## **Biomolecules**

## Assertion & Reason Type Questions

Consists of two statements, one is Assertion (A) and the other is Reason (R). Give answer:

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

b. Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

c. Assertion (A) is true but Reason (R) is false.

d. Assertion (A) is false but Reason (R) is true.

Q 1. Assertion (A): B-glycosidic linkage is present in maltose.



**Reason (R):** Maltose is composed of two glucose units in which C, of one glucose unit is linked to C4 of another glucose unit.

Answer: (d) In maltose, the two glucose units are joined together by a-glycosidic linkage.







**Q 2. Assertion (A):** All naturally occurring a-amino acids except glycine are optically active.

Reason (R): Most naturally occurring amino acids have L-configuration.

**Answer :** (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

**Q 3. Assertion (A):** In presence of enzyme, substrate molecule can be attacked by the reagent effectively.

**Reason (R):** Active sites of enzymes hold the substrate molecule in a suitable position.

**Answer :** (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

**Q 4. Assertion (A):** Enzymes are very specific for a particular reaction and for a particular substrate.

**Reason (R):** Enzymes are biocatalysts.

**Answer :** (b) Enzymes are very specific for a particular reaction and a particular substrate. Also enzymes are biocatalysts. Both assertion and reason are true but reason is not the correct explanation of assertion because each enzyme contains an active site which is an area of an enzyme that has specific shape and size and differs from one enzyme to another.

**Q 5. Assertion (A):** Only α-amino acids are obtained on hydrolysis of proteins. **Reason (R):** In zwitter ionic form, amino acids show amphoteric behaviour.

**Answer :** (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

**Q 6. Assertion (A):** Proteins are found to have two different types of secondary structures viz alpha- helix and beta-pleated sheet structure.

**Reason (R):** The secondary structure of proteins is stabilized by hydrogen bonding.

**Answer :** (b) All naturally occurring  $\alpha$ -amino acids are optically active because the acarbon atom is asymmetric. Also, most naturally occurring amino acids have Lconfiguration. Hence, assertion and reason both are true but reason is not the correct explanation of assertion.





**Q 7. Assertion (A):** Vitamin D can be stored in our body. **Reason (R):** Vitamin D is fat soluble vitamin.

**Answer :** (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

**Q 8. Assertion (A):** DNA has a double strand helix structure. **Reason (R):** The two strands in a DNA molecule are exactly similar.

**Answer :** (c) Reason (R) is false because the two strands are complementary to each other as the hydrogen bonds are formed between specific pairs of bases.

**Q9. Assertion:** D(+)– Glucose is dextrorotatory in nature. **Reason:** 'D' represents its dextrorotatory nature.

**Q**10. **Assertion:** Sucrose is called an invert sugar.

**Reason:** On hydrolysis, sucrose bring the change in the sign of rotation from dextro (+) to laevo(–).

**Q11. Assertion:**  $\beta$ -glycosidic linkage is present in maltose



**Reason:** Maltose is composed of two glucose units in which C–1 of one glucose unit is linked to C–4 of another glucose unit.

**Q12. Assertion:** At isoelectric point, the amino group does not migrate under the influence of electric field.

**Reason:** At isoelectric point, amino acid exists as a zwitterion.

**Q13. Assertion:** Vitamin D cannot be stored in our body **Reason:** Vitamin D is fat soluble vitamin and is excreted from the body in urine.





## ANSWER KEY 9 to 13

**Q9**:(c)

**Q10** : (a) The hydrolysis of sucrose brings about a change in the sign of rotation from dextro (+) to laevo (-) and the product is named as invert sugar.

**Q11**: (d) **Q12**: (a)

**Q13** : (d) Vitamin D is a fat soluble vitamin and can be stored in the body since it is not excreted out of the body.

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