EngineeringRise

Carbohydrates

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Open-chain glucose	CHO-(CHOH)4-CH2OH; 4 chiral C; 2^4 = 16 stereoisomers Valid when: count of stereoisomers is 2^n for n distinct chiral centres, no meso form	count
Open-chain fructose	CH2OH-CO-(CHOH)3-CH2OH; 3 chiral C; 2^3 = 8 Valid when: same counting rule, no meso form (open-chain ketohexose)	count
Pyranose aldohexose	5 chiral C (anomeric C added); 2^5 = 32 Valid when: ring-closed form where anomeric carbon becomes chiral; no meso form	count
Sucrose	glucose (C1) - fructose (C2); non-reducing; C12H22O11, about 342 g per mol Valid when: sucrose, an alpha-1,2-beta-glycosidic disaccharide	g per mol
Maltose	glucose + glucose (1-4); reducing	count
Lactose	galactose + glucose (1-4); reducing	count
Oligosaccharide of n units	n - 1 glycosidic bonds; n - 1 H2O to hydrolyse Valid when: linear oligosaccharide with n units joined by glycosidic links	count (mol)
Glucose with Br2 water / HNO3 / HI / Ac2O	gluconic acid / saccharic acid / n-hexane / pentaacetate	n/a (product names)
Tollens reaction	RCHO gives 2 Ag per molecule Valid when: aldehyde (or free aldose-type) group present; Tollens reagent in excess	mol Ag per mol

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/chemistry/biomolecules/carbohydrates

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