TOPIC
Chemistry – Section III – Question 2

QUESTION
Limestone ($CaCO_3$) decomposes to CaO and CO_2. The number of grams of limestone needed to produce 100 grams of CO_2 most nearly is

(A) 36
(B) 152
(C) 200
(D) 227

HINT
Consider the stoichiometry of the decomposition reaction.

SOLUTION
Basis: 100 gr of CO_2

Mols of $CO_2 = \frac{100gr}{44gr/mol}$

$= 2.27$ mols of CO_2

1 mol of limestone produces 1 mol of CO_2.

Therefore 2.27 moles of $CaCO_3$ are needed.

Mass of $CaCO_3 = 2.27mols \times 100gr/mol$

$= 227$ gr

ANSWER
(D)

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