

PART 1 - CHEMISTRY

Topic : Biomolecules

SECTION-A : (Maximum Marks : 12)

- This section contains **THREE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).
- For each question, choose the option(s) corresponding to (all) the correct answer(s).
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks	: +4	ONLY if (all) the correct option(s) is(are) chosen;
Partial Marks	: +3	If all the four options are correct but ONLY three options are chosen;
Partial Marks	: +2	If three or more options are correct but ONLY two options are chosen, both of which are correct;
Partial Marks	: +1	If two or more options are correct but ONLY one option is chosen and it is a correct option;
Zero Marks	: 0	If none of the options is chosen (i.e. the question is unanswered);
Negative Marks	: -1	In all other cases.
- For example, in a question, if **(A), (B) and (D)** are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -1 marks.

1. The correct statement(s) regarding sugars is(are)

Given: Specific rotations of L-(-)-glucose and L-(+)-fructose are -52.5° and $+92.5^\circ$, respectively.

[JEE Advanced 2026 Paper 2]

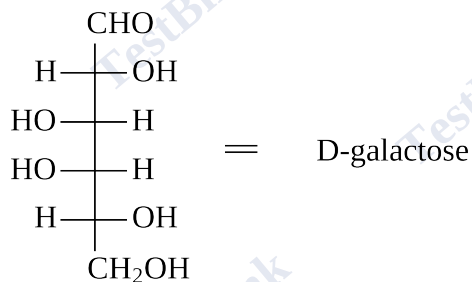
- (A) On treatment with HNO_3 , gluconic acid is oxidized to saccharic acid, whereas glucose is not oxidized to saccharic acid.
- (B) Fructose gives a positive Fehling's test because it isomerises to glucose and another aldohexose in the presence of Fehling's reagent.
- (C) Invert sugar is an equimolar mixture of D-glucose and D-fructose formed after hydrolysis of the corresponding disaccharide.
- (D) Specific rotation of invert sugar is -40° .

Scan or tap for the full solution



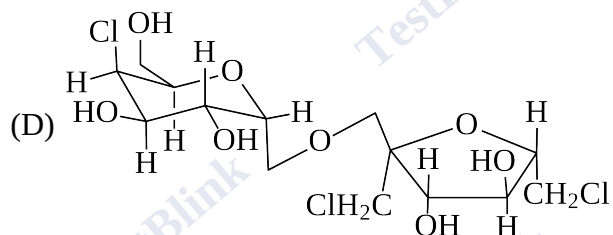
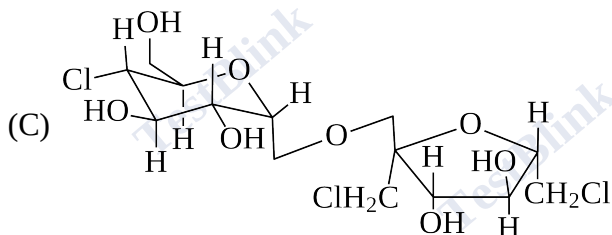
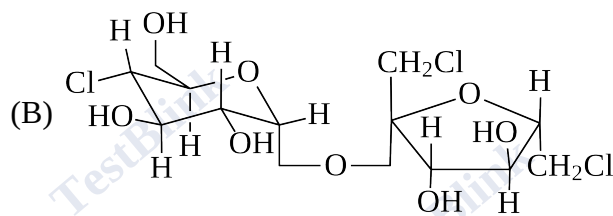
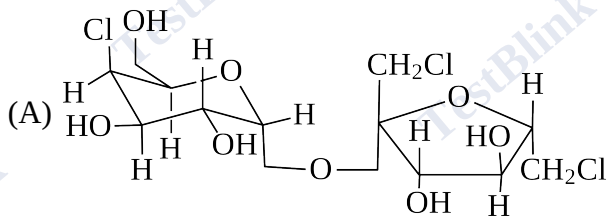
2. A known artificial sweetener X is composed of 4-chloro-4-deoxy- α -D-galactose and 1,6-dichloro-1,6-dideoxy- β -D-fructose joined by a glycosidic linkage. Structure of D-galactose is given below:

Space for Rough Work



The correct structure of X is

[JEE Advanced 2026 Paper 2]



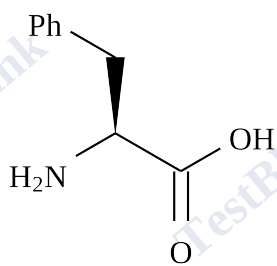
Scan or tap for the full solution



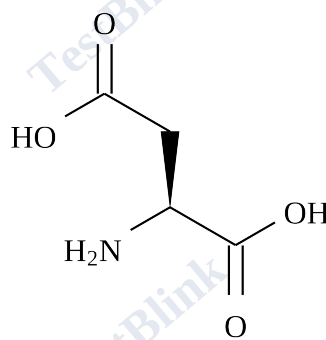
3. Aspartame, an artificial sweetener, is a dipeptide aspartyl phenylalanine methyl ester. The structure of aspartame is

[JEE Advanced 2024 Paper 1]

Structures of phenylalanine and aspartic acid are given below.



