



Online Test India

Time : 50 Mins

Biomolecules Important Questions With Answers
NEET Chemistry 2023 1

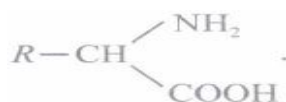
Marks : 200

1. Which of the following statements is not correct?

- a) Proteins are polyamides formed from amino acids.
- b) Except glycine, all other amino acids show optical activity.
- c) Natural proteins are commonly made up of L-isomer of amino acids.
- d) In α -amino acids, $-\text{NH}_2$ and $-\text{COOH}$ groups are attached to different carbon atoms.**

Solution : -

In α -amino acids, $-\text{NH}_2$ and $-\text{COOH}$ groups are attached to the same carbon atom,



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

- a) C_1 - C_4 β -linkage
- b) C_1 - C_6 β -linkage
- c) C_1 - C_6 α -linkage
- d) C_1 - C_4 α -linkage**

3. Mg is present in :

- a) chlorophyll**
- b) haemoglobin
- c) vitamin-D
- d) vitamin-B

Solution : -

Chlorophyll is an organometallic complex with Mg as central metal. It's formula is $\text{C}_{55}\text{H}_{72}\text{MgN}_2\text{O}_6$.

4. Amino acids generally exist in the form of Zwitter ions. This means they contain

- a) basic $-\text{NH}_2$ group and acidic $-\text{COOH}$ group**
- b) the basic $-\text{NH}_3$ group and acidic $-\text{COO}^-$ group
- c) basic $-\text{NH}_2$ and acidic $-\text{H}^+$ group
- d) basic $-\text{COO}^-$ group and acidic $-\text{NH}_3$ group.

Solution : -

Zwitter ion contains both +ve and -ve charge. Proton of $-\text{COOH}$ group is transferred to the $-\text{NH}_2$ group. NH_3^+ group is acidic since it can donate a proton and $-\text{COO}^-$ group is basic since it can accept a proton.

5. Chemically considering digestion is basically :

- a) anabolism
- b) hydrogenation
- c) hydrolysis**
- d) dehydrogenation

Solution : -

Chemically considering digesting is basically hydrolysis.

6. Enzymes take part in a reaction and :

- a) decrease the rate of a chemical reaction
- b) increase the rate of a chemical reaction**
- c) both (a) and (b)
- d) none of these

Solution : -

Enzymes are biocatalyst which increases the rate of a chemical reaction by providing alternative lower activation energy pathways.

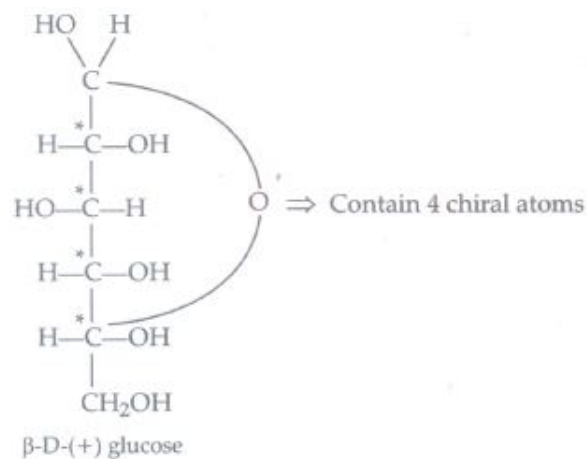
7. Denaturation of protein leads to loss of its biological activity by

- a) formation of amino acids
- b) loss of primary structure
- c) loss of both primary and secondary structure
- d) loss of both secondary and tertiary structures.**

8. Number of chiral carbons in β -D-(+)-glucose is :

- a) five b) six c) three **d) four**

Solution : -



9. Which of the following is the sweetest sugar?

- a) Fructose** b) Glucose c) Sucrose d) Maltose

Solution : -

Fructose is the sweetest among all the sugars and is highly soluble in water.

10. The two main differences between RNA and DNA are

- a) ribose sugar and thymine in RNA b) deoxyribose sugar and uracil in DNA
c) ribose sugar and uracil in RNA d) deoxyribose sugar and guanine in DNA.

Solution : -

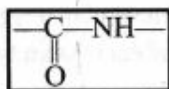
RNA contains ribose sugar and uracil while DNA contains deoxyribose sugar and thymine.

11. In a protein molecule, various amino acids are linked together by _____.

- a) α -glycosidic bond b) β -glycosidic bond **c) peptide bond** d) dative bond

Solution : -

peptide bond



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

- a) Thyroxin b) Insulin **c) Adrenaline** d) Estradiol

Solution : -

Adrenaline hormone helps to release fatty acids from fat and glucose from live glycogen under the condition of stress.

