

**TOPIC**

Chemistry

**QUESTION**

The molecular weight of a particular hydrocarbon is 72 gr/mol and it is 83.3% (by weight) carbon and 16.7% by weight hydrogen. Its chemical formula is

- (A) C<sub>5</sub>H
- (B) C<sub>5</sub>H<sub>12</sub>
- (C) C<sub>7</sub>H<sub>17</sub>
- (D) CH<sub>5</sub>O

**HINT**

Choose one mole of hydrocarbon as a basis.

**SOLUTION**

Basis: 1 mol of hydrocarbon = 72 gr

Mass of carbon =  $0.833 \times 72 = 60.0$  gr

Moles of carbon =  $\frac{60.0 \text{ gr}}{12 \text{ gr/mol}} = 5$  mols

Mass of hydrogen =  $0.167 \times 72 = 12$  gr

Moles of hydrogen =  $\frac{12 \text{ gr}}{1 \text{ gr/mol}} = 12$  mols

If one mole of hydrocarbon has 5 mols of C and 12 moles of H, then one molecule of hydrocarbon has 5 atoms of C and 12 atoms of H. The formula is C<sub>5</sub>H<sub>12</sub>.

**ANSWER**

(B)

**CONTRIBUTOR**

*This question of the day was provided by the courtesy of Professor [Scott Campbell](#) of the [University of South Florida](#) from the book [Fundamentals of Engineering Examination Sample Questions General Engineering](#).*