



## BIOLOGY

### BOOKS - CENGAGE BIOLOGY (ENGLISH)

#### BIOMOLECULES

#### Exercises

1. both in cells and extracellular fluids , dibasic phosphate ( $HPO_4^{2-}$ ) and monobasic phosphate ( $H_2PO_4^-$ ) act as acid base buffers to maintain

- A. (a)  $K^+$  concentration of extracellular fluid
- B. (b)  $Na^+$  concentration of extracellular fluid
- C. (c)  $Na^+$  concentration of cellular fluid
- D. (d)  $H^+$  concentration of cellular fluid

**Answer: D**



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2. all the following statement are correct except

- A. (a) Mitochondria are rich in manganese.
- B. (b) Molybdenum is necessary for the fixation of nitrogen catalyzed by the enzyme nitrogenase .
- C. (c) Magnesium is essential for a large number of enzymes , particulaly those utilizing ATP.
- D. (d) Calcium and magnesium have effect on the excitability of nerves and muscles .

**Answer: D**



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3. Which is the most abundant compound on earth ?

A. (a) C

B. (b) H

C. (c) O

D. (d) N

**Answer: C**

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4. which element is / are found in cytochromes ?

A.  $Fe^{++}$  and  $Cu^{++}$

B.  $Fe^{+++}$  and  $Mg^{++}$

C.  $Mg^{++}$

D.  $CU^{++}$

**Answer: A**

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5. the concentration of Na, K, Ca in a cell in decreasing order is

A. (a) K-Na-Ca

B. (b) K-Ca-Na

C. (c) Na-K-Ca

D. (d) Ca-K-Na

**Answer: A**



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6. All the macromolecules are the result of the process of polymerization, a process in which repeating subunits termed monomers are bound into chains of different lengths except

A. (a) Nucleic acids

B. (b) Carbohydrates

C. (c) Lipids

D. (d) Proteins

**Answer: C**



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7. Raffinose has three monosaccharide units those are

A. (a) Glucose , pentose and maltose

B. (b) Glucose , levulose and galactose

C. (c) Glucose, fructose and sucrose

D. (d) Fructose , fructose and galactose

**Answer: B**



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8. A monosaccharide is a simple polyhydroxy aldehyde or ketone molecule , which cannot be further hydrolyzed into smaller units .

The number of carbon atoms in monosaccharide vary from

A. 2-8 carbons

B. 2-7 carbons

C. 3-6 carbons

D. 3-7 carbons

**Answer: D**



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9. the sweetest amongst all naturally occurring sugars is

A. Glucose

B. Fructose

C. Mannose

D. Galactose

**Answer: B**



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**10. Glucose is**

A. (a) Aldose hexose sugar

B. (b) Ketose hexose sugar

C. (c) Pyranose pentose sugar

D. (d) Furanose pentose sugar

**Answer: A**



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**11. Glucose is also called**

- A. (a) Dextrose
- B. (b) corn sugar
- C. (c) Grape sugar
- D. (d) All of these

**Answer: D**

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**12. Why sucrose and not glucose is used to preserve fruit products ?**

- A. Glucose is reactive as it has a CHO group .
- B. Sucrose is more common in nature
- C. Sucrose is easily available and has both glucose and fructose.
- D. none of these

**Answer: A**

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13. Honey has two sugars . They are

- A. (a) Glucose and mannose
- B. (b) glucose and galactose
- C. (c) Dextrose and levulose
- D. (d) Dextrose and lactose

**Answer: C**



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14. Which of the following disaccharide is not a reducing sugar?

- A. (a) Glucose
- B. (b) Lactose
- C. (c) Maltose

D. (d) Sucrose

**Answer: D**

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15. On hydrolysis which of the following carbohydrates give only glucose?

A. (a) Sucrose

B. (b) Lactose

C. (c) Maltose

D. (d) Raffinose

**Answer: C**

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16. Storing carbohydrates in the form of polysaccharides has following advantages :

- A. (a) during their formation , many molecules of water are removed from monosaccharide ( dehydration synthesis ), condensing the bulk to be stored .
- B. (b) when necessary ,polysaccsrides are broken down by enzymes for the release of energy
- C. (c) Unike small carbohydrates, polysaccharides are relatively easy to store.
- D. (d) All of these

**Answer: D**



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17. the most abundant organic compound in biophere is

A. (a) Lignin

B. (b) Cellulose

C. (c) Pectin

D. (d) Hemi-cellulose

**Answer: B**



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**18.** The largest amount (90%) of cellulose amongst the natural materials is present in

(a) Wood

(b) Cotton fibers

(c) Rayon

(d) Roughage

A. Wood

B. Cotton fibers

C. Rayon

D. Roughage

**Answer: B**



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19. Carbohydrates, the most abundant biomolecules on earth, are produced by

(a) some bacteria , algae , and green plant cells

(b) Fungi , algae , and green plant cells

(c) All bacteria , fungi , and algae

(d) Viruses , fungi , and algae

A. some bacteria , algae , and green plant cells

B. Fungi , algae , and green plant cells

C. All bacteria , fungi , and algae

D. Viruses , fungi , and algae

**Answer: A**



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**20.** Cellulose is

- (a) Heptopolysaccharide
- (b) Heptopolysaccharide , branched
- (c) Homopolysaccharide , unbranched
- (d) pentosan polysaccharide , branched

- A. Heptopolysaccharide
- B. Heptopolysaccharide , branched
- C. Heteropolysaccharide , unbranched
- D. pentosan polysaccharide , branched

**Answer: C**



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21. which of the following is added to ice creams , cosmetics, and medicines to emulsify and give a smooth texture ?

- A. Cellulose acetate
- B. Cellulose nitrate
- C. Carboxymethyl cellulose
- D. Cellulose

**Answer: C**



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22. chitin is the second most abundant organic substance present in the exoskeleton of insects and crustaceans ,It is a

- A. Protein
- B. polysaccharide and the basic unit is N-Acetylglucosamine
- C. protein and  $CaCO_3$  deposits in it

D. Lipid

**Answer: B**



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**23.** One of the following is the correct sequence of carbohydrates in the order of increasing complexity of chemical structure-

- (a) Sucrose , starch ,oligosaccharide, maltose , triose
- (b) Triose , maltose , Sucrose, starch, oligosaccharide
- (c) Triose , glucose ,maltose , oligosaccharide ,starch
- (d) Oligosaccharide, triose , starch, sucrose , maltose

A. Sucrose , starch ,Oligosaccharide,maltose , triose

B. Triose , maltose , Sucrose, starch,Oligosaccharide,

C. Triose , glucose ,maltose , oligosaccharide ,starch

D. Oligosaccharide, triose , starch , sttarch , sucrose , maltose

**Answer: C**





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24. which one is a carbohydrate?

