Sunday, April 5, 2015 9:21 AM

The sum of first 9 terms of the series

$\frac{1^3}{1} + \frac{1^3+2^3}{1+3} + \frac{1^3+2^3+3^3}{1+3+5} + \ldots$ is :

(1) 142
(2) 192
(3) 71
(4) 96

n^{th} term $= t_n = \dfrac{1^3+2^3+\cdots+n^3}{1+3+5+\cdots+(2n-1)}$

$t_n = \left\{\dfrac{n(n+1)}{2}\right\}^2 \times \dfrac{1}{n^2} = \dfrac{(n+1)^2}{4}$

$\therefore t_n = \dfrac{n^2+2n+1}{4}$

$\therefore S_n = \dfrac{1}{4}\left\{\sum(n^2) + 2\sum n + \sum(1)\right\}$

$= \dfrac{1}{4}\left\{\dfrac{n(n+1)(2n+1)}{6} + \dfrac{2n(n+1)}{2} + n\right\}$

$\therefore S_9 = \dfrac{1}{4}\left\{\dfrac{9\times10\times19}{6} + 9\times10 + 9\right\} = 96$

$\therefore$ Correct option is (4)