic group

Answer: C

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33. The function of enzymes in the living system is to

A. transport oxygen

B. provide immunity

C. catalyse biochemical reactions

D. provide energy

Answer: C

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34. Which one of the following is not a protein ?

A. Wool

B. Nail

C. Hair

D. DNA

Answer: D

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35. Enzymes belong to which class of compounds ?

A. Polysaccharides

B. Polypeptides

C. Polynitro heterocyclic

D. Hydrocarbons

Answer: B

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36. Enzymes are made up of

A. Edible proteins

B. Proteins with specific structure

C. Nitrogen containing carbohydrates

D. Carbohydrates

Answer: B

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37. Regarding enzymes, incorrect statement is

A. an enzyme is generally a protein

B. an enzyme may be a conjugated protein

C. enzyme gets deactivated during reactions

D. enzyme gets activated during reactions

Answer: D

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38. (A) : Amino acids posses very high dipole moments in the solid state.

(R) : Amino acids are ionic compounds.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: C

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39. (A) : An amino acid, $H_3\overset{+}{N}CHRCOO^-$ can act as an ampholyte.

(R) : On treatment with acid, amino part $(-NH_2)$ of amino acid acts as a base and on treatment with base the acidic part $(-COOH)$ of amino acid acts as an acid.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: B

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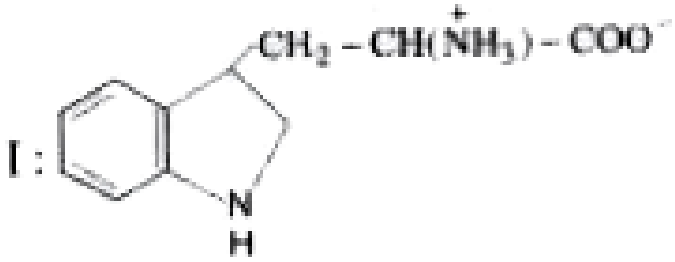

40. (A) :

Trytophan is a hetrocyclic amino acid and it doesn't evolve N_2 on treatment with HNO_2

(R) : Trytophan consists of a secondary amino group.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: A

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41. (A) : The pKa of the - COOH of alanine is much greater than pKa of - COOH of CH_3COOH

(R) : The electron withdrawing inductive effect of N^+ stabailises the - COOH.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: C

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42. (A) : Lysine (PI = 9.6) and glycine (PI = 5.97) could be separated by electrophoresis

(R) : In the electrophoresis process if the pH of the solution is

maintained either at 9.6 or 5.97, one will migrate towards electric pole while other wouldn't.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: A

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43. (A) : In electric field, an amino acid migrate towards cathode when $pH > pI$

(R) : When pH is greater than PI anionic form of amino acid predominates.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: D

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44. (A) : Amino acids are least solute in water when pH is equal to pI.

(R) : At isoelectric point, the covalency of amino acid dominates.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: C

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45. (A) : An aqueous solution of glycine of pH = 7 is not electrically neutral.

(R) : The isoelectric point of glycine, PI is 6.0.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: A

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46. (A) : Alanine is one of the basic units of protein.

(R) : All kinds of amino acids are considered basic units of protein.

A. Both (A) and (R) are true and (R) is the correct explanation of (A)

B. Both (A) and (R) are true and (R) is not the correct explanation of (A)

C. (A) is true but (R) is false

D. (A) is false but (R) is true

Answer: C

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47. The end products of protein digestion are

A. Peptides

B. Monosaccharides

C. Lipids

D. α- Amino acids

Answer: D

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48. IUPAC name of Glycine is

A. 2-amino propanoic acid

B. 2-amino butanoic acid

C. 2-amino ethanoic acid

D. 2-amino pent-1, 5-dioic acid

Answer: C

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49. Among Valine, Leucine, Isoleucine, Lysine and phenyl alanine, odd member is

A. Leucine since others are acidic

B. Valine since others are basic

C. Isoleucine since others are optically active

D. Lycine since others are neutral

Answer: D

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50. D-Alanine differs from L - Alanine with respect to

A. configuration

B. chemical formula

C. number of $-NH_2$ groups

D. number of -COOH groups

Answer: A

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51. In L-Phenyl alanine the amino group lies at

A. right side to chiral centre

B. left side to chiral centre

C. para position to -COOH in benzene ring

D. ortho position to -COOH in benzene ring

Answer: B

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52. Nature of aqueous solutions of two different amino acids X and Y are acidic and basic. Now X and Y are.

A. Alanine and Valine

B. Aspartic acid and Aspargine

C. Glutamine and Glutamic acid

D. Aspartic acid and Lysine

Answer: D

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53. The pH at which an amino acid carries no net charge is called it's

A. isoelectric point

B. inversion point

C. neutralisation point

D. triple point

Answer: A

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54. For a neutral amino acid (X), isoelectric point is 5.8. Now its solubility at this point in water is

A. maximum

B. minimum

C. zero

D. unpredictable

Answer: B

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55. Which of the following does not exit as a zwitter ion ?

A. Glycine

B. Alanine

C. Sulphanilic acid

D. Picric acid

Answer: D

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56. Which of the following molecule is capable of forming zwitter ion ?

A. $CH_3 - CHOH - NH_2$

B. NH_2CH_2COOH

C. $CH_3 - COOH$

D. $CCl_3 - NO_2$

Answer: B

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57. If the amino group of Glycine and carboxylic acid group of Alanine undergo elimination of wter molecule, the name of the compound thus formed is

A. Alanylglycine (dipeptide)

B. Glycyl alanide (tri peptide)

C. Glycyl alanine (dipeptide)

D. Alanineglycine (dipeptide)

Answer: A

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58. Which of the following belongs to oligo peptides ?

A. Toxine

B. effective hormone

C. DNA

D. t-RNA

Answer: B

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59. Number of peptide linkages in the artificial sweetner "aspartame" is

A. 2

B. 21

C. 1

D. 11

Answer: A

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60. Regarding secondary structure of a protein, correct statement(s) is/are

(A) peptide bonds possess regional planarity

(B) C = O and $-NH-$ of different peptide chains are held by Van der Waal attarctions

(C) closely packed arrangement so as to minimise repulsion between "R" groups.

A. only C

B. only B

C. A and B only

D. A and C only

Answer: D

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61. Proteins contain the following chemical linkages in addition to $-CO-NH-$ linkages

A. $NH-----O=C$

B. $-HS=SH-$

C. $C=N-----H-O-$

D. $-O-O-$

Answer: B

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62. The secondary structure of a protein refers to

A. hydrophobic interactions

B. sequence of α- amino acids

C. fixed configuration of the polypeptide backbone

D. α - helical backbone.

Answer: D

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63. In a protein ,the different type of attractions that exist are

(A) H bonding

(B) hydrophobic

(C) ionic

(D) covalent

A. B, C and D only

B. A, C and D only

C. A, B D only

D. A, B and C only

Answer: C

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64. Proteins cannot be denatured by the addition of

A. water

B. acids

C. detergents

D. heat

Answer: A

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65. 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 & quaternary structures

D. Loss of both secondary and tertiary structures

Answer: D

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66. The prosthetic group attached to the enzymes of vitamin B_{12} at the time of reaction is

A. cellulose

B. 5 - deoxy adenosyl

C. β-methyl aspartic acid

D. glutamic acid

Answer: B

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67. Water soluble vitamins are

A. A, D

B. E, K

C. D, E

D. C, B

Answer: D

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68. Which one of the following is a source of vitamin "A"' ?

A. Milk

B. Fish liver oil

C. Yeast

D. Egg

Answer: B

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69. The chief source of vitamin D is

A. Fish

B. Spinach

C. Cow dung

D. Citrous fruit

Answer: A

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70. Antiricketic Vitamin is

A. Vitamin A

B. Vitamin B_{12}

C. Vitamin C

D. Vitamin D

Answer: D

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71. Sterol, the basic unit of vitamin D, consists of 4 rings they are

A. Three 6-carbon rings one five carbon ring

B. Three 5-carbon rings one six carbon ring

C. Four 6-carbon rings only

D. Four 5-carbon rings only

Answer: A

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72. Clacium absorption in intestine is the function of

A. Vitamin A

B. Vitamin B

C. Vitamin C

D. Vitamin D

Answer: D

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73. Anti sterility factor which is necessary for fertility of men and borth process of the female is

A. Vitamin E

B. Vitamin A

C. Vitamin C

D. Vitamin D

Answer: A

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74. Dificiency of Vitamin E leads to

A. Neurosis of heart muscles

B. Degeneration of lacrymal gland

C. Beri-Beri

D. Dermatitis

Answer: A

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75. In all green leaves and vegetables which of the following vitamin is avialable ?

A. Vitamin A

B. Vitamin D

C. Vitamin K

D. Vitamin B_{12}

Answer: C

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76. Which of the following vitamin is Naphtha-quinone derivative ?

A. A

B. B

C. D

D. K

Answer: D

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77. Anti haemorrhagic vitamin is

A. A

B. B

C. D

D. K

Answer: D

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78. Which of the following vitamin is known as Nictinic acid ?

A. B_1

B. B_2

C. B_3

D. B_5

Answer: D

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79. Defficiency of the following vitamin leads to pellagra

A. A

B. B_2

C. B_5

D. C

Answer: C

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80. Which of the following vitamin acts as important component of NADP (&) DPN ?

A. A

B. D

C. B_5

D. B_{12}

Answer: C

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81. The following vitamin plays a role in transportation of amino acids across the cell membrane.

A. B_1

B. B_2

C. B_3

D. B_6

Answer: D

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82. Convulsion is due to deficiency of vitamin

A. B_1

B. B_2

C. B_5

D. B_6

Answer: D

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83. The cheaf source of vitamin "H" is

A. Yeast

B. Citrous fruit

C. Rice polish

D. Cereals

Answer: A

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84. Which of the following vitamin involves in the synthesis of RNA ?

A. A

B. B

C. C

D. B_{12}

Answer: D

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85. Vitamin B_{12} is rich in

A. Sewage sludge

B. Liver of pig

C. Egg

D. all

Answer: C

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86. Formation of RBC is because of

A. Mucoprotein

B. Vitamin B_{12}

C. Vitamin C

D. both 1 & 2

Answer: B

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87. Ascorbic acid resembles the structure of

A. Vitamin A

B. Glucose

C. Cellulose

D. Vitamin D

Answer: B

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88. Deficiency of Vitamin "C" leads to

A. gum swelling

B. blead easily and teeth become loose

C. delay in wound heling

D. all

Answer: C

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89. Dark red tongue, fissuring at corners of mouth and lips are the symptoms of the deficiency of which vitamin

A. C

B. A

C. B_2

D. D

Answer: C

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90. Some examples are given in List - II and their type is given in List - I

List - I	List - II
(1) Lipid	(A) Histidine
(2) Protein	(B) Ascorbic acid
(3) Amino acid	(C) Cephalin
(4) Hormone	(D) Insulin
(5) Vitamin	

A. A-4, B-1, C-2, D-5

B. A-3, B-2, C-5, D-1

C. A-3, B-5, C-1, D-4

D. A-3, B-4, C-1, D-2

Answer: C

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91. Vitamin B_6 is known as

A. Pyridoxine

B. Thiamine

C. Tocopherol

D. Riboflavin

Answer: A

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92. Vitamin D is called

A. Ascorbic acid

B. Calciferol or ergocalciferol

C. Thiamine

D. Riboflavin

Answer: B

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93. Vitamin E is also called

A. Cyanocobalamin

B. Tocopherol

C. Lactoflavin

D. Ascorbic acid

Answer: B

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94. Which of the following vitamins is not soluble in water ?