- A. Inulin
- B. Raphide
- C. Aleurone
- D. Cystolith

**Answer: A**



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25. the center of starch grain is called hilum it is made up of

- A. protein
- B. Carbohydrate
- C. fat

D. Nitrogen

**Answer: A**



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**26. which one is a fibrous polysaccharide ?**

A. Starch

B. Glycogen

C. Cellulose

D. Mucilage

**Answer: C**



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27. Glucose is stored as glycogen in

(a) Pancreas

(b) Bone

(c) Kidney

(d) Liver

A. Pancereas

B. Bone

C. Kidney

D. Liver

**Answer: D**



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28. which of the following yields purgative ?

A. Hibiscus esculents

B. *Plantago ovata*

C. *Aloe bardensis*

D. Both (2) and (3)

**Answer: D**



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**29.** Choose the odd one out.

(a) Keratin phosphate

(b) Hyaluronic acid

(c) Chondroitin sulphate

(d) Alginic acid

A. Keratin phosphate

B. yaluronic acid

C. chondriotion sulphate

D. Alginic acid

**Answer: D**



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**30.** A cellulose molecule is formed by the polymerization of glucose. The number of glucose molecules present in a cellulose is

(a) 600

(b) 6000

(c) 60000

(d) 60

A. 600

B. 6000

C. 60000

D. 60

**Answer: B**



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**31.** Mucilages are polysaccharides formed from galactose and mannose, they are slimy substance. Which one of the following is not a mucilage?

- (a) Agar
- (b) Alginic acid
- (c) Rayon
- (d) Carrageen

A. Agar

B. Alginic acid

C. Rayon

D. compound

**Answer: C**



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**32.** Starch grains of rice are

- (a) Dumb-bell shaped
- (b) simple eccentric
- (c) simple concentric
- (d) Compound

A. Dumb-bell shaped

B. simple eccentric

C. simple concentric

D. Compound

**Answer: D**



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**33.** Cellulose present in the food of grazing animals is

A. Digested by the intestinal bacteria

B. Digested by the animal it self

C. Digested partly by animal and partly by the bacteria

D. Passed out undigested

**Answer: A**



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**34.** the number of monosaccharide units in a polysaccharide is

A. 2

B. 9

C. 10

D. more than 10

**Answer: D**



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35. A bond which is formed between aldehyde or ketone group of monosaccharide and alcoholic group of another organic compound is known as

- (a) Peptide bond
- (b) glycosidic bond
- (c) phosphodiester bond
- (d) Ester bond

A. Peptide bond

B. glycosidic bond

C. phosphodiester bond

D. Ester bond

**Answer: B**



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36. Which of the following is a saturated fatty acid?

- A. Oleic acid
- B. Linoleic acid
- C. Arachdonic acid
- D. Dtearic acid

**Answer: D**

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**37. which of the following is the most essential fatty acid ?**

- A. Linoleic
- B. Linolenic
- C. Arachidonic
- D. Steric acid

**Answer: A**

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**38.** Lecithin is a

- A. Fatty acid
- B. Phospholipid with choline attached to phosphate group
- C. Cholesterol
- D. fat

**Answer: B**



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**39.** Bee wax is secreted by

- A. Drons
- B. Workers
- C. Queen

D. Scout

**Answer: B**



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**40.** which of the following is a phospholipid ?

A. Lecithin

B. Glycerol

C. Oleic acid

D. Prostaglandin

**Answer: A**



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**41.** Keratin, a structure protein is present in

A. Sulfur

B. Calcium

C. Magnesium

D. Phosphorous

**Answer: A**



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**42.** Bee wax is made up of

(a) Palmitic acid and myricyl alcohol

(b) Hexadecyl palmitate

(c) Ergosterol

(d) both a and b

A. Palmitic acid and myricyl alcohol

B. Hexadecyl palmitate

C. Ergosterol

D. both (1) and (2)

**Answer: A**



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**43.** Which is not a lipid ?

- (a) Lecithin
- (b)  $\beta$ - keratin
- (c) Sterol
- (d) wax

A. Lecithin

B.  $\beta$  - keratin - protein

C. Sterol

D. wax

**Answer: B**



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**44.** An antifertility steroid is

- (a) Diosgenin
- (b) Cortisol
- (c) Estradiol
- (d) Progesterone

A. Diosgenin

B. Cortisol

C. Estradiol

D. Progesterone

**Answer: A**



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**45.** In brain, common types of lipids are

- A. Glycolipids
- B. Lipoproteins
- C. Phospholipids
- D. Steroids

**Answer: A**

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**46.** find the odd one out .

- A. Palmitic acid , stearic acid
- B. Oleic acid , Linoleic acid
- C. Linoleic acid , oleic acid
- D. Tripalmitin, Linolenic acid

**Answer: D**

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47. Which of the following is basic amino acid ?

- A. Glycine and alanine
- B. Lysine and arginine
- C. Glutamic acid and aspartic acid
- D. Histidine and proline

**Answer: B**



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48. Which of the following is the simplest amino acid?

- A. Alanine
- B. Asparagine
- C. Glycine

D. Tyrosine

**Answer: C**



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**49.** the hormone adrenaline ( epinephrine ) is formed from which of the following amino acids ?

A. Glycine

B. Tyrosine

C. Tryptophan

D. Alanine

**Answer: B**



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50. which of the following amino acids is involved in the formation of heme ?

- A. Tryptophan
- B. Tyrosine
- C. Glycine
- D. Histidine

**Answer: C**



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51. Vitamin nicotinamide as well as the plant hormone in dole -3-acetoic acid are formed from

- A. Tryptophan
- B. Alanine
- C. Glutamic acid

D. Serine

**Answer: A**



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52. on losing the carboxyl group as carbon dioxide , amino acids form biologically active

A. Glucose

B. Amine such as histamine

C. Alcohol

D. N- base

**Answer: B**



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53. Skin pigment melanin is formed from

- (a) Tyrosine
- (b) Adrenaline
- (c) Indole-3-acetic acid
- (d) Tryptophan

A. Tyrsine

B. Adrenaline

C. Indole-3-acetic acid

D. Tryptophan

**Answer: A**



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54. Which one of the following is alcoholic amino acid pair ?

- (a) Tyrosine and serine
- (b) Theronine and serine

(c) Phenylalanine and tyrosine

(d) Tryptophan and phenylalanine

A. tyrosine and serine

B. Theronine and serine

C. phenylalanine and tyrosine

D. Tryptophan and phenylalanine

**Answer: B**



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**55.** Which of the following is not an essential amino acid ?