Hence, it is also called flight or fight hormone

13. Which of the following diseases is not correctly matched with the vitamins mentioned with it?

- a) Vitamin B₂ - Cracking of lips **b) Vitamin C -Bone deformities** c) Vitamin D -Osteomalacia
d) Vitamin A -Night blindness

Solution : -

Deficiency of vitamin C causes scurvy or bleeding gums.

14. Which one of the amino acids can be synthesised in the body?

- a) Alanine** b) Lysine c) Valine d) Histidine

Solution : -

Except alanine, all amino acids are essential amino acids which cannot be synthesised in the body and must be obtained through diet.

15. Hyperglycemia implies

- a) **high blood-sugar level** b) low blood -sugar level c) high concentration of salt in blood
d) low concentration of salt in blood

Solution : -

Hyperglycemia refers to high blood-sugar level i.e. increased amount of glucose in blood

16. Glycosidic linkage is an

- a) amide linkage b) ester linkage **c) ether linkage** d) acetyl linkage.

17. **Assertion:** Glucose forms hydrogen sulphite addition product with NaHSO_3

Reason: Glucose gives all the reactions of aldehydic group.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. **d) If both assertion and reason are false.**

Solution : -

Despite having the aldehyde group glucose does not give 2, 4 DNP test, Schiff's test and it does not form the hydrogensulphite addition product with NaHSO_3 .

18. Which is not true statement?

- a) α -carbon of α -amino acid is asymmetric **b) All proteins are found in L-form.**
c) Human body can synthesize all proteins they need.
d) At $\text{pH}=7$ both amino and carboxylic groups exist in ionized form.

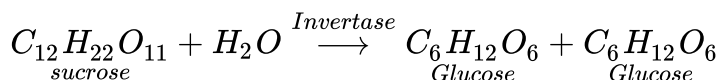
Solution : -

Some proteins are also found in the D-form.

19. What are the hydrolysis products of sucrose?

- a) Fructose + Fructose b) Glucose + Glucose c) Glucose + Galactose **d) Glucose + Fructose**

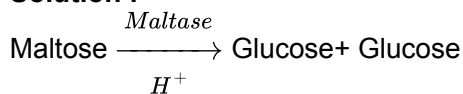
Solution : -



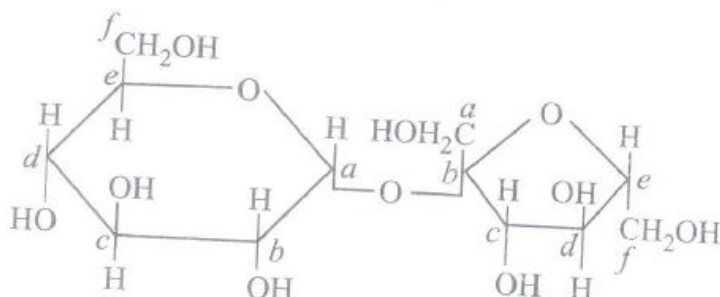
20. The conversion of maltose into glucose is possible by the enzyme

- a) zymase b) lactase **c) maltase** d) diastase

Solution : -



21. Structure of a disaccharide formed by glucose and fructose is given below. Identify anomeric carbon atoms in monosaccharide units.



- a) 'a' carbon of glucose and 'a' carbon of fructose b) 'a' carbon of glucose and 'e' carbon of fructose
 c) 'a' carbon of glucose and 'b' carbon of fructose d) 'f' carbon of glucose and 'f' carbon of fructose

Solution : -

'a' carbon of glucose and 'b' carbon of fructose are anomeric carbon atoms.

22. **Assertion:** All naturally occurring α- amino acids are optically active.

Reason: Most naturally occurring amino acids have D-configuration.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false. **d) If both assertion and reason are false.**

Solution : -

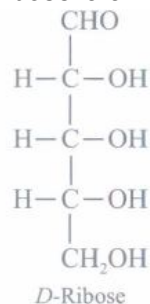
Glycine is optically inactive. Most naturally occurring amino acids have L- configuration.

23. which of the following is an example of an aldopentose?

- a) **D-Ribose** b) Glyceraldehyde c) Fructose d) Erythrose

Solution : -

Ribose is an aldopentose. It contains an aldehydic group and five carbon atoms.