A. C

B. B_1

C. B_2

D. D

Answer: D

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95. The best source of vitamin C is

A. Codeliver oil

B. Egg yolk

C. Citrous fruits

D. Fish liver oil

Answer: C

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96. The deficiency of vitamin K causes

A. Haemorrhage

B. Lengthening time of blood clotting

C. Inflammation of tunge

D. Both (1) and (2)

Answer: D

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97. Milk contains vitamins

A. A, D and E

B. A, B_{12} and D

C. C, D and K

D. B_1, B_2, and A

Answer: D

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98. Nervousness anaemia is caused by the deficiency of vitamin

A. B_1

B. B_2

C. B_6

D. B_{12}

Answer: D

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99. The metal present in vitamin B_{12} is

A. Iron

B. Manganese

C. Cobalt

D. Magnesium

Answer: C

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100. Match items List - I with those in List - II from the combinations shows :

List - I	List - II
(I) Saliva	(A) Genetic material
(II) Nucleic acid	(B) Digestive enzyme
(III) Ascorbic acid	(C) Antibiotic
(IV) Testosterone	(D) Sex hotmone
	(E) Vitamin

A. I - B, II - A, III - C , IV - E

B. I - B, II - A, III - E , IV - D

C. I - A , II - B , III - E, IV - C

D. I - C , II - B, III-A, IV - D

Answer: B

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101. Match List - I with List - II and select the correct answer using the codes given below.

List - I	List - II
(I) Anti-beriberi factor	(A) Vitamin C
(II) Pancreas	(B) Glycerides
(III) Palm oil	(C) Vitamin B_1
(IV) L(+) − Ascorbic acid	(D) Insulin

A. I - C, II - D , III B, IV - A

B. I - C , II - D, III - A, IV - B

C. I - A , II - B , III - D, IV - C

D. I - A, II - B, III - C , IV - D

Answer: A

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102. Match List - I (name of vitamin) with List - II (deficiency result/disease) and select the correct answer using the codes given below.

List - I	List - II
(I) Ascorbic acid	(A) Beri-beri
(II) Retinol	(B) Cracked lips
(III) Riboflavin	(C) Scurvy
(V) Thiamine	(D) Night blindness

A. I - B, II - A, III - C , IV - D

B. I - A, II - B, III - C , IV - D

C. I - D, II - C , III - B, IV - A

D. I - C , II - D , III - B , IV - A

Answer: D

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103. Match the following

List - I	List - II
$(A) B_1$	(I) Riboflavin
$(B) B_2$	(II) Pantothenic acid
$(C) B_3$	(III) Niacin
$(D) B_5$	(IV) Thiamine

The correct match is

A. A - IV, B - I, C - III, D - II

B. A - IV, B - III, C - I, D - II

C. A - III, B - IV, C - II, D - I

D. A - IV, B - I, C - II, D - III

Answer: D

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104. The condition of vitamin deficiency is known as

A. Vitaminosis

B. Avitamonosis

C. Both 1 and 2

D. Anemea

Answer: B

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105. The organic compound which is required in minute quantities in order to maintain good health of the living organism is :

A. Vitamin

B. Protein

C. Lipid

D. Carbohydrate

Answer: A

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106. Which one of the following statements is true regarding vitamin ?

A. Vitamins are needed in large amounts to maintain good health

B. Vitamins are secreated by ductless glands

C. Vitamins A, D, E, K are fat soluble and vitamins B complex and C are water soluble

D. All vitamins are synthesised in human body

Answer: C

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107. Which one of the following statements is incorrect regarding vitamins ?

A. Vitamin A is essential for growth and vision

B. Vitamin D is essential for development of bones

C. A red coloured carotene in the body breaks into vitamin C

D. Vitamin K is essential for blood coagulation

Answer: C

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108. Which of the following constitutes the genetic material of the cell ?

A. Nucleic acids

B. Proteins

C. Lipids

D. Carbohydrates

Answer: A

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109. Nuclic acids are called acids mainly because of the presence of

A. $-COOH$ group

B. $-OH$ group of sugar unit

C. $-OH$ group of the heterocyclic base

D. $-OH$ group of phosphate unit

Answer: D

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110. Which of the following is not a pyrimidine base

A. Uracil

B. Thymine

C. Cytosine

D. Guanine

Answer: D

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111. The following does not belong to either purines or pyrimidines

A. Tryptophan

B. Cytosine

C. Uracil

D. Adenine

Answer: A

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112. Purine without ketonic group is

A. adenine

B. adenosine

C. cytidine

D. thymidine

Answer: A

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113. The purine base present in RNA is

A. Guanine

B. Thymine

C. Cytosine

D. Uracil

Answer: A

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114. 6 - amino purine is

A. Adenosine

B. Adenine

C. Cytosine

D. Thymine

Answer: B

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115. The bases that are common in both RNA and DNA are

A. adenine, guanine, cytosine

B. adenine, guanine, thymine

C. adenine, uracil, cytosine

D. guanine, uracil, thymine

Answer: A

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116. The pyrimidine bases present in RNA are

A. Cytosine and Thymine

B. Thymine and Uracil

C. Cytosine and Uracil

D. Uracil and Guanine

Answer: C

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117. Adenosine monophosphane (AMP) is a

A. nucleotide

B. nucleoside

C. insecticide

D. antibacterial

Answer: A

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118. An example for N-glycoside is

A. Adenine

B. Guanine

C. Cytosine

D. Cytidine

Answer: D

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119. Which one of the following is not present in DNA ?

A. adenine

B. ribose

C. cytosine

D. guanine

Answer: B

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120. A nitrogenous base which is present in the structure of RNA but not in DNA is

A. Uracil

B. Thymine

C. Cytosine

D. Guanine

Answer: A

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121. The pentose sugar in DNA and RNA has

A. Open chain structure

B. Pyranose structure

C. Furanose structure

D. None of the above

Answer: B

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122. Adenosine is an example of a

A. Nucleotide

B. Nucleoside

C. Purine base

D. Pyridine base

Answer: C

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123. Nucleoside on hydrolysis gives

A. Pentose sugar and purine base

B. Pentose sugar, phosphoric acid, purine or pyrimidine base

C. Pentose sugar and a heterocyclic base

D. Heterocyclic base and phosphoric acid

Answer: C

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124. In nucleic acids, the sequence is represented as

A. Phosphate - base - sugar

B. Sugar - base - phosphate

C. Base - sugar - phosphate

D. Base - phosphate - sugar

Answer: C

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125. In nucleic acids, the nucleotides are linked to one another through

A. Hydrogen bond

B. Peptide bond

C. Glycosidic linkage

D. Phosphate groups

Answer: D

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126. In a nucleotide the phosphate linkage is generally attached to

A. C - 1 of sugar

B. C - 2 of sugar

C. C - 5 of sugar

D. N - of base

Answer: C

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127. 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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128. Adenine pairs with thymine through

A. two hydrogen bonds

B. one hydrogen bond

C. three hydrogen bonds

D. four hydrogen bonds

Answer: A

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129. How many base pairs are present in each full turn of the DNA double helix ?

A. 4

B. 6

C. 8

D. 10

Answer: D

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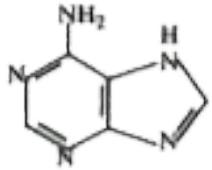
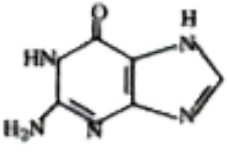
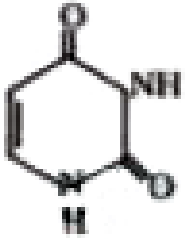
130. The base present in Cytidine :

A. 

B. 

C. 

D. 

Answer: D

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131. Hydrolysis of adenosine triposphate involves rupture of

A. Base-sugar bond

B. Sugar - phosphate bond

C. $P-O-P$ bond

D. $P-N-P$ bond

Answer: C

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132. The backbone of a nucleotide strand contains the following sequence of arrangement

A. Base - Sugar

B. Sugar - Phosphate

C. Base - Phosphate

D. $\text{Base}_1 - \text{Base}_2$

Answer: B

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133. Number of base pairs present in total DNA of human cell (human genome) is around

A. 2.9×10^5

B. 2.9×10^8

C. 2.9×10^7

D. 2.9×10^9

Answer: C

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134. The AT/GC ratio in human beings is (where A=adenine, T=thymine, G=guanine, C=cytosine)

A. 1.52

B. 1.25

C. 0.93

D. 1

Answer: A

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135. The ratio of number of $A + G$ to the number of $C + T$ in DNA of E. Coli species is

A. $1:1$

B. 0.93

C. 1.52

D. 1.8

Answer: A

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136. The couplings between base units of DNA is through

A. Hydrogen bonding

B. Electrostatic bonding

C. Covalent bonding

D. Vander Waals forces

Answer: A

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137. The main role of DNA in a living system is

A. It is the structural material of cell walls

B. It is an enzyme

C. It carries the hereditary characteristics of the organism

D. It participates in cellular respiration

Answer: C

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138. Synthesis of identical copies of DNA is called

A. transcription

B. replication

C. translation

D. reverse transcription

Answer: B

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139. Which of the following statements about RNA is incorrect ?

A. It has a single strand

B. It does not undergo replication

C. It contain any pyrimidine base

D. It controls the synthesis of proteins

Answer: C

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140. If the sequene of bases in DNA is TGAACCCTT, the sequence of bases in m-RNA is

A. ACUUGGGAA

B. TCUUGGGTT

C. ACUUCCCAA

D. TUCUGTUTU

Answer: A

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141. The synthesis of m RNA will be in the direction of

A. $3^1 \rightarrow 5^1$

B. $5^1 \rightarrow 3^1$

C. by both

D. none

Answer: B

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142. The genetic information of a human cell contained in _____ of chromosomes

A. 46 pairs

B. 23 pairs

C. 46

D. 23

Answer: B

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143. Which of the following processes is "semi conservative" ?

A. translation

B. transcription

C. replication

D. reverse transcription

Answer: C

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144. During the replication of DNA, one of the strands is synthesized in pieces and are joined latter in the presence of enzyme called

A. RNA ligase

B. DNA ligase

C. r-RNA

D. m-RNA

Answer: B

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145. Which of the following statements about DNA is not correct ?

A. It has a double helix structure

B. It undergoes replication

C. The two strands in a DNA molecule are exactly similar

D. It contains the pentose sugar, 2-deoxyribose

Answer: C

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146. The RNAs which take part in the synthesis of proteins is/are

A. m-RNA

B. r-RNA

C. t-RNA

D. All the three above

Answer: D

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147. Each codon consists of _____ nitrogen bases

A. four

B. twenty

C. three

D. sixty four

Answer: C

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148. Transcription is a process when

A. messenger RNA is formed from DNA

B. ribosome RNA is formed DNA

C. protein is synthesised at the ribosomes

D. None of the above

Answer: A

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149. The chemical change in DNA molecule that could lead to synthesis of protein with an altered amino acid sequence is called.

A. Replication

B. Lipid formation

C. Cellular membrane

D. Mutation

Answer: D

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150. The relationship between the nucleotide triplets and the amino acids is called

A. Translation

B. Transcription

C. Replication

D. A genetic code

Answer: D

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151. Cytosine, Thymine and Uracil are similar with respect to

A. C = O at 2nd position in pyrimidine ring

B. NH_2 group at 4th carbon in pyrimidine ring

C. C = O at 4th position in pyrimidine ring.

D. absence of C = O group at 2nd position in pyrimide ring

Answer: A

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152. Number of C = O groups in thymine and in X are equal. Now, X is

A. cytosine

B. uracil

C. adenine

D. guanine

Answer: B

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153. The following group/linkage is absent in Adenine but present in Guanine

A. $-C \equiv N$

B. $-NH_2$

C. $> C = O$

D. $-C_N H_2$

Answer: C

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154. The sugar unit present in the nucleotides of RNA is

A. $D-\beta-$ ribose

B. $L-\beta-$ ribose

C. $D-\alpha-$ ribose

D. $L-\alpha-$ ribose

Answer: A

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155. Phosphate ester of X is called a nucleotide. X is

A. adenine

B. guanine

C. nucleoside

D. thymine

Answer: C

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156. In the nucleotide namely adenosine-5'-tri phosphate, the sequence of linkages among N(base), C(sugar) and P(phosphate) is

A. $C - P - N - P - P$

B. $N - C - P - P - P$

C. $P - C - N - P - P$

D. $P - P - P - C - N$

Answer: A

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157. Two or more nucleotides of RNA or DNA are joined as

A. $3' - 5'$

B. $5' - 5'$

C. $3' - 3'$

D. $5' - 3'$

Answer: A

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158. Incorrect relationship regarding all types of living species is

A. $A + G = C + T$

B. $A + G = C + U$

C. $(A + T)/(C + G) = 1$

D. $(A + T)/(C + G) \neq 0$

Answer: D

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159. (A) : Guanine unites with Cytosine but not with Thymine.