A. Tryptophan and valine

B. Lysine and methionine

C. Leucine and isoleucine

D. none of these

**Answer: D**



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**56.** One of the following amino acids does not contain sulfur

- (a) Tryptophan
- (b) Methionine
- (c) Cysteine
- (d) Homocysteine

- A. Tryptophan
- B. Methionine
- C. Cystine
- D. HomoCysteine

**Answer: A**



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57. one of the following is a heterocyclic amino acid .

- A. proline
- B. Histidine
- C. Hydroxyproline
- D. All of these

**Answer: D**



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58. One of the following is a neutral amino acid

- (a) Arginine
- (b) Glycine
- (c) Glutamic acid
- (d) Aspartic acid

A. Arginine



B. Glycine

C. Glutamic acid

D. Aspartic acid

**Answer: B**



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**59.** Which of the following is a non-polar amino acid?

(a) Alanine

(b) Glutamic acid

(c) Serine

(d) none of these

A. Alanine

B. Glutamic acid

C. Serine

D. none of these

**Answer: A**



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60.  $\beta$  – pleated structure of protein is present in silk fibers , the prtein is

- A. Fibroin
- B. Collagen
- C. Rayon
- D. Keratin

**Answer: A**



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61. Keratin present in hair shows secondary structure known as

- A. Secondary structure

B.  $\alpha$ -Helical structure

C.  $\beta$ -pleated structure

D. Primary structure

**Answer: B**



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**62.** most of the blood proteins in our body are

A. Basic

B. Acidic

C. Neutral

D. Basic and Neutral

**Answer: B**



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**63.** Casein of milk is

- (a) Glycoprotein
- (b) Phosphoprotein
- (c) Chromoprotein
- (d) Metalloprotein

A. Glycoprotein

B. Phosphoprotein

C. Chromoprotein

D. Metalloprotein

**Answer: B**



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**64.** Prolamines are

- (a) Associated with nucleic acids
- (b) Storage proteins

(c) Enzymatic protein

(d) Structural protein

A. Associated with nucleic acids

B. Storage proteins

C. Enzymatic protein

D. Structural protein

**Answer: B**



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**65.** Which of the protein is involved in the transport of organic compounds through phloem?

(a) Protamine

(b) p-Protein

(c) Myosin

(d) Glutelin

A. Protamine

B. p-Protein

C. Myosin

D. Glutelin

**Answer: B**



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**66.** Cheese is a

(a) Globular protein

(b) Conjugated protein

(c) Denatured protein

(d) All of these

A. Globular protein

B. Conjugated protein

C. Denatured prtein

D. All of these

**Answer: C**



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**67.** The storage protein of wheat is

A. Glutenin

B. Oryzin

C. Hordein

D. Zein

**Answer: A**



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**68.** The type of prolamins and glutelins found in wheat are

- A. Zein and gliadin
- B. Glutelin and hordein
- C. Gliadin and glutenin
- D. Hordein and zein

**Answer: C**

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**69.** which of the following is a contractile protein ?

- A. P-protein
- B. Myosin
- C. Albumin
- D. Penneases

**Answer: B**

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70. the storage protein found in castor oil seeds is

- A. Legumin
- B. Tuberin
- C. Richin
- D. Leucosin

**Answer: C**



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71. cholesterol is synthesized in

- A. Pancreas
- B. Burner's gland
- C. spleen

D. Liver

**Answer: D**



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**72. which is a disaccharide ?**

A. Galactose

B. Fructose

C. Maltose

D. Dextrin

**Answer: C**



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**73. which element is normally absent in proteins ?**

A. C

B. N

C. S

D. P

**Answer: D**



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**74.** which substance is not a carbohydrate ?

A. starch

B. glycogen

C. Wax

D. Glucose

**Answer: C**



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75. to get quick energy, one should use ?

A. Carbohydrate

B. Fats

C. Vitamins

D. Proteins

**Answer: A**



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76. The protein most abundant in human body is

A. Collagen

B. Myosin

C. Actin

D. Albumin

**Answer: A**



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**77. which is not a polysaccharide ?**

A. Sucrose

B. Starch

C. Glycogen

D. Cellulose

**Answer: A**



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**78. Decreasing order of amount of organic compound in animal body**

- A. Carbohydrate,protein ,fat, and nucleic acid
- B. Protein , fats , nucleic acid , and carbohydratae
- C. prtein , fats , carbohydrates, and nucleic acid
- D. Carbohydrate, fats,proteins , and nucleic acid

**Answer: C**

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**79. Charateristic feature of hemoglobin**

- A. Reversible uniion with oxygen
- B. Red color
- C. Presence of Cu
- D. Presence of Globulin protein

**Answer: C**

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80. External coat composed of cellulose- like material occurs in

- A. Hemichordate
- B. Urochdate
- C. Cephalochordate
- D. Cyclostomata

**Answer: B**



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81. common in feater and silk is

- A. Carbohydrate
- B. fats
- C. Protein

D. Nucleic

**Answer: C**



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**82. Monosaccharide is**

A. pentose sugar

B. Hexose sugar

C. only Glucose

D. All the above

**Answer: D**



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**83. sugar which is found in hemolymph of insects is called**



A. Maltose

B. Lactose

C. Trehalose

D. Galactose

**Answer: C**



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**84.** which substance is most abundant in cell ?

A. carbpohydrates

B. protein

C. water

D. fats

**Answer: C**



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85. proteins which present in protoplasm are very Important because

- A. they provide definite shape to cell
- B. they function as biocatalyst
- C. they yield energy
- D. they are stored food

**Answer: B**



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86. How is a dipeptide formed?

- A. structure of two peptide bonds
- B. two amino acids linked by one peptide bond
- C. Bond between one amino acid and one peptide

D. None

**Answer: B**



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**87.** which amino acid is nonessential for human body ?

A. Glycine

B. phhenyl alannine

C. Arginine

D. Methionine

**Answer: A**



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**88.** Glucose is stored in the form of

- A. Glucose monosaccharide
- B. Sucrose disaccharide
- C. Glycogen polysaccharide
- D. Fatty acid and glycerol

**Answer: C**

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**89.** products of proteins catabolism are

- A.  $NH_3$ ,  $CO_2$  and urea
- B. Urea,  $CO_2$  and  $NH$
- C. Urea,  $NH_3$  and uric acid
- D. Urea,  $NH_3$  alanine and creatine

**Answer: A**

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90. Galactosemia disease in children can be prevented if

- A. Milkless food
- B. proteinaceous milk
- C. More milk
- D. Vitamins-less milk

**Answer: A**



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91. Glycogen is a homopolymer made up of

- A. Polymer of amino acids
- B. polymer of fatty acids
- C. Unsaturated fats

D. polymer of glucose

**Answer: D**



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**92.** Carbohydrate is

A. polymer of fatty acids

B. polymer of amino acid

C. polyhydroxy aldehyde or etone

D. None

**Answer: C**



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**93.** in which form , food is stored in animal body ?

