Study Note FM-09-05, Problem No. 36
Calculate the Macaulay duration of a common stock that pays dividends at the end of each year into perpetuity. Assume that the dividend is constant, and the effective rate of interest is 10%.

A. 7  B. 9  C. 11  D. 19  E. 27

Solution.
The stock is a perpetuity-immediate, therefore its duration is
\[ \frac{1}{i} = \frac{1}{0.10} = 10. \]

Note that when \( i = \frac{1}{10} \), we have \( d = \frac{1}{11} \). The Macaulay duration is equal to
\[ D_M = (1 + i) \cdot D = (1 + i) \cdot \frac{1}{i} = \frac{1}{d} = 11. \]

Answer C.

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