(R) : Guanine and Cytosine are purine bases while Thymine is a pyrimidine base.

A. A and R are true and R explains A

B. A and R are true but R does not explain A

C. A is true and R is false

D. A is false and R is true

Answer: C

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160. The reason for double helical structure of DNA is operation of

A. Vander Waal's forces

B. dipole - dipole interaction

C. hydrogen bonding

D. electrostatic attractions.

Answer: C

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161. RNA differs from DNA with respect to the following

A. type of base unit

B. type of sugar unit

C. type of H - bond

D. 1 and 2

Answer: D

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162. Observe the following statements

(A) for DNA, the form having right handed helices with β - conformation is less stable.

(B) on heating, DNA melts so that the two strands separate and on on cooling, they unite

(C) RNA is single stranded while DNA is double stranded.

Correct statements are.

A. A and B

B. B and C

C. A and C

D. A, B and C

Answer: B

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163. Match the following

List - I	List - II
(A) Replication	(1) formation of RNA from DNA
(B) Transcription	(2) synthesis of copy of DNA
(C) Translation	(3) single strand of DNA
(D) Template	(4) synthesis of proteins by RNA

Now, correct match is

A. A - 4, B - 3, C - 2, D - 1

B. A - 1, B - 2, C - 4, D - 3

C. A - 2, B - 1, C - 4, D - 3

D. A - 2, B - 1, C - 3, D - 4

Answer: C

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164. 64 codons code for

A. 100 amino acids

B. 20 amino acids

C. 10 amino acids

D. 700 amino acids

Answer: B

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165. Combination of proteins with nucleic acids gives

A. enzymes

B. polypeptides

C. nucleo proteins

D. dipeptides

Answer: C

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166. Lipids are

A. Nucleic acids occurring in plants

B. Proteins occurring in animals

C. Carbohydrates occurring in plants

D. Fats of natural origin

Answer: D

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167. Which of the following is not belonging to lipids ?

A. carbohydrates

B. oils

C. fats

D. waxes

Answer: A

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168. In plants, lipids occur in

A. fruits

B. nuts

C. seeds

D. all the above

Answer: D

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169. Esters of glycerol with long chain fatty acids are called

A. homo lipids

B. simple lipids

C. triglycerides

D. all the above

Answer: D

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170. Lipids are stored in

(A) Liver

(B) Muscles

(C) Adipose tissues

(D) Bone marrow

The correct combination is

A. Only C

B. Only D

C. C and D only

D. All

Answer: C

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171. The digestion of fats in the intestine is aided by

A. Peptisation

B. Emulsification

C. Diffusion

D. Protection

Answer: B

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172. Which one of the following acts as an emulsifier in lipid metabolism ?

A. Amino acid

B. Fatty acid

C. Bile acid

D. Gluconic acid

Answer: B

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173. Hydrolysis of fats and oils in the body produces

A. Ester

B. Adipase

C. Carbon dioxide

D. Carboxylic acid

Answer: D

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174. The most efficient source of energy in the human body is

A. Fats

B. Sugars

C. Proteins

D. Nuclieic acids

Answer: A

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175. The fat α-oleo $-\beta-$ plamito $-\alpha^1-$ stearin is an example of

A. tri glyceride

B. simple lipid

C. mixed fat

D. all the above

Answer: D

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176. Mixed fat with symmetrical nature is ------

A. α, β - Dipalmitin

B. $\alpha, \alpha^1,$ - Diplamitin

C. α, α^1- Diplamito, β- steatin

D. α, β - Dipalmito, $\alpha^1 -$ stearin

Answer: B

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177. Unsymmetrical simple lipid is ---------

A. 1-Palmitin

B. 2-Palmitin

C. 1, 3-Dipalmitin

D. 1, 3-Dipalmito, 2-stearin

Answer: D

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178. $$\begin{array}{l} CH_2 - O - CO - C_{15}H_{31} \\ | \\ CH - O - CO - C_{17}H_{33} \\ | \\ CH_2 - O - CO - C_{17}H_{35} \end{array}$$

This neutral lipid is called as

A. α - plamito, β - oleo, α^1- stearin

B. α - oleo, β - palmito, α^1-stearin

C. α - stearo, β - oleo, α^1 - palmitin

D. α - palmito, β - oleo, γ - stearin

Answer: A

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179. Waxes are esters of higher fatty acids with long chain

A. Monohydric alcohols

B. Dihydric alcohols

C. Trihydric alcohols

D. All the three above

Answer: A

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180. The triglycerides of which of the following unsaturated fatty acids are not present in oils and fats ?

A. Oleic acid

B. Linoleic acid

C. Linolenic acid

D. Formic acid

Answer: D

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181. Ester of myricyl alcohol with palmitic acid is present in

A. Animal fur

B. Bee's wax

C. Sperm whale oil

D. Wool

Answer: B

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182. Linoline fat is an ester of cholesterol with

A. long chain alcohol

B. phosphoric acid

C. long chain fatty acid

D. glycerol

Answer: C

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183. Which of the following is an unsaturated acid

A. Linoleic acid

B. Stearic acid

C. Caproic acid

D. Archidic acid

Answer: A

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184. Which of the following lipids can insulate nerve impulse ?

A. Simple lipids

B. Phospholipids

C. Glycolipids

D. Terpenes

Answer: B

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185. Lecithin and cephalin are

A. Neutral fats

B. Glyc olipids

C. Waxes

D. Phospholipids

Answer: D

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186. Which one of the following is not a lipid ?

A. Lecithin

B. Spingomyelins

C. Insulin

D. Cephalin

Answer: C

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187. Which of the following is not a wax ?

A. Myricyl palmitate

B. Tripalmitin

C. Myricyl cerotate

D. Cetyl palmitate

Answer: B

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188. Formula of linolenic acid is $C_{17}H_{29}.COOH$. The double bonds occupy the position at

A. $C-9, C-15$

B. $C-12, C-15$

C. $C-9, C-12, C-15$

D. $C-9$ only

Answer: C

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189. Lanoline wool is

A. Palmitic ester of cholesterol only

B. Stearic ester of cholesterol only

C. Oleic ester of cholesterol only

D. palmitic or stearic or oleic ester of cholesterol

Answer: D

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190. Glycolipids are

A. Hetero lipids

B. Neutral fats

C. Derived lipids

D. Waxes

Answer: A

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191. A carbohydrate, galactose is present in

A. Terpenes

B. Glycerophosphatides

C. Glycolipids

D. Phosphoinositides

Answer: C

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192. Sphingol is

A. An amino acid

B. A fatty acid

C. A complex amino alcohol

D. A long chain monohydric alcohol

Answer: C

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193. Polymers of isoprene are called

A. glycolipids

B. waxes

C. derived fats

D. Terpenes

Answer: D

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194. Bile acids, cholesterol and vitamine - D belong to

A. Simple lipids

B. compound lipids

C. derived fats

D. glycolipids

Answer: C

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195. Molecular formula of cholesterol is

A. $C_{27}H_{45}OH$

B. $C_{28}H_{43}OH$

C. $C_{27}H_{43}OH$

D. $C_{28}H_{45}OH$

Answer: A

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196. Which of the following lipid does not contain phosphoric acid ?

A. Lecithin

B. Cephalin

C. sphingomyelins

D. glycolipids

Answer: D

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197. Ergosterol and cholesterol are _____ respectively

A. Derived fat and derived fat

B. Compound fat and derived fat

C. Derived fat and compound fat

D. Simple lipid and hetero lipid

Answer: A

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198. A triglyceride can have how many different acyl groups ?

A. 3

B. 2

C. 1

D. 4

Answer: A

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199. Tristearin and Triolein are -------- lipids

A. saturated, unsaturated

B. unsaturated, unsaturated

C. saturated, saturated

D. unsaturated, saturated

Answer: A

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200. Glycerides are also called neutral lipids because they

A. dissolve in water to give neutral solutions

B. do not undergo hydrogenation

C. do not carry any charge

D. exist as zwitter ions in aqueous solutions

Answer: A

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201. Which of the following cannot be further hydrogenated ?

A. Tripalmitin and Triolein

B. Triolein and Tristearin

C. Tristearin and Trilinolein

D. Tristearin and Tripalmitin

Answer: D

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202. Spermaceti and Bee's wax belong to esters of

A. same alcohol but different fatty acids

B. same fatty acid but different alcohols

C. different alcohols and fatty acids

D. same alcohol and same fatty aicd

Answer: B

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203. In glycerol, if one of the H - atoms of - OH groups is replaced with phosphoric acid, then it is called

A. a simpe liquid

B. a compound lipid

C. a glycolipid

D. a hormone

Answer: B

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204. One mole "trilinolein" (X) on hydrogenation gave Y where 9 moles of hydrogen are found to be consumed. Now, number of "pi" bonds in X are

A. 3/molecule

B. 3/each chain of fatty acid

C. 6/molecule

D. 9/each chain of fatty acid

Answer: B

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205. A diglyceride on hydrolysis gave glycerol and a fatty acid. If the formula of fatty acid is $C_{15}H_{31}COOH$, the diglyceride is

(A) simple lipid

1, 2 - stearin

(C) 1, 2 - palmitin

(D) 1, 3 - palmitin

A. A, B and D

B. B, C and D

C. A, B and C

D. A, C and D

Answer: D

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206. Which of the following does not belong to "phospholipids"

A. glycerophosphotides

B. phosphoinositides

C. Phosphosphingosides

D. Glycolipids

Answer: D

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207. Glycolipid contains the following parts

A. amino alcohol, fatty acid and carbohydrate

B. alcohol, phosphoric acid and carbohydrate

C. alcohol, phosphoric acid and fatty acid

D. alcohol, amino acid, carbohydrate

Answer: A

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208. The following is one of the important biolegical roles of lipids

(A) enzyme activators

(B) energy source

(C) emulsifiers

(D) vitamin carriers

A. A and D

B. B and C

C. A, C and D

D. A, B, D and D

Answer: D

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209. The fats presents in the body act as

A. Food storage only

B. Heat insulator

C. Electrical insulators

D. All the three above

Answer: D

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210. Which of the following substance acts as stimulator ?

A. Vitamin

B. Enzyme

C. Hormone

D. Carbohydrate

Answer: C

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211. Receptors of hormones are generally

A. Carbohydrates

B. Vitamins

C. Lipids

D. Protiens

Answer: D

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212. Steroid hormones are produced by the

(a) Adrenal cortex

(b) Pancreas

(c) Thyroid

(d) Testis

(e) Pitutiary

A. a and d

B. a, b, and c

C. c, d

D. d, e

Answer: A

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213. Substances produced by endocrine glands are

A. Vitamines

B. Harmones

C. Herb

D. Drug

Answer: B

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214. Which of the following is a derivative of amino acid ?

A. Thyroxin

B. Estradiol

C. Estrogene

D. Progesterone

Answer: A

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215. Total number of carbon atoms present in steroid nucleus.

A. 24

B. 17

C. 10

D. 20

Answer: B

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216. Which of following hormone is produced by testis ?

A. Progesterone

B. Estradiol

C. Testosterone

D. Estrone

Answer: C

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217. Harmone containing only ketonic functional group is

A. Estradiol

B. Progresterone

C. Testosterone

D. Insulin

Answer: B

Watch Video Solution

218. Synthetic testosterone promotes

A. Menstrual cycle

B. Muscle growth

C. Respiration

D. Birth control agents

Answer: B

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219. Phosphorylation of glucose is increased by

A. Auxins

B. Insulin

C. Ethylene

D. Transumatic acid

Answer: B

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220. In insulin molecule S - S linkage is in between

A. Cysteine - Glycine

B. Cystein - Cystein

C. Cysteine - Valanine

D. Proline - Cystein

Answer: B

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221. Which of the following is not an example of phytohormones ?