- A. glucose
- B. Glycogen
- C. Cellulose
- D. ATP

**Answer: B**

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**94.** what is the normal ratio of sugar in human blood ?

- A. 0.01 %
- B. 0.1 %
- C. 1 %
- D. 0.18 %

**Answer: B**

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95. units of proteins which unite in long chains to form proteins are called

- A. Sugar
- B. Purines
- C. pyrimidines
- D. Amino acids

**Answer: D**



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96. Milk protein is

- A. Lactose
- B. Myosin
- C. Casein



D. Pepsin

**Answer: C**



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**97.** Long chain molecules of fatty acids are formed by

A. Polymerization of carbon compounds

B. Decomposition of fats

C. Polymerization of glycogen

D. Conversion of glycogen

**Answer: A**



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**98.** Most simple amino acid is

- A. tyrosine
- B. Lysine
- C. Glycine
- D. Aspartic acid

**Answer: C**

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**99.** fats in the body are formed when

- A. Glycogen is formed from glucose
- B. sugar level becomes stable in blood
- C. Extra glycogen in liver and muscless is stopped
- D. None all of them

**Answer: C**

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**100.** In India, the best source for proteins in herbivores persons is

- A. Pulses
- B. potato
- C. egg
- D. Meat

**Answer: A**



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**101.** proteins are conducted in the body in the form of

- A. Amino acids
- B. Natural protein
- C. Enzymes

D. Nucleic acids

**Answer: B**



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**102.** The translocation of sugars in angiosperms occurs in the form of

A. Glucose

B. Sucrose

C. Fructose

D. Maltose

**Answer: B**



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**103.** sucrose is composed of

- A. Glucose and fructose
- B. Glucose and glycogen
- C. Two molecules of glucose
- D. Glycogen and fructose

**Answer: C**



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**104.** Which one of the following amino acids is an essential part of human diet?

- A. Alanine
- B. Glycine
- C. Tryptophan
- D. Tyrosine

**Answer: C**



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105. which of the following disaccharides will give two molecules of glucose on hydrolysis ?

A. Maltose

B. Sucrose

C. Lactose

D. None

**Answer: A**



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106. which is the most structural part of the body ?

A. protein

B. carbohydrates

C. Lipid

D. Nucleic acid

**Answer: A**



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**107.** which of the following sugar is found in ATP?

A. Deoxyribose

B. Ribose

C. Trehalose

D. Glucose

**Answer: B**



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**108.** Antibodies are

- A.  $\gamma$  – Globulins
- B. Albumins
- C. Vitamins
- D. Sugar

**Answer: A**



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**109.** The enzyme concerned with transfer of electrons is

- A. hydrolase
- B. Dehydrogenase
- C. Transaminease
- D. Protease



**Answer: B**



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**110.** At which pH , enzymes of lysosomes are usually active

A. 5

B. 7

C. 8

D. At any pH

**Answer: A**

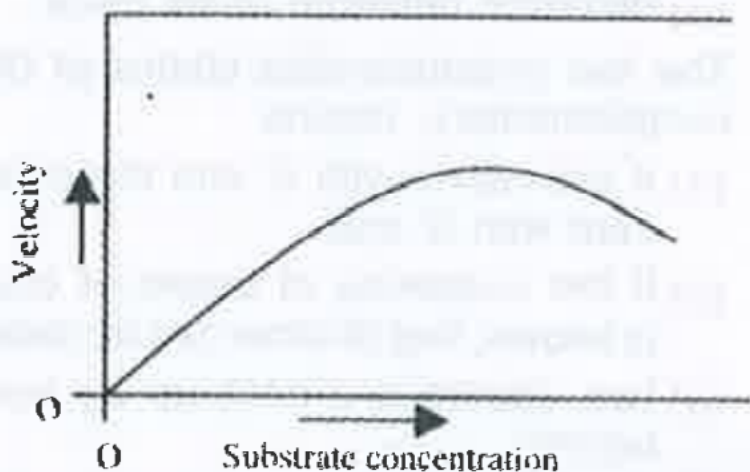


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**111.** What does the graph indicate ?

The graph given below shows the effect of substrate concentration on

the rate of reaction of the enzyme green-gram-phosphatase.



- A. the rate of enzyme reaction is directly proportional to the substrate concentration
- B. Presence of an enzyme inhibitor in the reaction mixture .
- C. Formation of an enzyme-substrate complex.
- D. At higher substrate concentration , the pH increases  $H^+$  concentration  $\downarrow$

**Answer: D**



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112. All lipids are

- A. Composed of fatty acids
- B. triglycerides
- C. Insoluble in water
- D. All the above

**Answer: D**



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113. if genetic code is tetraplet then what is the possible number of codons will contain 20 types of amino acids ?

- A. 261
- B. 64
- C. 256
- D. 43

**Answer: C**



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**114.** in which of the following , the DNA is the principal constituent ?

- A. Nucleus
- B. Chromatin
- C. Ribosomes
- D. Chloroplas

**Answer: B**



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**115.** Khorana and his colleagues synthesized RNA molecule with repeating sequences of  $UGN_2$ -base the RNA with  $UGUGUGUGUGUGUG$  produced

a tetrapeptide with alternating sequence of cysteine and valine, this prove that codon for cysteine and valine is

- A. (a) UGG & GUU
- B. (b) UUG & GGU
- C. (c) UGU & GUG
- D. (d) GUG & UGU

**Answer: C**



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**116.** number of H-bonds between guanine and cytosine are-

- A. one
- B. two
- C. three
- D. Four

**Answer: C**



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**117.** On an average how many purine  $N_2$  bases are present in single coil of DNA.

