

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]

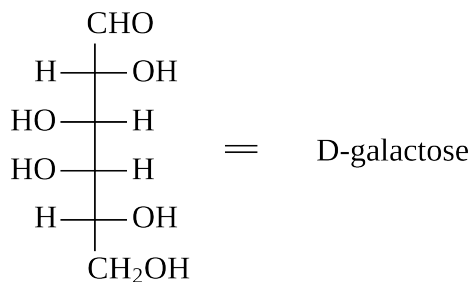
- (A) On treatment with HNO_3 , gluconic acid is oxidized to saccharic acid, whereas glucose is not oxidized to saccharic acid.
- (B) Fructose gives a positive Fehling's test because it isomerises to glucose and another aldohexose in the presence of Fehling's reagent.
- (C) Invert sugar is an equimolar 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



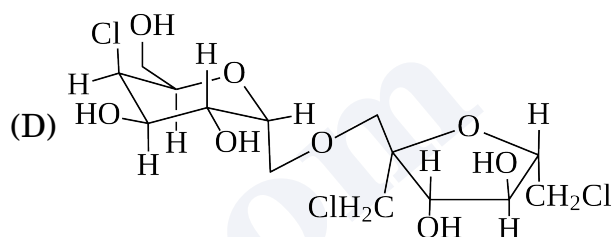
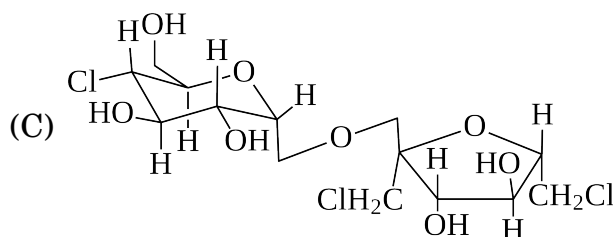
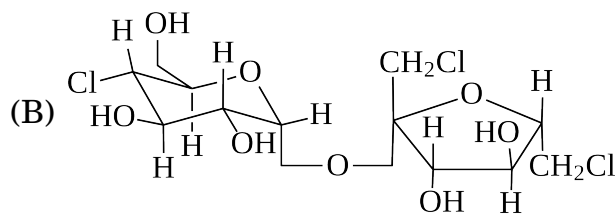
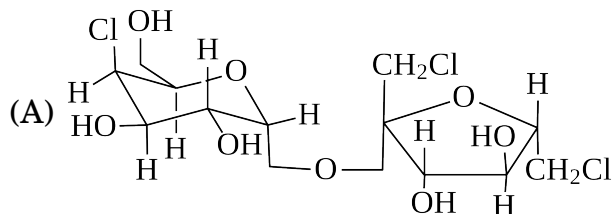
2. A known artificial sweetener X is composed of 4-chloro-4-deoxy- α -D-galactose and 1,6-dichloro-1,6-dideoxy- β -D-fructose joined by a glycosidic linkage. Structure of D-galactose is given below:

Space for Rough Work



The correct structure of X is

[JEE Advanced 2026 Paper 2]

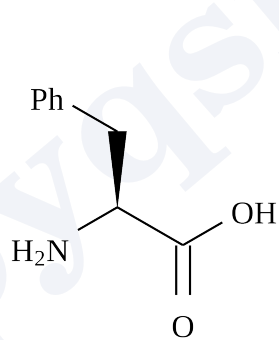


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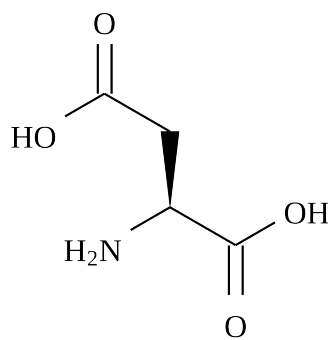
3. Aspartame, an artificial sweetener, is a dipeptide aspartyl phenylalanine methyl ester. The structure of aspartame is

[JEE Advanced 2024 Paper 1]

Structures of phenylalanine and aspartic acid are given below.