A. Cytokinins

B. Ethylene

C. Auxins

D. Insulin

Answer: D

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222. Estradiol is responsible for the development of

A. Primary male characters

B. Secondary female characters

C. Primary female characters

D. Secondary male characters

Answer: B

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223. Which of the following maintains constant sugar level in blood ?

A. Gibberlins

B. Insulin

C. Glucogen

D. Estrone

Answer: B

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224.

List - I (Name of hormone)	List - II (Functional group in hormons)
(1) Testosterone	(a) Double bond
(2) Estradiol	(b) Ketone
(3) Progesterone	(c) Alcohols
(4) Ethylene	(d) Alcohol and ketone

The correct match is

A. 1 - c, 2 - b, 3 - d, 4 - a

B. 1 - d, 2 - c, 3 - b, 4 - a

C. 1 - d, 2 - c, 3 - a, 4 - b

D. 1 - a, 2 - b, 3 - c, 4 - d

Answer: B

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225.

List - I	List - II
(1) Steriod hormone	(a) Cytokinins
(2) None steroid hormone	(b) Estrogens
(3) Plant hormone	(c) Auxins
(4) Peptide hormone	(d) Insulin

The correct match is

A. 1 - b , 2 - b , 3 - c, 4 - d

B. 1 - b, 2 - a, 3 - d, 4 - c

C. 1 - b, 2 - a, 3 - c, 4 - d

D. 1 - c, 2 - a, 3 - d, 4 - b

Answer: C

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226. For artificial ripening of fruit which of the following is used ?

A. Testosterone

B. Insulin

C. Ethylene

D. Estrogen

Answer: C

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227. Which of the following hormones contains iodine ?

A. Insulin

B. Thyroxine

C. Adrenaline

D. Testosterone

Answer: B

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228. Which of the following is a male sex hormone ?

A. Progesterone

B. Estrone

C. Epinephrine

D. Testosterone

Answer: D

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229. The hormone which controls the uterine cycle in women is

A. Estrone

B. Androsterone

C. Progesterone

D. Testosterone

Answer: C

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230. The sex hormone which controls the development and maintenance of pregnancy is

A. Cortisone

B. Thyroxine

C. Progesterone

D. Estrone

Answer: C

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231. The hormones used by athletes to increase the mass and strength of muscles is/are

A. Estrogens

B. Gestogenes

C. Androgens

D. Both estrogens and androgens

Answer: C

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232. Number of six membered rings present in a steroid nucleus is

A. 1

B. 2

C. 3

D. 4

Answer: C

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233. The organic compound that transfer biological information from one group of cells to distant tissues or organs are called as

A. Vitamins

B. Proteins

C. Hormones

D. Carbohydrates

Answer: C

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234. Insulin is a

A. Non steroidal, peptide hormone

B. Steroidal, peptide hormone

C. Non steroidal, amino acid hormone

D. Steroidal, amino acid derivative hormone

Answer: A

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235. An example for amino acid hormone is ?

A. Insulin

B. Testosterone

C. Thyroxine

D. Progesterone

Answer: C

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236. In insulin molecule there are two chains 'A' and 'B', 'A' contain 'X' - amino acids and 'B' contain 'Y' amino acids. The value of X and Y are

A. 21, 31

B. 21, 30

C. 28, 36

D. 32, 34

Answer: B

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237. Terpenes are the polymers of

A. Pentanoic acid

B. 1, 3 - Pentadiene

C. Isoprene

D. Pentanal

Answer: C

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Level Ii Lecture Sheet Exercise I

1. Consider in the compound given :

The correct order of acidic nature of the positions X, Y, Z is

A. $Z > X > Y$

B. $X > Y > Z$

C. $X > Z > Y$

D. $Y > X > Z$

Answer: B

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2. One of the essential alpha amino acids is

A. Lysine

B. glycine

C. serine

D. proline

Answer: A

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3. The pH value of a solution in which a polar amino acid doesn't migrate under the influence of an electric field is called

A. isoelectronic point

B. isoelectric point

C. neutralisation point

D. None of these

Answer: B

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4. The structural feature which distinguishes proline from α - amino acids is that

A. proline is optically inactive

B. proline contains an aromatiac group

C. proline is a dicaraboxylic acid

D. proline is a secondary amine

Answer: D

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5. Which amino acid is achiral ?

A. Alanine

B. Valine

C. Proline

D. None of these

Answer: D

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6. Which is not a true statement ?

A. α - carbon atom of α - amino acids is asymmetric except in glycine

B. All proteins contain α - amino acids of L - configuration

C. Human body can synthesize all proteins they need

D. At pH = 7 both amino group and carboxylic group exists in the ionised form

Answer: D

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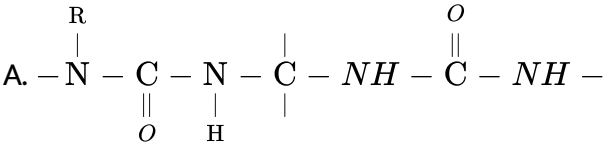
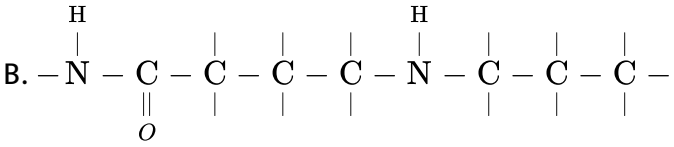
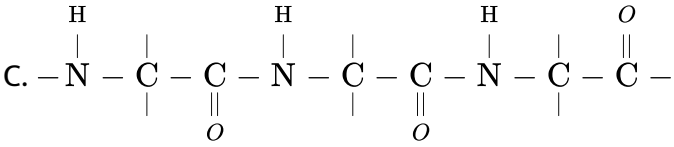
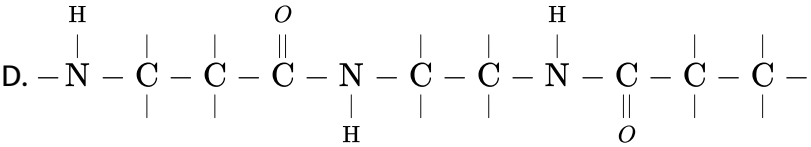
7. Which of the following structure represents the peptide chain ?

A. 

B. 

C. 

D. 

Answer: C

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8. All common amino acids except one react with cold nitrous acid (HNO_2) and evolve nitrogen gas, that amino acid is

A. cysteine

B. proline

C. histidine

D. None of these

Answer: B

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9. The amino acid cysteine often forms a disulphide bond with another nearby cysteine. The reaction is bst classified as

A. an addition

B. a substitution

C. an oxidation

D. a reduction

Answer: C

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10. Peptides on hydrolysis gives

A. amines

B. amino acids

C. ammonia

D. alcohols

Answer: A

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11. Peptides are composed of amino acids joined by amide bonds. Which of the following statements is not correct ?

A. Amide groups are more resistant to hydrolysis than are similar ester groups

B. $p-\pi$ resonance stabilises the amide bond

C. Stable conformations of peptide are restricted to those having planar amide groups

D. Amide groups doesnot participate in hydrogen bonding

Answer: D

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12. Which of the following is used in a colour test of amino acid ?

A. Ninhydrin

B. Cyanogen bromide

C. Trypsin

D. Chymotrypsin

Answer: A

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13. Isoelectric point is

A. the pH at which all molecular species are ionised and that carry the same charge

B. the pH at which all molecular species are neutral and uncharged

C. the pH at which half molecular species are ionised (charged) and other half unionised

D. the pH at which negataively and positively charged molecular species in equal concentration

Answer: D

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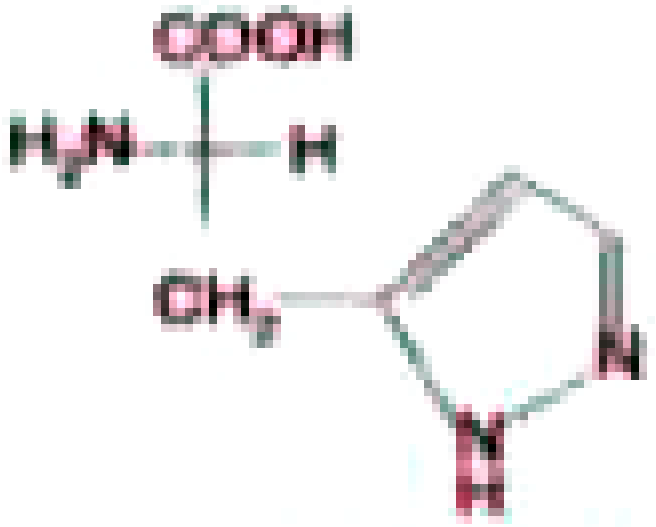

14. Histidine has $pK_{a1} = 1.8, pK_{a2} = 09.2$ and $pK_{a3} = 6.0$. The isoelectric point, PI of histidine is likely to be

A. in between 1.8 and 6.0

B. in between 6.0 and 9.2

C. below 1.8

D. above 9.2

Answer: B

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15. Glutamic acid, $H_2N-CH(CH_2CH_2COOH)COOH$ has $pK_{a1}, (\alpha-COOH) = 2.2, pK_{a2}\left(\alpha-\overset{+}{N}H_3\right) = 9.8$ and pK_{a3} (R group COOH) = 4.3. The isoelectric point of glutamic acid is

A. 5.9

B. 7

C. 10.2

D. 3.25

Answer: D

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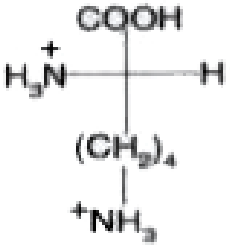
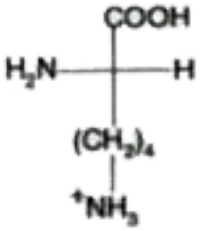
16. Which of the following is the major solute species in a solution of lysine at pH = 10.5(pI = 9.6) ?

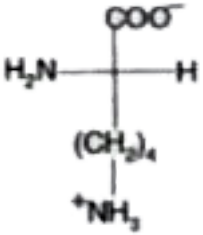
A.



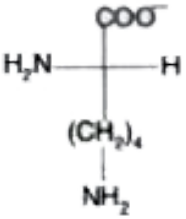
B.



C.



D.



Answer: D

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17. In an electric field, if an amino acid migrates towards cathode, the pH of the solution is said to be

A. less than pI

B. more than pI

C. equal than pI

D. 7 (seven)

Answer: A

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18. During the process of digestion, the proteins present in food materials are hydrolysed to amino acids. The two enzymes are involved in the process.

Proteins $\xrightarrow{\text{Enzyme - A}}$ polypeptides $\xrightarrow{\text{Enzyme - B}}$ amino acids are respectively.

A. pepsin and trypsin

B. invertase and zymase

C. amylase and maltase

D. diastase and lipase

Answer: A

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19. The helical structure or a secondary structure of proteins is stabilised by

A. peptide bonds

B. dipeptide bonds

C. H - bond

D. ether bonds

Answer: C

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20. Proteins give

A. a violet colour with alkaline $CuSO_4$ solution

B. a purple colour on boiling with dilute ninhydrin solution

C. yellow colour on boiling with HNO_3

D. All the above

Answer: D

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21. The destruction of the biological nature and activity of proteins by heat or chemical agent is called

A. dehydration

B. denaturation

C. denitrogenation

D. deamination

Answer: B

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22. The primary structure of protein is based upon the

A. hydrogen bonding

B. van der Waal's attraction

C. ionic bonding

D. covalent bonding

Answer: D

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Level Ii Lecture Sheet Exercise Ii

1.

	pK_{a_1} $(-COOH)$	pK_{a_2} $(-NH_2)$	pK_{a_3} (Acid or base of
$HOOC-CH_2-\underset{\underset{NH_2}{\vert}}{C}H-COOH$ Aspartic acid	2.1	9.8	3.9
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-(CH_2)_4-NH_2$ Lysine	2.2	9.0	10.5
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-CH-OH$ Threonine	2.6	10.4	
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-CH_2CH_2CONH_2$ Glutamine	2.2	9.1	

The aqueous solution of lysine is neutral at

A. pH = 7

B. pH = 9.8

C. 2.2

D. 5.6

Answer: B

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2.

	pK_{a_1} ($-COOH$)	pK_{a_2} ($-NH_2$)	pK_{a_3} (Acid or base of
$HOOC-CH_2-\underset{NH_2}{\underset{\mid}{C}}H-COOH$ Aspartic acid	2.1	9.8	3.9
$HOOC-\underset{NH_2}{\underset{\mid}{C}}H-(CH_2)_4-NH_2$ Lysine	2.2	9.0	10.5
$HOOC-\underset{NH_2}{\underset{\mid}{C}}H-CH-OH$ Threonine	2.6	10.4	
$HOOC-\underset{NH_2}{\underset{\mid}{C}}H-CH_2CH_2CONH_2$ Glutamine	2.2	9.1	

At pH = 3 which of the following of aspartic acid is predominant ?