A. four

B. five

C. ten

D. Uncertain

**Answer: C**



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**118.** Distance between two nucleotide pairs of DNA is

A. 0.34 nm

B. 34Å

C. 3.4nm

D. 34nm

**Answer: D**



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**119.** Histone occupies the major groove of a DNA at an angle of

A.  $60^\circ$

B.  $90^\circ$

C.  $45^\circ$  to helix axis

D.  $30^\circ$  to helix axis

**Answer: D**



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120. DNA polymerase is needed for

- A. Replication of DNA
- B. synthesis of DNA
- C. elongation of DNA
- D. All of the above

**Answer: D**



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121. the usual method of DNA replication is

- A. Conservative
- B. Dispersive
- C. Non-conservative



D. Semi-conservative

**Answer: D**



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**122.** DNA duplication occurs in:

A. Meiosis -II

B. Mitotic interphase

C. Mitosis only

D. Meiosis and mitosis both

**Answer: D**



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123. A DNA molecule in which both strands have radioactive thymidine is allowed to duplicate in an environment containing non-radioactive thymidine. What will be the exact number of DNA molecules that contains the radio active thymidine after 3 duplications -

- A. one
- B. two
- C. four
- D. Eight

**Answer: D**



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124. A bacterium with completely radioactive DNA was allowed to replicate in a non-radioactive medium for two generation what % of the bacteria should contain radioactive DNA:-

A. 100 %

B. 50 %

C. 25 %

D. 12.5 %

**Answer: B**



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**125.** Dna directed synthesis of m -RNA is called

A. Transcription

B. Translocation

C. Transduction

D. Replication

**Answer: A**



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**126.** The process by which DNA of the nucleus passes genetic information to m -RNA is called

- A. Transcription
- B. Translocation
- C. Translation
- D. Transportation

**Answer: A**



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**127.** Sometimes the starting codon is GUG in place of AUG. GUG normally stands for

- A. Valine
- B. Glycine

C. Methionine

D. Tyrosine

**Answer: A**



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**128.** DNA which is composed of dinucleotide unit is

A. A-DNA

B. B-DNA

C. C-DNA

D. Z-DNA

**Answer: B**



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129. Informosomes composed of

- A. r-RNA & proteins
- B. m-RNA & proteins
- C. m- RNA ^ lipid
- D. DNA & proteins

**Answer: B**



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130. t-RNA attach to larger subunit of ribosomes with the help of which loop

- A. DHU-loop
- B. T $\Psi$  C loop
- C. Anticodon loop
- D. Minor loop

**Answer: B**



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**131.** In bacteria , the codon AUG stands for

- A. (a) Glycine
- B. (b) Methionine
- C. (c) N-Formyl methionine
- D. (d) Alanine

**Answer: C**



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**132.** which compound produces more than twice the amount of energy as compared to carbohydrates ?

- A. Protein
- B. fats
- C. Vitamins
- D. Glucose

**Answer: B**

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**133.** Carbohydrate metabolism is controlled by

- A. parathormone
- B. Insulin
- C. Glucose
- D. Vitamin  $B_{12}$

**Answer: B**

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**134.** Chemically, enzymes are

- A. (a) fats
- B. (b) Carbohydrates
- C. (c) hydrocarbons
- D. (d) Proteins

**Answer: D**



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**135.** Glycogen is stored in

- A. (a) Liver and muscles
- B. (b) Liver only
- C. (c) Muscles only

D. (d) Pancreas

**Answer: A**



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**136.** Carbohydrates are stored in human body as the polysaccharide

- A. Glucose in liver
- B. glycogen in muscles and spleen
- C. Lactic acid in muscles
- D. glycogen in liver and muscles

**Answer: B**



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137. which is sweet in taste,  
but is not sugar ?

starch

saccharine

Lactose

protein

A. starch

B. saccharide

C. Lactose

D. protein

**Answer: B**



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138. Fattiness is due to the excess of

A. (a) Connective tissue

B. (b) blood

C. (c) Muscular tissue

D. (d) Adipose tissue

**Answer: D**



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**139.** which one of the following is polysaccharide ?

A. sucrose

B. Lactose

C. Glycogen

D. Glucose

**Answer: C**



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140. the formation of protein can be considered as

- A. Dehydration sythesis
- B. Dehydration analysis
- C. hydration synthesis
- D. Hydration analysis

**Answer: A**



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141. starving person will first use

- A. fats
- B. Glycogen
- C. Blood

D. Muscle protein

**Answer: B**



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**142.** for body growth and repair , one needs

A. Carbohydrates

B. Fats

C. protein

D. Vitamins

**Answer: C**



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**143.** Deficiency of protein leads to

A. Rickets

B. Scurvy

C. Kwashiorkor

D. carotenemia

**Answer: C**



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**144.** Lactose is composed of

A. Glucose + Galactose

B. Glucose +Fructose

C. Glucose +glucose

D. Glucose +Mannose

**Answer: A**



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145. True statement for cellulose molecule is

- A.  $\beta - 1' - 4''$  linkage , unbranched
- B.  $\beta - 1' - 4''$  linkage , branched
- C.  $\beta - 1' - 4''$  linkagea , branched
- D.  $\beta - 1' - 6''$  linkage , unbranched

Answer: A



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146. Which of the following is the contractile protein of a muscle?

- A. Actin
- B. Myosin
- C. Trpophonin



D. tropomyosin

**Answer: B**



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**147.** Variations in proteins are due to

A. sequence of amino acids

B. Number of amino acids

C. R-group

D. None

**Answer: A**



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**148.** Which of the following does not contain metal

A. Glycoproteins

B. Ferritin

C. Cytochromes

D. Chromoproteins

**Answer: A**



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**149.** Which protein found in maximum amount

A. Catalase

B. Zinc carbonic anhydrase

C. transferase

D. RuBisCO

**Answer: D**



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150. proteoglycan in cartilages , which is part of polysaccharide, is

- A. Condriotin
- B. Ossein
- C. Casein
- D. Cartilegen

**Answer: A**



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151. Enzymes are made up of

- A. Edible proteins
- B. proteins
- C. Nitrogen -containing carbohydrates

D. carbohydrates

**Answer: B**



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**152.** Hydrolytic enzymes which act at low pH are called as

A. Protease

B.  $\alpha$  – Amylase

C. hydrolases

D. Peroxidase

**Answer: A**



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**153.** In the genetic code dictionary , how many codons are used to used to code for all the 20 essential amino acids ?

- A. 20
- B. 64
- C. 61
- D. 60

**Answer: C**



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**154.** Enzymes, vitamins and hormones can be classified into a single category of biological chemicals, because all of these

- A. Enhance oxidative metabolism
- B. are conjugated proteins
- C. are exclusively synthesized in the body of a living organism

D. Help in regulatind metabolism

**Answer: A**



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**155.** Which one of the following statements regarding enzyme inhibition is correct?