24. Which of the following represents a peptide chain?

- a) $-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-$
 b) $-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_2\text{CH}_2-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-$
 c) $-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\text{CH}_2-$
 d) $-\text{NH}-\text{CH}_2\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\text{NH}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-$

25. The couplings between base units of DNA is through :

- a) **hydrogen bonding** b) electrostatic bonding c) covalent bonding d) vander Waal's forces.

Solution : -

The couplings between base units of DNA is through hydrogen bonding.

26. In aqueous solutions, amino acids mostly exist as

- a) $\text{NH}_2-\text{CHR}-\text{COOH}$ b) $\text{NH}_2-\text{CHR}-\text{COO}^-$ c) $\overset{+}{\text{N}}\text{H}_3\text{CHR}\overset{-}{\text{C}}\text{OOH}$ **d) $\overset{+}{\text{N}}\text{H}_3\text{CHR}\overset{-}{\text{C}}\text{OO}^-$**

Solution : -

In aqueous solutions, amino acids mostly exist as zwitter ion or dipolar ion.

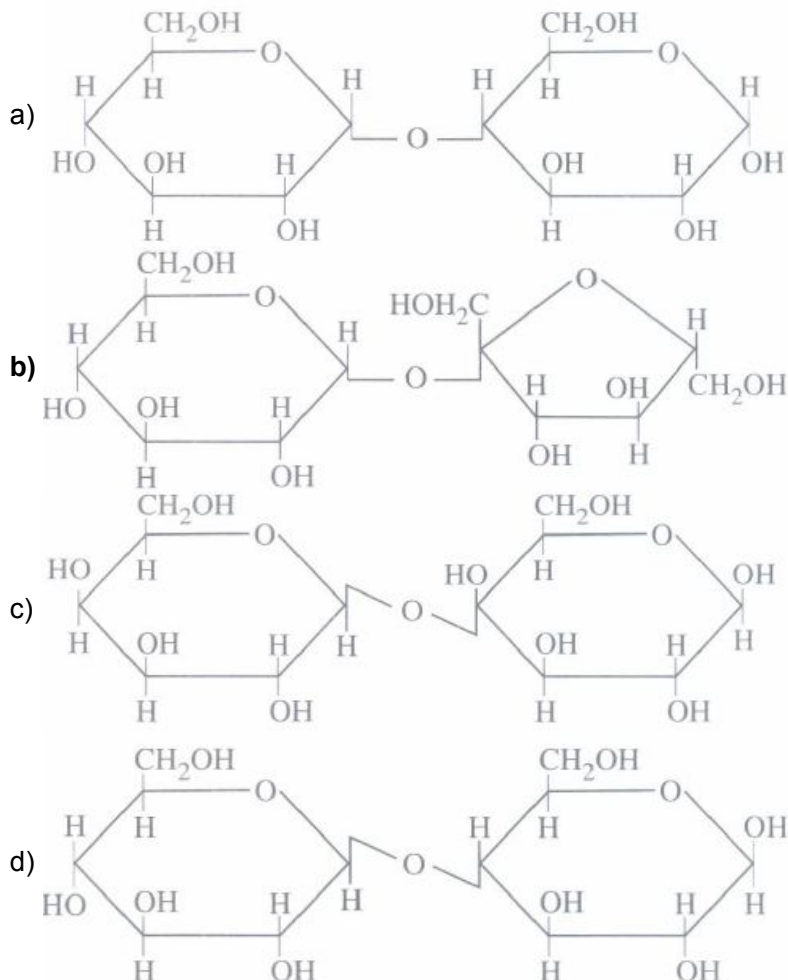
27. Most common types of secondary structures of proteins are

- a) α- helix and β- helix structures **b) α helix and β - pleated sheet structures**
 c) right and left hand twisted structures d) globular and fibrous structures.

Solution : -

Due to regular folding of backbone of the peptide chain, two most common secondary structures of proteins are α -helix and β -pleated structures. In α -helix, all H-bonds are formed by twisting the chain into a right handed helix. In β -pleated, all peptide chains are stretched to maximum extension and then laid side by side and connected by hydrogen bonds.

28. In disaccharides, if the reducing groups of monosaccharides i.e. aldehydic or ketonic groups are bonded, these are non-reducing sugars. Which of the following disaccharide is a non-reducing sugar?



Solution : -

In option (b), two monosaccharides are held together by a glycosidic linkage between C-1 of α -glucose and C-2 of β -fructose.