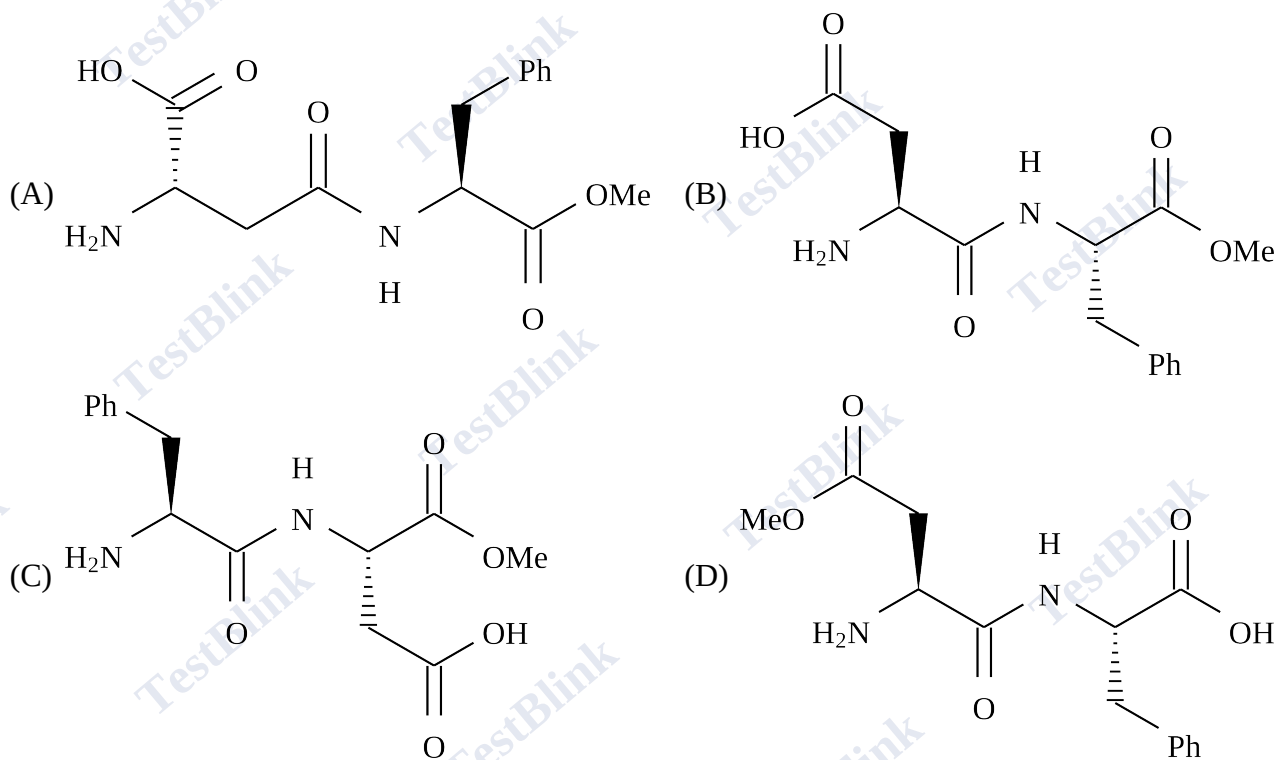
Phenylalanine



Aspartic acid

Space for Rough Work

PYQSide



Scan or tap for the full solution



Space for Rough Work

SECTION-B : (Maximum Marks : 8)

- This section contains **TWO** questions.
- The answer to each question is a **NON-NEGATIVE INTEGER**.
- For each question, enter the correct integer corresponding to the answer in the place designated to enter the answer.
- Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If ONLY the correct answer is entered;

Zero Marks : 0 In all other cases.

4. A linear octasaccharide (molar mass = 1024 g mol^{-1}) on complete hydrolysis produces three monosaccharides: ribose, 2-deoxyribose and glucose. The amount of 2-deoxyribose formed is 58.26 % (w/w) of the total amount of the monosaccharides produced in the hydrolyzed products. The number of ribose unit(s) present in one molecule of octasaccharide is _____.

Use: Molar mass (in g mol^{-1}): ribose = 150, 2-deoxyribose = 134, glucose = 180;

Atomic mass (in amu): H = 1, O = 16

[JEE Advanced 2025 Paper 2]

Scan or tap for the full solution



5. For a double strand DNA, one strand is given below:

5' $\overline{\text{A G T C A C G T A A G T C}}$ 3'

The amount of energy required to split the double strand DNA into two single strands is _____ kcal mol^{-1} .

[Given: Average energy per H-bond for A-T base pair = $1.0 \text{ kcal mol}^{-1}$, G-C base pair = $1.5 \text{ kcal mol}^{-1}$, and A-U base pair = $1.25 \text{ kcal mol}^{-1}$. Ignore electrostatic repulsion between the phosphate groups.]

[JEE Advanced 2024 Paper 2]

Scan or tap for the full solution



Space for Rough Work

Test Pattern : **JEE (Advanced)**

SECTION-A

[illegible][illegible]