- A. Non-competitive inhibition of an anzyme can be overcome by adding large amount of substrate .
- B. Competitive inhibition is seen when a substrate competes with and enzyme for binding to an inhibitor protein .
- C. competitive inhibition is seen when the substrate and the inhibitor compete for the active site on the enzyme.
- D. non-competitive inhibitors often bind to the enzyme irreversibly.

**Answer: B**

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156. the catalytic efficiency of two different enzyme can be compared by

- A.  $K_M$  value
- B. pH optimum value
- C. Formation of the product
- D. molecular size of the enzyme

**Answer: C**

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157. An organic substance bound to an enzyme and essential for its activity is called

- A. Apoenzyme
- B. Isoenzyme

C. Coenzyme

D. Holoenzyme

**Answer: C**



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**158.** The main arena of various types of activities of a cell is

A. Plasma membrane

B. Mitochondrion

C. cytoplasm

D. Nucleus

**Answer: C**



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159. DNA or RNA segment tagged with a radioactive molecule is called.

- A. Vector
- B. Prode
- C. Clone
- D. Plasmid

**Answer: B**



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## Assertion Reasoning Questions

1. Assertion : Heparin is a natural anticogulantt indside the blood vessels .

Reason : It is example of homopolysaccharide .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: C**

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2. Assertion : Hemoglobin is a monomeric protein .

Reason : It is made up of two polypeptide chains .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: D**

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**3. Assertion :** Saturated fatty acids are non -essential fatty acids

**reason :** they can be synthesized in animal body .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: A**

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4. Assertion : Lipids provide more energy as compared to carbohydrates on oxidation .

Reason : Lipid is the first respiratory substance .

A. (a) If both assertion and Reason are true and the Reason is the correct explanation of the assertion .

B. (b) If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .

C. (c) If Assertion is true , but Reason is false

D. (d) if both Assertion and Reason are false.

**Answer: C**



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5. Assertion : In protoplasm, protoplasm , protein functions as a buffer .

reason : the protein molecule is amphoteric .

- A. If both assertion and Reason are true and the Reason is the correct explanation of the assertion .
- B. If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .
- C. If Assertion is true , but Reason is false
- D. if both Assertion and Reason are false.

**Answer: B**

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**6. Assertion :** Phospholipids form bimolecular layer in aqueous medium .

**Reason :** phospholipid molecules are amphipathic .

- A. (a) If both assertion and Reason are true and the Reason is the correct explanation of the assertion .

B. (b) If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .

C. (c) If Assertion is true , but Reason is false

D. (d) if both Assertion and Reason are false.

**Answer: B**

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7. Assertion : Starch is the storage polysaccharide in plants .

Reason : Starch is a polymer of  $\beta$ - glucose .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: B**

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**8. Assertion :** Lecithin is important in membranes .

**Reason :** It has amphipathic nature .

A. (a) If both assertion and Reason are true and the Reason is the correct explanation of the assertion .

B. (b) If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .

C. (c) If Assertion is true , but Reason is false

D. (d) If both Assertion and Reason are false.

**Answer: B**

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9. Assertion : Glucose is correctly named as D-(+)-glucose. ' 3

Reason : 'D' before the name of glucose represents its dextrorotatory nature.

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: B**



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10. Assertion : Histones are acidic proteins .

Reason : Cellobiose is an example of disaccharide.



- A. (a) If both assertion and Reason are true and the Reason is the correct explanation of the assertion .
- B. (b) If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .
- C. (c) If Assertion is true , but Reason is false
- D. (d) If both Assertion and Reason are false.

**Answer: D**



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**11. Assertion :** Disaccharides show optical activity .

**Reason :** Cellobiose is an example of disaccharide .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: B**

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**12.** Assertion : Isabgol is used as a medicine .

Reason: the husk of isabgol contains mucilage .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: A**

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**13.** Assertion : Monellim is the sweetest chemical.

reason : Monellin is a protein .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: B**

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14. Assertion : Natural silk is made up protein .

Reason : Artificial silk is a polysaccharide .

- A. If both assertion and Reason are true and the Reason is the correct explanation of the assertion .
- B. If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .
- C. If Assertion is true , but Reason is false
- D. if both Assertion and Reason are false.

**Answer: B**



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15. Assertion : Specific substrate binds at the active site of the enzyme .

Reason : Enzymes increase the activation energy of substrate .

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

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

C. If Assertion is true , but Reason is false

D. if both Assertion and Reason are false.

**Answer: C**

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**16.** Assertion : Enzymes become denatured at high temperature .

Reason : the tertiary structure of proteins gets damaged at high temperature .

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

- B. If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .
- C. If Assertion is true , but Reason is false
- D. if both Assertion and Reason are false.

**Answer: A**

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17. All enzymes are

- A. If both assertion and Reason are true and the Reason is the correct explanation of the assertion .
- B. If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .
- C. If Assertion is true , but Reason is false
- D. if both Assertion and Reason are false.

**Answer: B**



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**18.** Assertion : Allosteric modulators accelerate or retard the rate of catalysis of an allosteric enzyme .

Reason : Allosteric modulators modulate the configuration of the active site of enzyme.

- A. If both assertion and Reason are true and the Reason is the correct explanation of the assertion .
- B. If both Assertion and Reason are true , but the reason is not the correct explanation of the assertion .
- C. If Assertion is true , but Reason is false
- D. if both Assertion and Reason are false.

**Answer: B**



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1. About 98 percent of the mass of every living organism is composed of just six elements including carbon, hydrogen, nitrogen, oxygen and

- A. Calcium and phosphorus
- B. Phosphorus and sulphur
- C. Sulphur and magnesium
- D. Magnesium and sodium

**Answer: B**



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2. A competitive inhibitor of succinic dehydrogenase is :

- A.  $\alpha$  – ketoglutarate



B. Malate

C. Malonate

D. Oxaloacetate

**Answer: C**



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**3. Carrier ions like  $Na^+$  facilitate the absorption of substance like**

A. amino acids and Glucose

B. Glucose and fatty acids

C. Fatty acids and glycerol

D. Fructose and some amino acids

**Answer: A**



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4. Three of the following statements about enzyme are correct and one is wrong . Which one is wrong ?

- A. Enzymes are denatured at high temperature but in certain exceptional organisms they are effective even at temperature  $80 - 90^{\circ}C$
- B. Enzymes are highly specific
- C. Most enzymes are proteins but some are lipids .
- D. Enzymes require optimum pH for maximal activity .