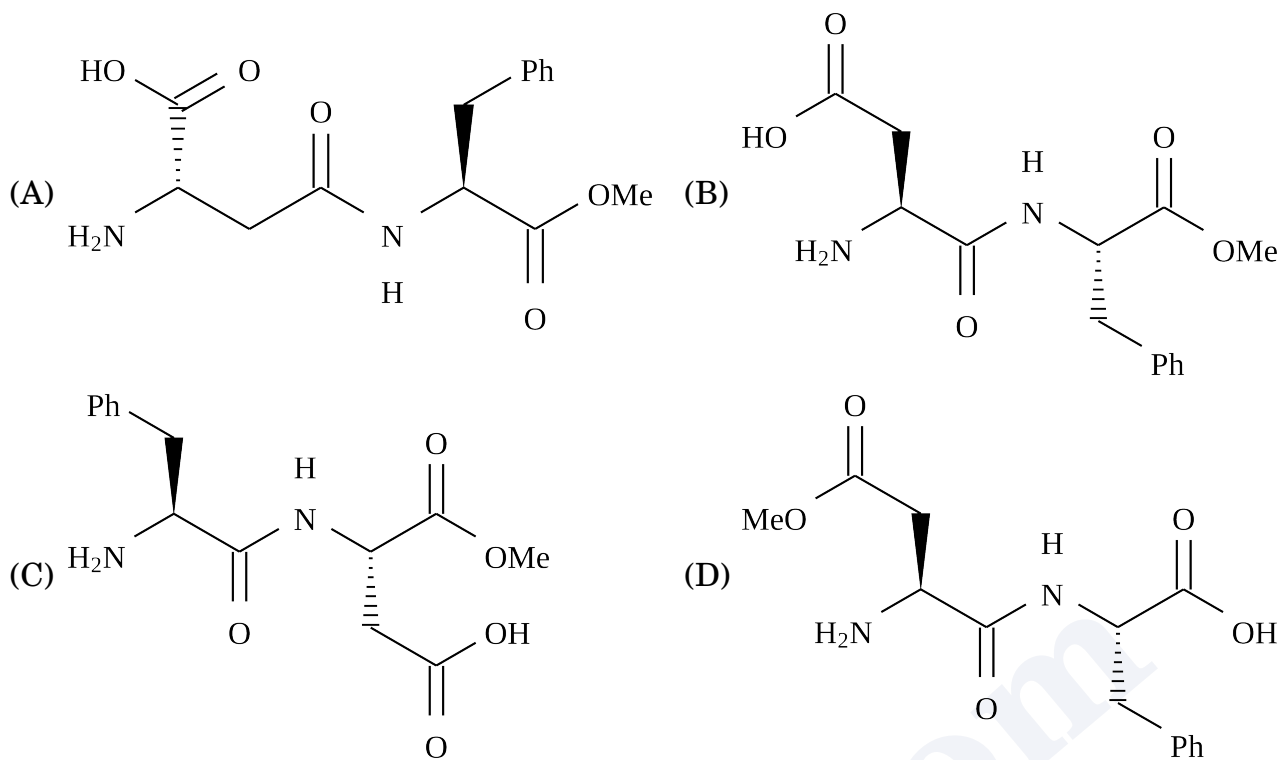


Phenylalanine



Aspartic acid

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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.

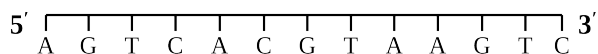
4. A linear octasaccharide (molar mass = 1024 g mol^{-1}) on complete hydrolysis produces three monosaccharides: ribose, 2-deoxyribose and glucose. The amount of 2-deoxyribose formed is 58.26 % (w/w) of the total amount of the monosaccharides produced in the hydrolyzed products. The number of ribose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

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



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]

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JEE ADVANCED BIOMOLECULES — PYQS

Test Pattern : **JEE (Advanced)**

ANSWER KEY

SECTION-A

[illegible]

SECTION-B

[illegible]