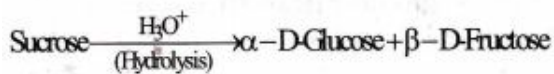
29. Which of the statement about "Denaturation" given below are correct?
- (i) Denaturation of proteins causes loss of secondary and tertiary structures of the protein
 - (ii) Denaturation leads to the conversion of double strand of DNA into single strand
 - (iii) Denaturation affects primary structure which gets distorted
- a) (i), (ii) and (iii) b) (ii) and (iii) c) (i) and (iii) **d) (i) and (ii)**

Solution : -

When the proteins are subjected to the action of heat, mineral acids or alkali, the water soluble form of globular protein changes to water-insoluble fibrous protein. This is called denaturation of proteins. Denaturation does not change the primary structure of proteins.

30. Sucrose on hydrolysis gives _____.
- a) α -Fructose + β -Fructose b) β -Glucose + α -Fructose **c) α -Glucose + β -Glucose**
d) α -Glucose + β -Fructose

Solution : -



31. Glycogen is a branched chain polymer of α -D-glucose units in which chain is formed by C-1 - C-4 glycosidic linkage whereas branching occurs by the formation of C-1- C-6 glycosidic linkage. Structure of glycogen is similar to _____.
- a) amylose **b) amylopectin** c) cellulose d) glucose

Solution : -

Amylopectin is a branched polymer, amylose and cellulose are linear polymers while glucose is a monomer.

32. Invert sugar is
- a) a type of cane sugar b) optically inactive form of sugar c) mixture of glucose and galactose
- d) mixture of glucose and fructose in equimolar quantities**

33. The general formula of carbohydrates is
- a) $\text{C}_n\text{H}_{2n+1}\text{O}$ b) $\text{C}_n\text{H}_{2n}\text{O}$ **c) $\text{C}_n(\text{H}_2\text{O})_n$** d) $\text{C}_n(\text{H}_2\text{O})_{2n}$

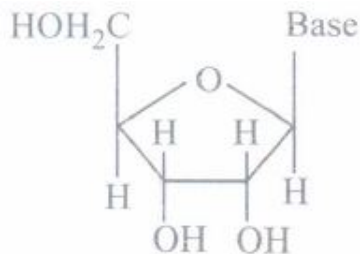
Solution : -

The general formula of carbohydrates is $\text{C}_n(\text{H}_2\text{O})_n$ where n is an integer.

34. A nucleoside on hydrolysis gives
- a) an aldopentose and a nitrogenous base** b) an aldopentose and phosphoric acid
- c) an aldopentose, a nitrogenous base and phosphoric acid d) a nitrogenous base and phosphoric acid.

Solution : -

Nucleoside is a unit formed by the attachment of a base to an aldopentose sugar



35. Which one of the following statements is not true regarding (+) lactose?
- a) On hydrolysis (+) lactose gives equal amount of D(+) glucose and D(+) galactose.
- b) (+) Lactose is a β -glucoside formed by the union of a molecule of D(+) glucose and a molecule of D(+) galactose
- c) (+) Lactose is a reducing sugar and does not exhibit mutarotation.**
- d) (+) Lactose, $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ contains 8-OH groups

Solution : -

(+) Lactose is a reducing sugar and all reducing , sugar shows mutarotation.

36. The correct statement in respect of protein haemoglobin is that it _____.
- a) functions as a catalyst for biological reactions b) maintains blood sugar level
- c) acts as an oxygen carrier in the blood** d) forms antibodies and offers resistance to diseases

Solution : -

Haemoglobin acts as an oxygen carrier in the blood. 4, Fe^{2+} ions of each haemoglobin can bind with 4 molecules of O_2 .

37. Which of the following can possibly be used as analgesic without causing addiction and mood modification?

- a) Morphine b) Diazepam c) Tetrahydrocortical **d) N-acetyl-para-aminophenol**

Solution : -

N-acetyl-para-amino phenol or paracetamol is used as analgesic as well as antipyretic.

38. Cellulose is a

- a) hexapolsaccharide b) pentapolsaccharide c) tripolsaccharide **d) none of these.**

Solution : -

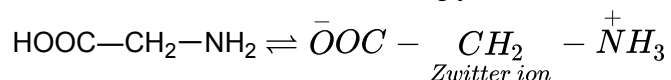
Cellulose is a polysaccharide and consists of long chain of glucose units linked by β (1 \rightarrow 4) bonds with each other.

39. Which of the following compounds can form a zwitter ion?

- a) Benzoic acid b) Acetanilide c) Aniline **d) Glycine**

Solution : -

A zwitterion has to have positive-forming (e.g. amino) and negative-forming (e.g. carboxyl) groups. So, the molecule which forms zwitterion is glycine.