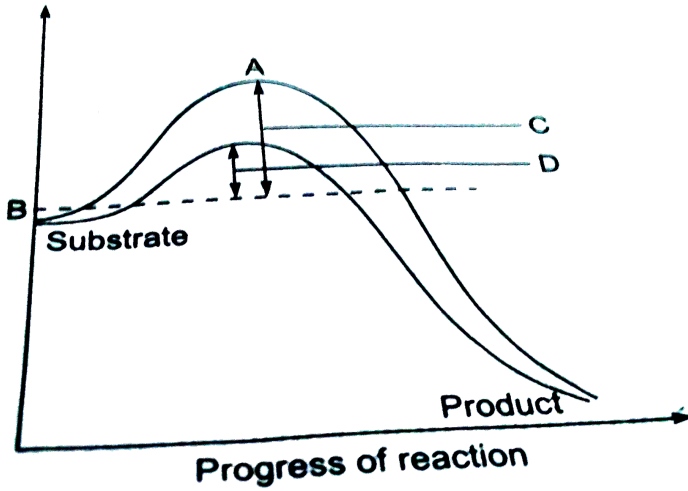
**Answer: C**



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5. Figure 9.37 shows the conversion of a substrate into product by an enzyme . In which one of the four options (1-4) , the components of

reaction leveled as A,B,C, and D are identified correctly?



A.

*A*

*B*

*C*

Transition state

potential energy

activation energy without enzyme

B.

*A*

*B*

*C*

potential energy

Transition state

Activation energy with enzyme

C.

*A*

*B*

*C*

Activation energy with enzyme

Transition state

activation energy without enzyme

D.

*A*

*B*

*C*

potential energy

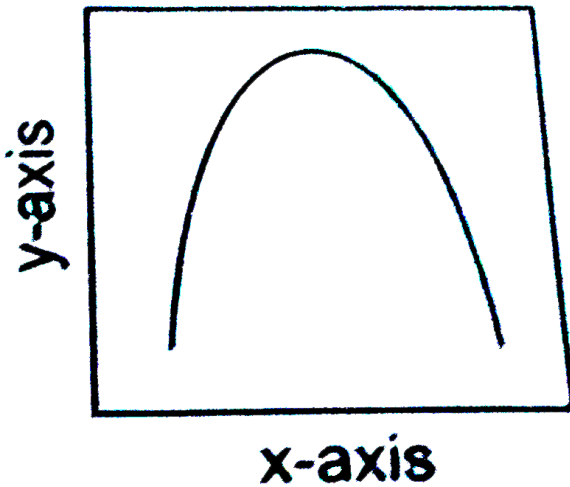
Transition state

Activation energy with enzyme

Answer: A

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6. the curve given below shows enzymatic activity with relation to three conditions (pH , temperature and substrate concentration ).



what do the two axes ( x and y) represent ?

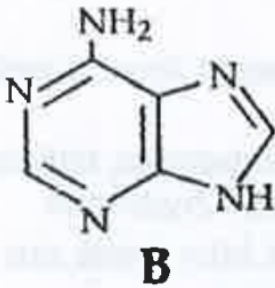
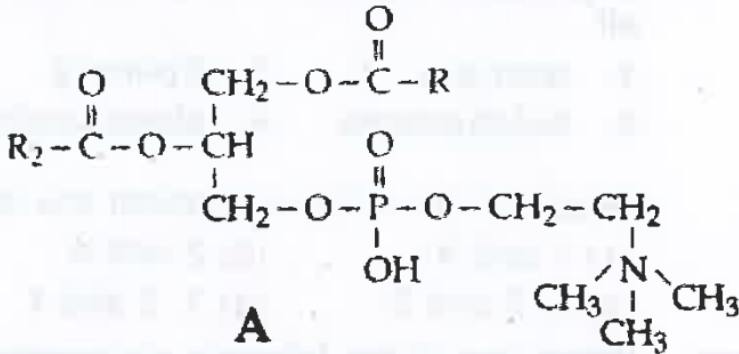
- A. Enzymatic activity , temperature
- B. Enzymatic activity ,pH
- C. Temperature enzye activity

D. Substrate concentration enzymatic activity

Answer: C

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7. Which one of the following structural formulae of two organic compounds is correctly identified along with its related function ?



A. A: Lecithin -a component of cell membrane

B. B: Adenine - a nucleotide that makes up nucleic acids

C. A: Triglyceride - major source of energy

D. B: Uracil -a Component of DNA

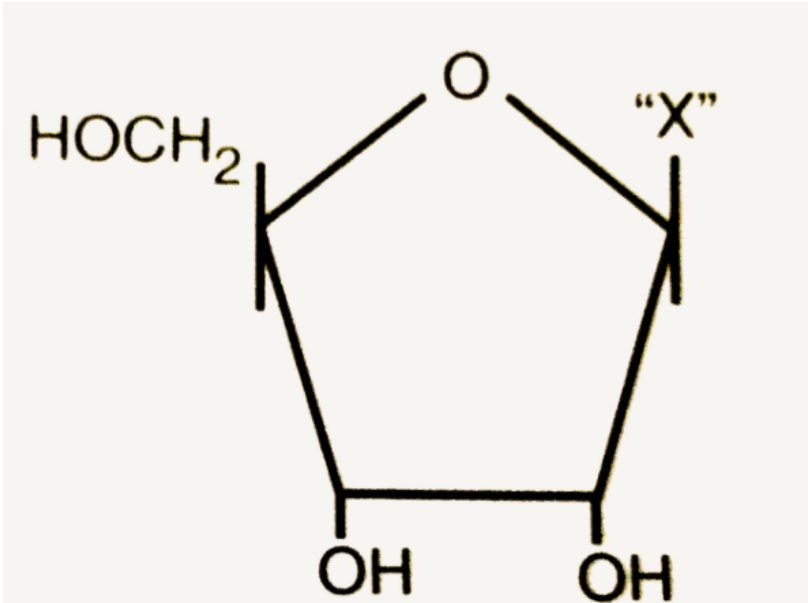
**Answer: B**



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8. Given below is the diagrammatic representation of one of the categories of small molecular weight organic compounds in the living tissues. Identify the category shown and the one blank component "X" in

it.