A. $^{-}OOC-CH_2-\underset{NH_3^+}{\underset{\mid}{C}}H-COO^{-}$

B. $^{-}OOC-CH_2-\underset{NH_3^+}{\underset{\mid}{C}}H-COO^{-}$

C. $HOOC-CH_2-\underset{NH_3^+}{\underset{\mid}{C}}H-COO^{-}$

D. $HOOC-CH_2-\underset{NH_2}{\underset{\mid}{C}}H-COO^{-}$

Answer: C

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3.

	pK_{a_1} $(-COOH)$	pK_{a_2} $(-NH_2)$	pK_{a_3} (Acid or base of
$HOOC-CH_2-\underset{\underset{NH_2}{\vert}}{C}H-COOH$ Aspartic acid	2.1	9.8	3.9
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-(CH_2)_4-NH_2$ Lysine	2.2	9.0	10.5
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-CH-OH$ Threonine	2.6	10.4	
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-CH_2CH_2CONH_2$ Glutamine	2.2	9.1	

The Zwitter ionic form of lysine is

A. I and II are conjugate acid - base pairs

B. The maximum conc. of II is found at pH = 9.1

C. The maximum con. of III is found at pH = 2.2

D. I and II are conjugate acid and conjugate base of III, respectively

Answer: A

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4.

	pK_{a_1} $(-COOH)$	pK_{a_2} $(-NH_2)$	pK_{a_3} (Acid or base of
$HOOC-CH_2-\underset{\underset{NH_2}{\vert}}{C}H-COOH$ Aspartic acid	2.1	9.8	3.9
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-(CH_2)_4-NH_2$ Lysine	2.2	9.0	10.5
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-CH-OH$ Threonine	2.6	10.4	
$HOOC-\underset{\underset{NH_2}{\vert}}{C}H-CH_2CH_2CONH_2$ Glutamine	2.2	9.1	

The Zwitter ionic form of lysine is

A. $^{-}OOC-\underset{\underset{NH_2}{\vert}}{CH}-(CH_2)_4-\overset{+}{N}H_3$

B. $^{-}OOC-\underset{\underset{+NH_3}{\vert}}{CH}-(CH_2)_4-NH_2$

C. $HOOC-\underset{\underset{+NH_3}{\vert}}{CH}-(CH_2)_4-\overset{+}{N}H_3$

D. $^{-}OOC - \underset{\underset{+NH_3}{|}}{C}H - (CH_2)_4 - \overset{+}{N}H_3$

Answer: A

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Level Ii Lecture Sheet Exercise Iii

1. Match the following :

List - I	List - II
$(A) CH_3 - CH(OH) - CHO$	(p) Carbohydrate
$(B) HOCH_2 - CH(OH).CHO$	(q) Amino acid
$(C) CH_3 - CH(NH_2).COOH$	(r) Positive Tollen's test
$(D) Ph.CH(CH_2NH_2).COOH$	(s) Ninhydrint test

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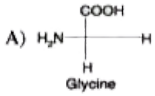
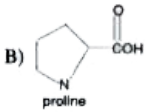
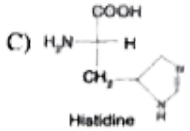
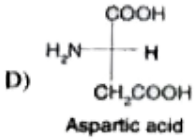
2. Match the following :

List - I	List - II
A)  Glycine	p) Optically active amino acid
B)  proline	q) Suitable for van slyke estimation
C)  Histidine	r) Neutral amino acid
D)  Aspartic acid	s) Basic amino acid

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3. Match the following :

List - I	List - II
$(A) CH_3 - \underset{\underset{NH_2}{\vert}}{CH} - CH_2 - \overset{\overset{O}{\Vert}}{C} - OH$	(p) Exists as Zwitter ion in solid form
$(B) CH_3 - CH_2 - \underset{\underset{NH_2}{\vert}}{\underset{CH}{\vert}} - COOH$	(q) On heating given diastereomeric
$(C) H_2N - CH_2 . CH_2CH_2 - \overset{\overset{O}{\Vert}}{C}OH$	(r) On heating given a cyclic product
$(D) H_2N - CH_2 - COOH$	(s) Treatment of ninhydrin gives blu

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Practice Sheet 1

1. Which of the following statements is/are wrong

A. All amino acids are optically active

B. Most of the naturally occuring amino acids are L - amino acids

C. Glycine is optically inactive

D. All amino acids contain a primary amino group except proline

Answer: A

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2. Which of the following amino acids contains sulphur in its structure

A. Proline

B. Cysteine

C. Leucine

D. Histidine

Answer: B

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3. $R - \underset{\underset{NH_2}{|}}{C}H - COOH \xrightarrow{HNO_2} A$. The product A is

A. RCH_2COOH

B. RCH_2NH_2

C. $RCH(OH)COOH$

D. $RCH(OH)CH_2OH$

Answer: C

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4. Which statement about the zwitter ionic form of an amino acid acid is correct ?

A. The zwitter ion acts only as a base

B. The zwitter ion carries an overall charge which can be positive or negative

C. The zwitter ion is neutral overall

D. The zwitter ion acts only as an acid

Answer: C

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5. You have a mixture of three amino acids : E(pI = 3.2), Y(pI = 5.7) & K(pI = 9.7). Under electro - phoresis at pH = 7.7, in which direction will each component of the mixture move ?

A. E to anode, Y & K to cathode

B. E to anode, Y stationery, K to cathode

C. E to cathode, Y stationery, K to anode

D. E & Y to anode , K to cathode

Answer: D

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6. Which of the following statements is true for phenylalanine in an aqueous solution at pH = pI ?

A. The nonpolar, neutral species $C_6H_5CH_2CH(NH_2)CO_2H$ is the most abundantsolute

B. The concentrations of [+] and [-] charged molecular ions are equal.

C. Racemization is rapid

D. This condition is impossible, since pH can never equal pI

Answer: B

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7. Which of the following statements most correctly defines the isoelectric point ?

A. The pH at which all molecular species are ionized and that carry the same charge

B. The pH at which all molecular species are neutral and uncharged

C. The pH at which half molecular species are ionised (charged) and other half unionised

D. The pH at which negataively and positively charged molecular species in equal concentration

Answer: D

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8. At isoelectric point, amino acid is present as

A. $H_2N - \underset{\underset{\mathrm{R}}{|}}{CH} - COOH$

B. $\overset{+}{H_3N} - \underset{\underset{\mathrm{R}}{|}}{CH} - \overset{-}{COO}$

C. $\overset{+}{N}H_3 - \underset{\underset{\mathrm{R}}{|}}{CH} - COOH$

D. $H_2N - \underset{\underset{\mathrm{R}}{|}}{CH} - \overset{-}{COO}$

Answer: B

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9. Which of the following statement is not true ?

A. Pheromenones are secreated outside the body by the insects

B. Aspirin is analgesic and antipyretic

C. Sucrose is a dipeptide commonly known as aspartame

D. The DNA assists in the synthesis of RNS molecules

Answer: D

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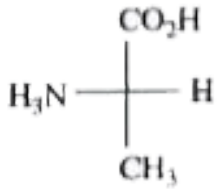
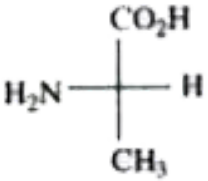
10. Which of the following is the major solute species in a solution of alanine at pH = 6 ?

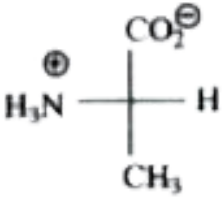
A.



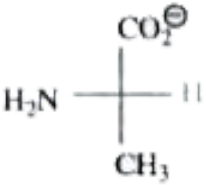
B.



C.



D.



Answer: C

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11. An activated amino acid $A(H_2NCHRCOX)$ reacts with an amino acid $B(H_2NCHR'CO_2H)$. Which statement is correct about this reaction ?

A. The amino acids are cpupled by a peptide link of form $-CONH-$

B. Activation prevents reaction between two molecules of A

C. The reaction involves elimination of HX

D. A dipeptide is formed

Answer: A::C::D

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12. Which statement about proteins is correct ?

A. Collagen is an example of fibrous protein

B. Myoglobin is an example of a globular protein and contains a prosthetic group

C. Proteins are naturally occurring polypeptides

D. Hydrogen bonding between C = O and H - N groups

Answer: A::B::D

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13. Peptides are compounds of amino acids joined by amide bonds. Which of the following statements is correct ?

A. Amide groups are more resistant to hydrolysis than are similar ester groups

B. p - p resonance stabilizes the amide bond

C. Stable conformations of peptide are restricted to those having planar amide groups

D. Amide groups do not participate in hydrogen bonding interactions

Answer: A::B::C

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14. Which of the following is an important secondary structural feature in large peptides and proteins ?

A. The α - helix

B. The β - turn

C. Chair conformation

D. The β - pleated sheet

Answer: A::B::D

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15. A protein can be denaturated by .....

A. Change of oH

B. Addition of detergents

C. Adding Urea

D. Strong heating

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

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16. Which of the following combination are correct in case of proteins ?

A. α - helix of protein _____ secondary structure

B. Sequence of Amino acids _____ Primary structure

C. Denaturation _____ Breaking of peptide bonds

D. β - plated sheet _____ quaternarystructure

Answer: A::B

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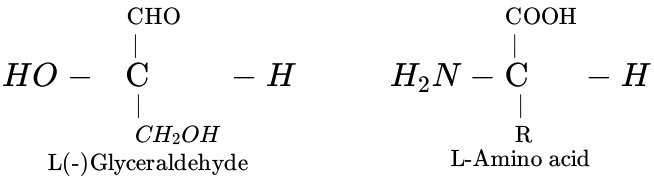
17. α - amino acids are high melting crystalline solids because of the zwitterion structure. They are moderately soluble in water. In acidic medium, α - amino acids exist as cations (I) and thus migrate towards cathode under the influence of an electric field. On the other hand, in alkaline medium, α - amino acids exist as anions (III) and thus migrate towards anode under the influence of an electric field. However, at some intermediate value of p^H, the concentration of the cationic form (I) and anionic form (III) will become equal and consequently the α - amino acid will exist primarily as the neutral dipolar ion (II). At this p^H, there would be no net migration of the amino acid in an electric field. This p^H at which there is no net migration of the amino acid under the influence of an applied electric field is called isoelectric point (pI). Each amino acid has a characteristic isoelectric point. The pH of an amino acid that does not have an ionisable side chain such as alanine isd average of pK_a values of the carboxyl group and the protonated amino group.

$$H_3\overset{+}{N}-\underset{|}{\overset{R}{C}}H-COOH \underset{H^+}{\overset{OH^-}{\Longleftrightarrow}} H_3\overset{+}{N}-\underset{\text{Zwitterion (II)}}{\underset{|}{\overset{R}{C}}H}-COO^- \underset{H^+}{\overset{OH^-}{\Longleftrightarrow}} \overset{+}{N}$$

Further, the α - carbon of all the amino acids (except glycine) is chiral (asymmetric) and hence amino acids can exist in teo stereoisomeric forms

i.e., D and L. However, all the nautrally occurring amino acids belong to the L - series.



Which of structural formula of lysine $\left(\begin{matrix} \text{COOH} \\ | \\ NH_2 - \text{C} \\ | \\ H \end{matrix} - CH_2 - CH_2 - CH_2 - CH_2NH_2 \right)$ at pH 13 ?