40. **Assertion:** Glucose gets oxidised to gluconic acid on reaction with mild oxidising agent like bromine water.

Reason: Glucose contains a keto group.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

Solution : -

Glucose on mild oxidation gives six carbon carboxylic acid (gluconic acid) which indicates it contains aldehydic group.

41. Pick up the incorrect statement from the following

- a) Glucose exists in two different crystalline forms, α -D-glucose and β -D-glucose.
b) Cyclic structure of α -D-glucose and β -D-glucose is called pyranose structure
c) α - glucose and β - D-glucose are enantiomers.
d) Cellulose is a straight chain polysaccharide made up of only β -glucose units

Solution : -

α - D-glucose and β -D-glucose are anomers not the enantiomers.

42. Which of the following B-group vitamins can be stored in our body?

- a) Vitamin B₁ b) Vitamin B₂ c) Vitamin B₆ **d) Vitamin B₁₂**

Solution : -

Vitamin B₁₂ can be stored in our body.

43. Deficiency of vitamin B₁ causes the disease :

- a) convulsions **b) beri-beri** c) cheilosis d) sterility

Solution : -

Deficiency of vitamin B₁ causes Beri-beri.

Deficiency of vitamin B₆ causes Convulsion.

Deficiency of vitamin B₂ causes Cheiloses.

Deficiency of vitamin E causes Sterility.

44. Which of the following vitamins is water-soluble?

- a) Vitamin E b) Vitamin K c) Vitamin A **d) Vitamin B**

Solution : -

Vitamin B and C are water soluble where as vitamin A, D, E and K are fat soluble.

45. Fructose reduces Tollen's reagent due to _____.

- a) **enolisation of fructose followed by conversion to aldehyde by base** b) asymmetric carbons
c) primary alcoholic group d) secondary alcoholic group

Solution : -

Fructose reduces Tollen's reagent due to enolisation of fructose followed by conversion to aldehyde by base.

Only aldehydes reduce Tollen's reagent. But fructose is a ketone.

In aqueous solution, fructose is enolised and then converted into aldehyde in basic medium.

All aldehydes generally reduce Tollen's reagent, thus fructose also reduces Tollen's reagent.

46. A diabetic person carries a packet of glucose with him always, because

- a) glucose increases the blood sugar level slowly b) glucose reduces the blood sugar level

c) glucose increases the blood sugar level almost instantaneously

d) glucose reduces the blood sugar level slowly.

Solution : -

The sugar level in the blood of a diabetic person may suddenly fall. Immediate intake of glucose increases the blood sugar level almost instantaneously.

47. The cell membranes are mainly composed of _____.

- a) fats b) proteins **c) phospholipids** d) carbohydrates

Solution : -

Cell membranes (Plasma membranes) forms bilayer of phospholipid with embedded proteins. In humans, lipids accounts for up to 79% of cell membranes

48. **Assertion:** Maltose and lactose are examples of reducing sugars.

Reason : Maltose and lactose reduce Fehling's solution and Tollens' reagent.

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

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

c) If assertion is true but reason is false. d) If both assertion and reason are false.

49. Which is not a true statement?

a) α -Carbon of α -amino acid is asymmetric **b) All proteins are found in L-form**

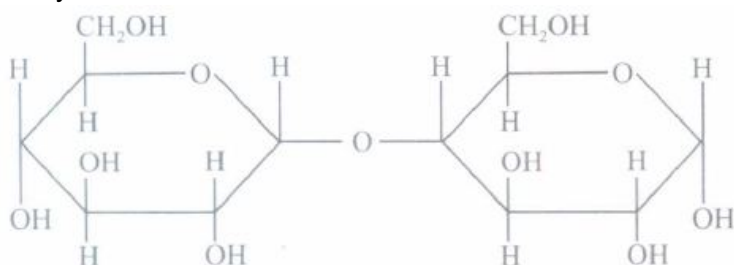
c) Human body can synthesize all proteins they need

d) At PH =7 both amino and carboxylic groups exist in ionised form

Solution : -

Some proteins are found in the D-form because some proteins are found in L-form.

50. Study the structure of maltose and mark the incorrect statement.



a) Maltose is composed of two α -D-glucose units. b) C-1 of one glucose is linked to C-4 of other unit.

c) It is a non-reducing sugar. d) It is a disaccharide.

Solution : -

It is a reducing sugar. The free aldehyde group can be produced at C-1 of second glucose in solution and it shows reducing properties.