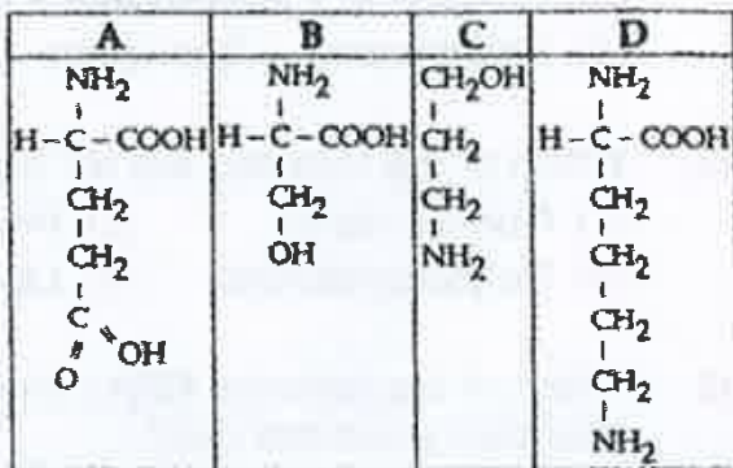
- A. category                      Component  
amino acid                       $\text{NH}_2$
- B. category                      Component  
Nucleotide                      Adenine
- C. category                      Component  
Nucleoside                      Uracil
- D. category                      Component  
Cholesterol                      Guanine

**Answer: C**



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9. Which one out of A- D given below correctly represents the structural formula of the basic amino acids ?



A. D

B. A

C. B

D. C

Answer: A

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10. which one is the most abundant protein in the animal world ?

- A. Collagen
- B. insulin
- C. Trypsin
- D. Haemoglobin

**Answer: A**



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11. Which one of the following biomolecules is correctly characterised?

- A. Lecithin -A phosphorylated glyceride found in the cell membrane
- B. Palmitic acid -An unsaturated fatty acid with 18 carbon atoms
- C. Adenylic acid -Adenosine with a glucose phosphate molecule
- D. Alanine amino acid -Contains an amino group and an acidic group anywhere in the molecule

**Answer: A**



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**12.** A phosphoglyceride is always made up of

- A. Only an unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached .
- B. A saturated or unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached .
- C. A saturated or unsaturated fatty acid esterified to a phosphate group which is also attached to a glycerol molecule .
- D. Only a saturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached .

**Answer: B**



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13. The essential chemical components of many coenzymes are

- A. Nucleic acids
- B. Carbohydrates
- C. Vitamins
- D. Proteins

**Answer: D**



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14. Transition state structure of the substrate formed during an enzymatic reaction is

- A. Permanent but unstable
- B. Transient and unstable
- C. Permanent and stable

D. Transient but stable

**Answer: B**



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**15.** The most abundant intracellular cation is :

A.  $Ca^{+}$

B.  $H^{+}$

C.  $K^{+}$

D.  $Na^{+}$

**Answer: C**



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**16.** Macro molecule chitin is

A. Phosphorous - containing polysaccharide

B. Sulfur-containing polysaccharide

C. simple polysaccharide

D. nitrogen-containing polysaccharide

**Answer: D**



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17. Which one of the following is a non-reducing carbohydrates ?

A. Maltose

B. Sucrose

C. Lactose

D. Ribose 5-phosphate

**Answer: B**



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18. Select the option which is not correct with respect to the enzyme action.

- A. substrate binds with enzyme at its active site .
- B. Addition of lot of succinate does not reverse the inhibition of succinic dehydrogenase by malonate
- C. A non-competitive inhibitor binds the enzyme at a site distinct from that which binds the substrate
- D. Malonate is a competitive inhibitor of succinic dehydrogenase

**Answer: B**



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19. Which one of the following statements is incorrect?

- A. the presence of the competitive inhibitor decreases the  $K_m$  of the enzyme for the substrate .
- B. A competitive inhibitor reacts reversibly with the enzyme to form an enzyme - inhibitor complex.
- C. in competitive inhibition , the inhibitor molecule is not chemically changed by the enzyme .
- D. the competitive inhibitor does not affect the rate of breakdown of the enzyme - substrate complex .

**Answer: A**



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20. The chitinous exoskeleton of arthropod is formed by the polymerization of

A. Lipogycans

B. Keratin sulphate and chondroitin sulphate

C. D-glucosamine

D. N-acetyl glucosamine

**Answer: C**



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**21. which one of the following statements is wrong?**

A. Sucrose is a disaccharide .

B. Cellulose is a polysaccharide .

C. Uracil is a pyrimidine .

D. Glycine is a sulphur containing amino acid .

**Answer: D**



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22. A typical fat molecule is made up of

- A. three glycerol molecule and one fatty acid molecule
- B. one glycerol and three fatty acid molecule
- C. one glycerol and one fatty acid molecule
- D. three glycerol and three fatty acid molecules

**Answer: B**



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23. A non-proteinaceous enzyme is

- A. Ligase
- B. Deoxyribonuclease
- C. Lysozyme
- D. Ribozyme

**Answer: D**



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**24.** Which of the following biomolecules is common to respiration-mediated breakdown of fats, carbohydrates and proteins?

- A. pyruvic acid
- B. Acetyl CoA
- C. Glucose -6-phosphate
- D. Fructose 1,6 - bisphosphate

**Answer: B**



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**25.** Which of the following is the least likely to be involved in stabilizing the three-dimensional folding of most proteins ?

A. Hydrophobic interaction

B. Ester bonds

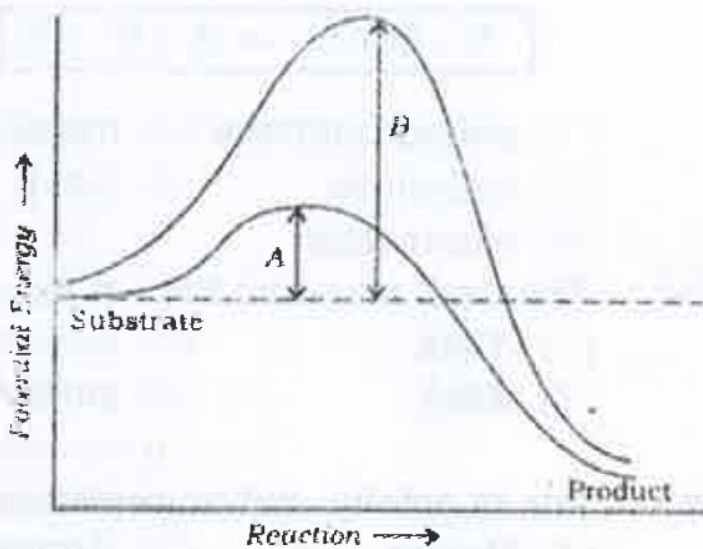
C. Hydrogen bonds

D. Electrostatic interaction

Answer: B

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26. Which of the following describes the given graph correctly ?



- A. Endothermic reaction with energy A in absence of enzyme and B in presence of enzyme
- B. Exothermic reaction with energy A in absence of enzyme and B in presence of enzyme
- C. Endothermic reaction with energy A in presence of enzyme and B in absence of enzyme
- D. Exothermic reaction with energy A in presence of enzyme and B absence of enzyme .

**Answer: D**



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