A. $H_3\overset{\oplus}{N}CH_2CH_2CH_2CH_2 \underset{\underset{\oplus NH_3}{|}}{\text{C}} HCO_2H$

B. $H_3\overset{\oplus}{N}CH_2CH_2CH_2\underset{\underset{NH_3}{|}}{\text{C}} HCO_2^{\ominus}$

C. $H_2NCH_2CH_2CH_2CH_2\underset{\underset{NH_2}{|}}{\text{C}} HCO_2^{\ominus}$

D. $H_2NCH_2CH_2CH_2CH_2\underset{\underset{NH_2}{|}}{\text{C}} HCOOH$

Answer: C

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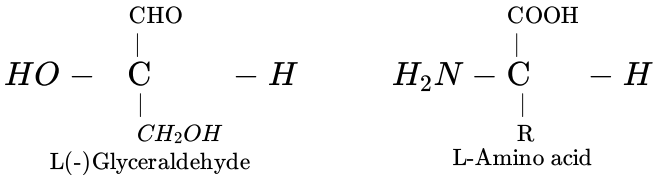
18. α - amino acids are high melting crystalline solids because of the zwitterion structure. They are moderately soluble in water. In acidic medium, α - amino acids exist as cations (I) and thus migrate towards cathode under the influence of an electric field. On the other hand, in alkaline medium, α - amino acids exist as anions (III) and thus migrate towards anode under the influence of an electric field. However, at some intermediate value of p^H, the concentration of the cationic form (I) and anionic form (III) will become equal and consequently the α - amino acid will exist primarily as the neutral dipolar ion (II). At this p^H, there would be no net migration of the amino acid in an electric field. This p^H at which there is no net migration of the amino acid under the influence of an applied electric field is called isoelectric point (pI). Each amino acid has a characteristic isoelectric point. The pH of an amino acid that does not have an ionisable side chain such as alanine isd average of pK_a values of the carboxyl group and the protonated amino group.

$$H_3\overset{+}{N} - \underset{|}{\overset{R}{C}}H - COOH \underset{H^+}{\overset{OH^-}{\Longleftrightarrow}} H_3\overset{+}{N} - \underset{\text{Zwitterion (II)}}{\underset{|}{\overset{R}{C}}H} - COO^- \underset{H^+}{\overset{OH^-}{\Longleftrightarrow}} \overset{+}{N}$$

Further, the α - carbon of all the amino acids (except glycine) is chiral (asymmetric) and hence amino acids can exist in teo stereoisomeric forms

i.e., D and L. However, all the nautrally occurring amino acids belong to the L - series.



In alanine, carboxyl group ionises at $pK_{a1} = 2.34$ and ammonium ion at $pK_{a2} = 9.69$. The isoelectric point of the amino acid is at p^H.

A. 6.02

B. 2.34

C. 9.60

D. 6.97

Answer: A

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19. α - amino acids are high melting crystalline solids because of the zwitterion structure. They are moderately soluble in water. In acidic medium, α - amino acids exist as cations (I) and thus migrate towards

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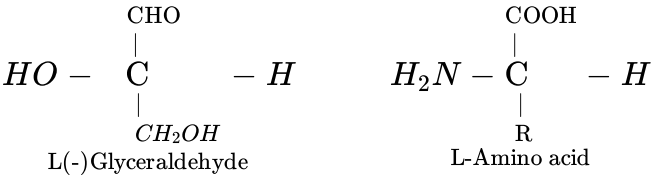

N - terminus of the peptide structure is on the

A. left hand side

B. right hand side

C. both sides

D. random way

Answer: A

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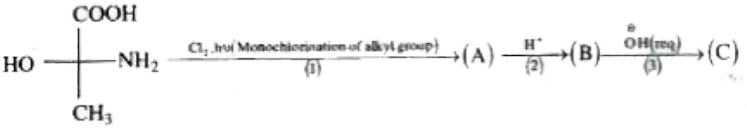
20.



The product (A) is

A. An achiral compound

B. Chiral compound (racemic mixture)

C. A chiral compound (optically pure)

D. A mixture of diastereomers

Answer: B

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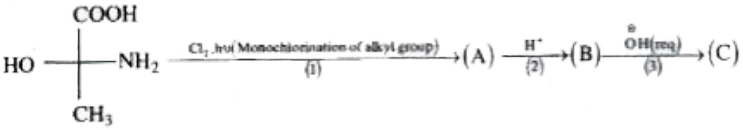
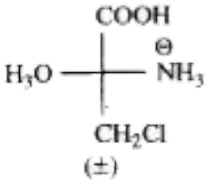
21.

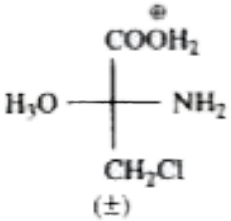


Compound (B) is

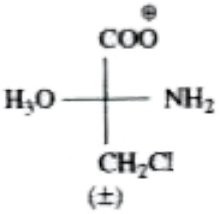
A.



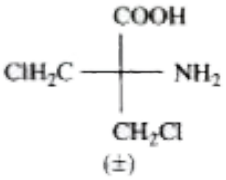
B.



C.



D.



Answer: A

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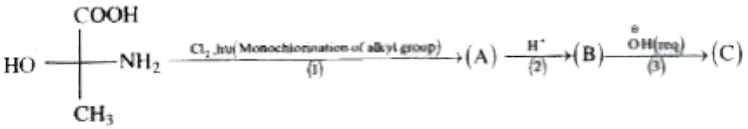
22.



The product (C) is

A. An anion

B. A zwitter ion (species with positive and negastive end)

C. A cation

D. A dianion

Answer: B

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23.

List - I	List - II
(A) Glycine	(p) Forms chloroacetic acid with NOCl
(B) Lysine	(q) Neutral
(C) Proline	(r) Optically inactive
(D) Glutamic acid	(s) Basic
	(t) Isoelectric point

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24.

List - I	List - II
(A) Acidic amino acid	(p) Valine
(B) Neutral amino acid	(q) Methionine
(C) Sulphur containing amino acid	(r) Aspartic acid
(D) Hydroxyl group containing amino acid	(s) Serine
	(t) Cysteine

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25. A tripeptide is composed equally of L - valine, L - tyrosine and L - alanine (one molecule of each).

How many isomeric tripeptides of this kind may exist _____.

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26. The number of polypeptide chains in insulin is ?

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27. In an amino acid the Carboxylic group ionises at

$p^{Ka_1} = 2.40$ and Ammonium ion at

$p_{Ka_2} = 9.60$ then the isoelectric point is ?

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28. Iso electric point of Alanine is $p^H = 6$. At which p^H, maximum concentration of zwitter ion of alanine will be present ?

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29. The number of possible dipeptides formed with two amino acids A and B are

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30. p^I of $H_3\overset{\oplus}{N} - CH_2 - COOK$ is 5

$H_3\overset{\oplus}{N}CH_2COOH \Leftrightarrow H_2NCH_2COO^- + H^+ K_a = 10^{-4}$

$H_2\overset{\oplus}{N}CH_2COO^- \Leftrightarrow H_2NCH_2COO^- + H^+ K_a = 10^{-X}$ What is x ?

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Practice Sheet 2

1. Which of the following is correct with respect to the amino acid compostion of proteins ?

A. Larger proteins have a more uniform distribution of amino acids than smaller proteins

B. The average molecular weight of an amino acid in a protein protein increases with the size of the protein

C. Proteins with different functions usually difer significantly in their amino acid composition

D. Proteins with the same molecular weight have the same amino acid composition

Answer: C

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2. Which of the following refers to particularly stable arrangements of amino acid residues in a protein that rise to reoccuring patterns ?

A. Primary structure

B. Secondary structure

C. Tertiary structure

D. Quaternary structure

Answer: A

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3. By adding SDS (sodium dodecyl sulphate) during the electrophoresis of proteins, it is possible to

A. determine a protein's isoelectric point

B. determine an anzyme's specific activity

C. determine the amino acid composition of the protein

D. preserve a protein's native structure and biological activity

Answer: D

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4. The most important contribution to the stability of a protein's conformation appears to be the

A. entropy increase from the decrease in ordered water molecules forming a solvent shell around it

B. maximum entropy increase from ionic interactions between the ionized amino acids in a protein

C. sum of free ebnergies of formation of many weak interactions among the hundreds of amino acids in a protein

D. sum of free energies of formation of many weak interactions between its polar amino acids and surrounding water

Answer: C

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5. Which protein is main constituent of milk ?

A. Casein

B. Insulin

C. Myosine

D. Keratin

Answer: A

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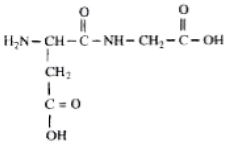
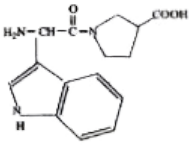
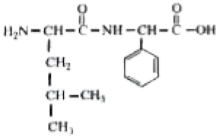
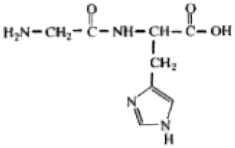
6. Which of the following structures is not a dipeptide ?

A. 

B. 

C. 

D. 

Answer: B

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7. Which of the following statement about the conformation (secondary and tertiary structure) of proteins is false ?

A. The four atoms of an amide linkage $(-CO-NH-)$ lie in a plane as a result of resonance between the nitrogen and the carbonyl group

B. Electrostatic attraction occurs between basic and acidic side chains

C. The favoured conformation of a protein is always that which has the greatest number of hydrogen bonds

D. The presence of the amino acid proline has the effect of turning a curner in a protein

Answer: D

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8. Which of the following statement about the arrangement of a protein in three dimensions is false ?

A. As a result of hydrogen bonding a portion of a protain may exist as a right - handed α - helix with 3.6 amino acid residues per turn, and a repeat unit of 5.4Å

B. As a result of hydrogen bonding a portion of a protein may exist as a pleated sheet, in which the repeat unit is 7.0Å

C. In a pleated sheet, the polyamide chains may be parallel or antiparallel

D. A portion of a protein may exist as a flat sheet with a repeat unit of 7.2Å

Answer: D

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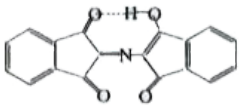
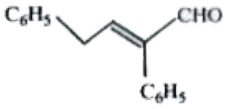
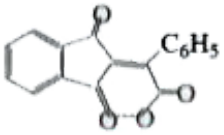
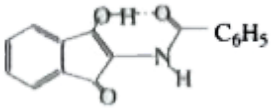
9. Ninhydring reasgent reacts with acids to give a purple colour. In the reaction of ninhydrin with phenylalanine, which of the following is responsible for this colour ?

A. 

B. 

C. 

D. 

Answer: A

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10. Which of the following statements most correctly defines the isoelectric point ?

A. The pH at which all molecular species are ionized and that carry the same charge

B. The pH at which all molecular species are neutral and uncharged

C. The pH at which half molecular species are ionised (charged) and other half unionised

D. The pH at which negataively and positively charged molecular species in equal concentration

Answer: D

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11. Which of the following amino acids have very low isoelectric pH value (lower than 5) ?

A. Histidine

B. Aspartic acid

C. Glutamic acid

D. Arginine

Answer: B::C

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12. Which of the following amino acids have very high isoelectric pH value, higher than 9 ?

A. Proline

B. Lysine

C. Tyrosine

D. Arginine

Answer: B::D

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13. Which of the following is (are) characteristics of an - amino acid at their isoelectric point ?

A. It possesses no net charge

B. Both acid and amine groups remain in their neutral state

C. It does not move towards either electrode under influence of applied electric field

D. It has no net effect on the moistened litmus paper

Answer: A::C::D

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14. In which of the following case, the forms of amino acid and pH is (are) correctly matched ?

A. Alanine : $pH = 3, H_3\overset{+}{N} - \underset{CH_3}{\underset{|}{C}}H - COO^-$

B. Leucine : $pH = 10, H_2N - \underset{CH_2 - \underset{CH_3}{\underset{|}{C}}H - CH_3}{\underset{|}{CH}} - COO^-$

C. Aspartic acid : $pH = 9, H_2N - \underset{CH_2 - COO^-}{\underset{|}{CH}} - COO^-$

D. Lysine : $pH = 3, H_2\overset{+}{N} - \underset{\underset{CH_2CH_2CH_2CH_3\overset{+}{N}H_3}{|}}{CH} - COOH$

Answer: B::C::D

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15. Which of the following statements regarding a peptide linkage in a protein molecule is/are correct ?

A. It is an amide linkage

B. It has partial double bond character

C. It is hydrophilic in nature

D. It connects protein molecules through H - bonds

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

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16. What is/are true regarding 20 standard amino acid molecules ?

A. They are all chiral and have L - configuration

B. They have very high melting points compared to other organic compounds of comparable molar masses

C. They have very low solubility in diethyl ether

D. They have very high electrical conductivity in aqueous solution

Answer: B::C::D

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17. Transcription is the synthesis of m.RNA from a DNA in cell nucleus. It resembles the DNA replication. DNA contains the sequence of bases called pramotor sites. These pramotor sites are bound to the enzyme which initiates the m.RNA synthesis

The process involve in the RNA farmation on DNA template is

A. Transcription

B. Translation

C. Replication

D. Transfermation

Answer: A

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18. Transcription is the synthesis of m.RNA from a DNA in cell nucleus. It resembles the DNA replication. DNA contains the sequence of bases called pramotor sites. These pramotor sites are bound to the enzyme which initiates the m.RNA synthesis

Enzyme required for transcription

A. Restriction enzyme

B. DNA polymerase

C. RNA polymerase

D. RNA ase

Answer: C

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19. Transcription is the synthesis of m.RNA from a DNA in cell nucleus. It resembles the DNA replication. DNA contains the sequence of bases called pramotor sites. These pramotor sites are bound to the enzyme which initiates the m.RNA synthesis

Sigma factor is the component of

A. DNA ligase

B. DNA polymerase

C. RNA polymerase

D. ENDO Nuclease

Answer: C

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20. The synthesis of identical copies of DNA is called replication (or) Duplication of DNA. DNA is duplicated so that the DNA in the New cell is identical to original DNA. Replication of DNA is enzyme catalysed process. In this 2-strands of DNA strats unconding at perticuler region.

Which of the following Biomolecules self repair mechanism.

A. DNA, RNA & Protein

B. DNA & RNA

C. Only DNA

D. Only RNA

Answer: C

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21. The synthesis of identical copies of DNA is called replication (or) Duplication of DNA. DNA is duplicated so that the DNA in the New cell is

identical to original DNA. Replication of DNA is enzyme catalysed process. In this 2-strands of DNA strats unconding at perticuler region.

Which of the following mechanism of DNA polymerase help in prevent error during replication of DNA

A. Recheking

B. Proof cheking

C. Proof reading

D. All

Answer: C

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22. The synthesis of identical copies of DNA is called replication (or) Duplication of DNA. DNA is duplicated so that the DNA in the New cell is identical to original DNA. Replication of DNA is enzyme catalysed process. In this 2-strands of DNA strats unconding at perticuler region.

The desortion of DNA helix due to pyrimidine dimer farmation is called.

A. Nick

B. Kink

C. Single strand break

D. None

Answer: B

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23.

List - I (Vitamines)	List - II (Disease folate defficiency)
(A) A	(p) Folate defficiency Anaemina
(B) C	(q) Bleeding gums
(C) D	(r) Osteomalacia
(D) B_{12}	(s) Xeropthalmia

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24.

List - I (Vitamines)	List - II (Chemical names)
$(A) B_1$	(p) Biotin
$(B) B_2$	(q) Pyridoxine
$(C) B_6$	(r) Thiamin
(D) H or vitamin B - 7	(s) Lactoflavin

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25. Number of peptide chains in oligo proteins.

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26. _____ structures associated with shape of protiens.

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27. Aspartime has _____ number of peptide bond/s.

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28. Number of sugar molecules in protein _____

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29. Number of H bonds present between adenine and thymine in formation of Nucleic acid

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30. RNA polymerase [OCHOA 1953] has _____ polypeptide chains.

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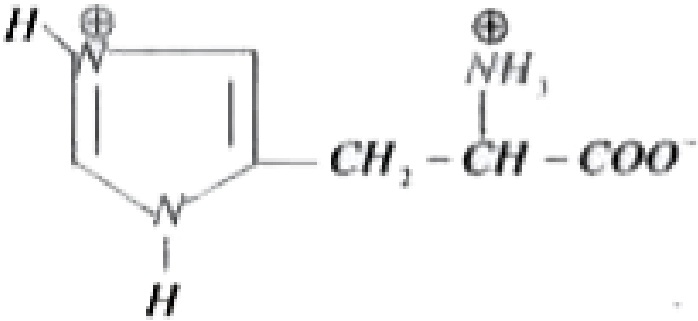
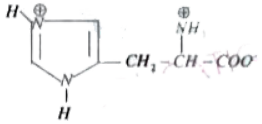
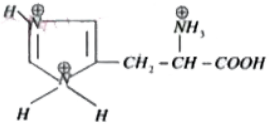
Practice Sheet 3

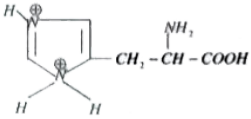
1. Histidine, a hetro cyclic amino acid has following structure at $p^H < 1.82$ is



At $p^H > 1.82$. The structure shows be

A. 

B. 

C. 

D. both a and b

Answer: A

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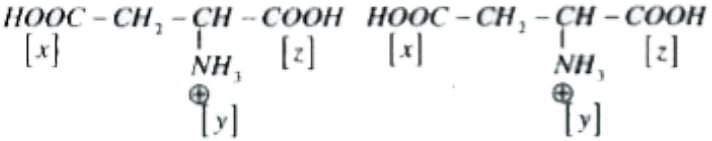
2. The Pka values for 3-Ionisable groups x, y, z of glytamic acid are 4.3, 9.7, & 2.2 respectively.



The isoelectric point for the Aminoacid is

A. 7.0

B. 3.25

C. 4.95

D. 5.95

Answer: B

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3. The enzyme Ptyalin used for the digestion of food is present.

A. Blood

B. Saliva

C. Intestines

D. Adrenal gland

Answer: B

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4. Which of the following set contain only essential only essential Amino acids ?

A. Alanine, Tyrosine, Cysteine

B. Leucine, Lysine, tryptophan

C. Alanine, glutamine, Lysine

D. Leucine, Proline, glycine

Answer: B

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5. Which of the following has Imidazole ring

A. Alanine

B. Tyrosine

C. Leucine

D. Histidine

Answer: D

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6. The 10% energy transfer law of food chain was given by

A. Linderman

B. Tansley

C. Stanely

D. Weismann

Answer: A

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7. Which of the following test is used to test for peptide linkage

A. Biuret test

B. Ninhyrin test

C. Molischsis test

D. Borsch's test

Answer: A

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8. Which of the following protein destory the antigen, when it enter in Body cell.

A. Insulin

B. Antibody

C. Chromo protein

D. Phaspno proteine

Answer: B

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9. Peptides are composed of amino acids joined by amide bonds. Which of the following statements is not correct ?

A. Amide groups are more resistant to hydrolysis than are similar ester groups

B. resonance stabilizes the amide bond

C. Stable conformations of peptide are restricted to those having planar amide groups

D. Amide groups do not participate in hydrogen bonding interactions

Answer: D

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10. Optically active aminoacid is/are

A. Leucine

B. Glycine

C. Glucolic acid

D. Valine

Answer: A::D

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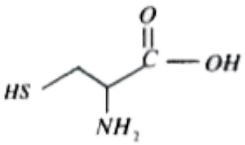
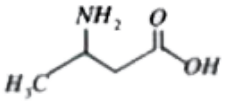
11. Which of the following aminoacids can be obtained when sample of protein is hydrolysed

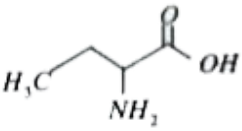
A.



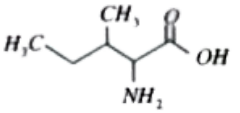
B.



C.



D.



Answer: A::D

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12. Which of the following statement is/are true ?

A. All amino acids found in proteins have L - configuration

B. All amino acids contain one chiral center

C. Some amino acids contain one, while some contain more (or) even no chiral centers

D. All aminoacids found in proteins have primary amino group

Answer: C

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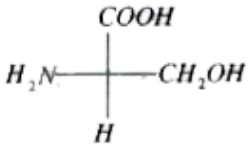
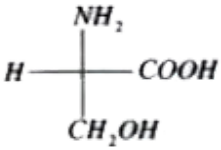
13. Which of the following/s are not belongs to L - serine

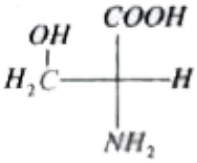
A.



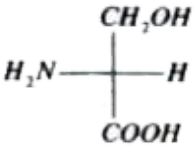
B.



C.



D.



Answer: A::C::D

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14. Excess of $Na^{(+)}$ ions in human body causes.

A. Heigh B.P.

B. Fat

C. Low B.P.

D. Diabetes

Answer: A::B

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15. Which of the following aminoacid does not contain S - atom

A. Serine

B. Lysine

C. Tyrosine

D. Cysteine

Answer: B::C

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16. Among the following fatty acid/s are

A. Oleic acid

B. Stearic acid

C. Palmitic acid

D. Nucleic acid

Answer: A::B::C

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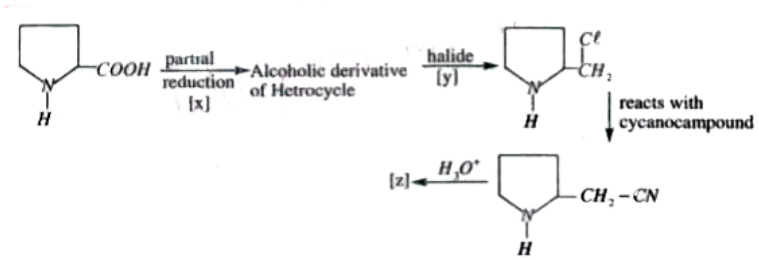

17.

The reducing agent 'x' is

A. Zn - Hg

B. $LiAlH_4$

C. $Ni / 300^\circ C$

D. Zn - Cu

Answer: B

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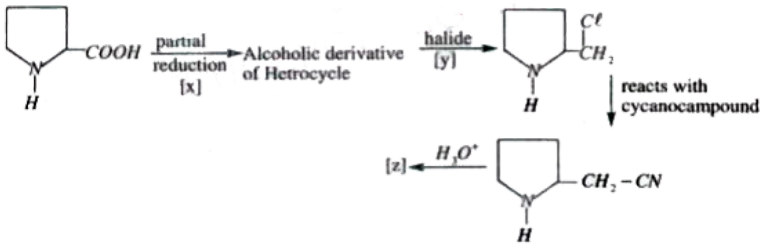

18.

The halide 'y' will be

A. PCl_5

B. NaCl

C. $CHCl_3$

D. CH_3CH_2Cl

Answer: A

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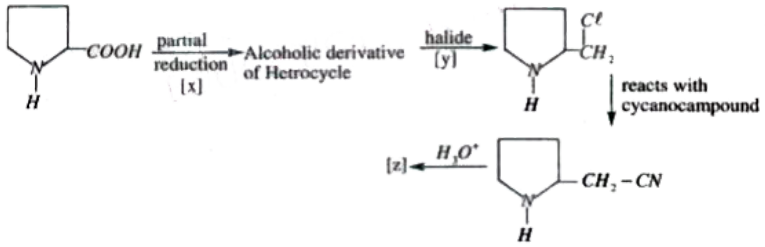
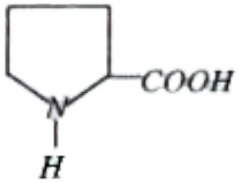
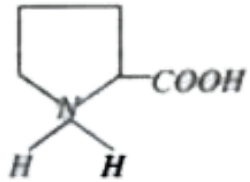
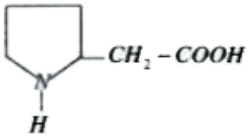


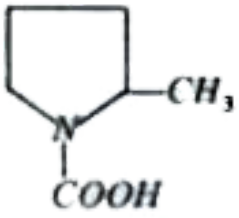
19.

The product 'z' will be is

A. 

B. 

C. 

D. 

Answer: C

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20. An analysis of the hydrolysis products of salmine, a polypeptide from salmon gave following result of weights of amino acidsd in gram per 109.66g of salmine

Ie: Isoleusine : 1.31 Alanine : 0.89 Serine : 7.35 Argemine : 86.40
valine : 3.51 Glycine : 3.0 Proline : 6.90

molecular weight of salmine is : 10, 966 molecular weight of Serine : 105
molecular weight of alanine is : 89 molecular weight of Argenine : 174
molecular weight of Isoleucine : 131 molecular weight of Protine : 115
molecular weight of Valine : 117 molecular weight of Glycine : 75

Singly present amino acids in the salmine are

A. Serine & valine

B. Isoleucine & proline

C. Alamine & Glycine

D. Alamine & Isoleucine

Answer: D

Watch Video Solution

21. An analysis of the hydrolysis products of salmine, a polypeptide from salmon gave following result of weights of amino acidsd in gram per 109.66g of salmine

$Ie:$	Isoleusine : 1.31	Alanine : 0.89	Serine : 7.35	Argemine : 86.40
	valine : 3.51	Glycine : 3.0	Proline : 6.90	

molecular weight of salmine is : 10, 966	molecular weight of Serine : 105
molecular weight of alanine is : 89	molecular weight of Argenine : 174
molecular weight of Isoleucine : 131	molecular weight of Protine : 115
molecular weight of Valine : 117	molecular weight of Glycine : 75

Salmine is also known as

A. $Ala.\ Arg_{50}.\ Gly_4.\ I \leq Pro_6.\ Ser_7 Val_3$

B. $Ala.\ Arg_{50}.\ Gly_{14}.\ I \leq_3 .\ Pro_6.\ Ser.\ Val$

C. $Ala.\ Arg_{50}.\ Gly_3.\ I \leq_4 .\ Pro_6.\ Ser_7.\ Val$

D. $Ala.\ Arg_{50}.\ Gly_6.\ I \leq .\ Pro_4.\ Ser_7.\ Val_3$

Answer: A

Watch Video Solution

22. An analysis of the hydrolysis products of salmine, a polypeptide from salmon gave following result of weights of amino acidsd in gram per 109.66g of salmine

Ie: Isoleusine : 1.31 Alanine : 0.89 Serine : 7.35 Argemine : 86.40
valine : 3.51 Glycine : 3.0 Proline : 6.90

molecular weight of salmine is : 10, 966 molecular weight of Serine : 105
molecular weight of alanine is : 89 molecular weight of Argenine : 174
molecular weight of Isoleucine : 131 molecular weight of Protine : 115
molecular weight of Valine : 117 molecular weight of Glycine : 75

Salmine is also known as

A. Protamine sulphate

B. Protamine

C. Peparine

D. Heparine

Answer: A

Watch Video Solution

23. Match vitamins and their difficiency diseases

List - I	List - II
(A) vitamin $-B_{12}$	(p) sterility
(B) vitamine $-B_6$	(q) haeomorrhagic condition
(C) vitamine - E	(r) Pernicioius anaemia
(D) vitamine - K	(s) diseage

Watch Video Solution

24. Match vitamins and their Isoelectric points

List - I	List - II
(A) Aspartic acid	(p) 9.7
(B) Lysine	(q) 3.0
(C) Histidine	(r) 3.2
(D) Glutamicacid	(s) 7.6

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25. A hexapeptide has composition Ala-Gly-Phe-Val_3. Both N - teriminal & C - terminal units are val. The number of val - val peptide bonds present, half of total 1° - structures hexapeptide passible which satidfy these conditions are _____.

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26. Oxytocin-sold under the trade name pitocin, is a naturally occurring hormone is a nonapeptide which is used to stimulate uterine contraction. It contain number of amide functional groups. How many are 2° - amides in oxytocin.

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27. Least solubility of Lysine in H_2O at the p^H $=$ _____.

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28. Number of disulphide linkages present in Insulin are _____.

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29. A Nano peptide contains _____ Peptide linkages.

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30. The glucolycis of 1 molecule of glucose produces _____ molecules of ATP.

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Practice Sheet 4

1. Anti bodies are .....

A. Carbohydrastes

B. Cellulose compounds

C. Globular proteins

D. Immuno globulins

Answer: D

Watch Video Solution

2. Proteins `overset(" x ")underset(H_(2)O)rarr Aminoacids 'x' is an enzyme found in insterline is

A. Trypsine

B. Pepsine

C. Lactobaccllie

D. Amylose

Answer: A

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3. Composition of DNA is .....

A. Pentose, phosphoric acid, A, G, U, T

B. Aldo pentose, Phosphoric acid, A, G, U, T

C. Aldo pentose, Phosphoric acid A, G, C, T

D. Keto pentose, phosphoric acid, A, G, C, T

Answer: C

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4. Insulin is an example of

A. Drug, Hormone & Polypeptide

B. Hormone & Lipid

C. Enzyme & Vitamin

D. Protein & Vitamin

Answer: A

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5. In DNA strand at 136^{th} position is the base thymine, then the base present at opposdite strand is ..... at same position.

A. Thymine

B. Adenine

C. Uracil

D. Guinine

Answer: B

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6. Which of the following has an aromatic ring ?

A. Alanine

B. Lycine

C. Tyrosine

D. Glycine

Answer: C

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7. At $p^H = 4$ Glycine exist as

A. $\begin{array}{l} \overset{\oplus}{N}H_3 \\ | \\ CH_2 - COOH \end{array}$

B. $\begin{array}{l} \overset{\oplus}{N}H_3 \\ | \\ CH_2 - COO^- \end{array}$

C. $\begin{array}{l} NH_2 \\ | \\ CH_2 - COOH \end{array}$

D. $\begin{array}{l} NH_2 \\ | \\ CH_2 - COO^- \end{array}$

Answer: A

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8. Which of the following element is present in insulin ?

A. Sodium

B. Zinc

C. Lithium

D. Iron

Answer: B

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9. Iodine value is related to _____ in our system is

A. Alcohols

B. Amino acids

C. Fats

D. Waxes

Answer: C

Watch Video Solution

10. Acrolin test is negative for

A. Oils

B. Fats

C. Proteins

D. Lipids

Answer: C

Watch Video Solution

11. The waxes are long chain compounds of fatty acids and they does not belong's to

A. Esters

B. Alcohols

C. Ethers

D. Acetic acid

Answer: B::C::D

Watch Video Solution

12. Which of the following/s is/are not deficiency disease of vitamine - E

A. Antifertility

B. Abortion

C. Coagulation

D. Beri-Beri

Answer: C::D

Watch Video Solution

13. Kwashiorkar is caused by the deficiency of

A. Vitamines

B. Harmones

C. Essential aminoacids

D. Gly, Ala, ...

Answer: C::D

Watch Video Solution

14. The number of Amino acids in the two protomers of insulin are

A. 21

B. 30

C. 29

D. 27

Answer: A::B

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15. Walls of blood vessels, ligaments are called .....

A. Keratins

B. Collagens

C. Globular proteins

D. Fibrous proteins

Answer: B::D

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16. Which of the following is true statement

A. Geometry of peptide linkages lies in a plane

B. Geometry of peptide linkages is unstable

C. The Geometry of peptide which are lies in plane are stable by resonance

D. The atoms of peptide link are not in plane

Answer: A::C

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17. Proteins can also be classified based on their shapes and solubility in water.

(i) Fibrous proteins are long and stringy, and are in soluble in water. Their primary role in structural materials of animal tissues.

Eg : Collagens, Elastins, Keratins, and Fibrins.

(ii) Globular proteins are compact and spherical and are soluble in water example enzymes, hormones, antibodies, transport proteins respiratory

proteins.

Which of the following belongs to collagen

A. Hair

B. Tendons

C. Egg

D. Milk

Answer: B

Watch Video Solution

18. Proteins can also be classified based on their shapes and solubility in water.

(i) Fibrous proteins are long and stringy, and are in soluble in water. Their primary role in structural materials of animal tissues.

Eg : Collagens, Elastins, Keratins, and Fibrins.

(ii) Globular proteins are compact and spherical and are soluble in water example enzymes, hormones, antibodies, transport proteins respiratory

proteins.

Elasdtins are the structural component of .....

A. Lungs

B. Heart

C. Blood

D. Liver

Answer: A

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19. Proteins can also be classified based on their shapes and solubility in water.

(i) Fibrous proteins are long and stringy, and are in soluble in water. Their primary role in structural materials of animal tissues.

Eg : Collagens, Elastins, Keratins, and Fibrins.

(ii) Globular proteins are compact and spherical and are soluble in water example enzymes, hormones, antibodies, transport proteins respiratory

proteins.

Fibrin proteins are essential for

A. Heart Beating

B. Respiratory

C. Bones growth

D. Blood clotting

Answer: D

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20. The deficiency of enzyme in living system can cause many diseases. For eg : pheonyl alanine hydroxylase cause a congential disease which is called [PKU]. Which damage brain & mental retardation. Extent of this disease can controlled by diet. So we can say enzymes acts as powerfull drugs, with their self prepared.

The Abrivation of PKU is

A. Phenyl keto urea

B. Phenyl alanine keto urea

C. Protonil keto urea

D. None

Answer: A

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21. The deficiency of enzyme in living system can cause many diseases. For eg : pheonyl alanine hydroxylase cause a congential disease which is called [PKU]. Which damage brain & mental retardation. Extent of this disease can controlled by diet. So we can say enzymes acts as powerfull drugs, with their self prepared.

An enzymic preparation is called

A. Enzymaisation

B. Enzyme catalysed reastion

C. Streptokinase

D. Both a & b

Answer: C

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22. The deficiency of enzyme in living system can cause many diseases. For eg : pheonyl alanine hydroxylase cause a congential disease which is called [PKU]. Which damage brain & mental retardation. Extent of this disease can controlled by diet. So we can say enzymes acts as powerfull drugs, with their self prepared.

Enzyme catalytic reaction occur in aqueous solution at temperature of

A. 298^k

B. 300^k

C. 273^k

D. 310^k

Answer: D

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23. Match the proteins and their functions

List - I	List - II
(A) Transport proteins	(p) Clotting of blood
(B) Respiratory proteins	(q) Outer layer of skin
(C) Keratines	(r) Movement of ions
(D) Fibrins	(s) Release of oxygen which kill imicrobes

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24. Match Food and % of protein they contain

List - I	List - II
(A) Milk	(p) 33%
(B) Cheese	(q) 12.5%
(C) Potatoes	(r) 2%
(D) Meat	(s) 5%

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25. A hepta peptide of m.wt 529μ, is made up of glycine $[m.\,wt = 7.5\mu]$, Alamine $[m.\,wt = 89\mu]$ and valine $[m.\,wt = 117\mu]$. On hydrolysis gives corresponding amino acids. If the product mixture contains 35.32% of glycine. The sum of alanine and valine molecules in a molecule of hepta peptide is .....

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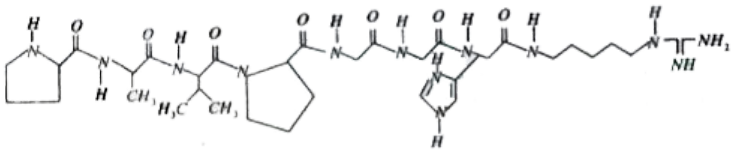
26. Number of moles of water required to hydrolyse 1 mole of following oligo peptide is ..... moles



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27. Calculate average isoelectric point of (Lysine + Asparticacid). The Pka_1, Pka_2, Pka_3, of dication of lysine are 2.18, 8.95, 10.53 respectively.

The Pka_1, Pka_2, Pka_3, of cation of aspartic acid $1.20, 3.32, 9.60$ respectively .....

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28. The two polypeptide chasins of insulin are cross linked at ..... places.

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29. P^H is stomock is approximately .....

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30. Number of elements present in living cell are .....

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