Sunday, April 5, 2015 9:05 AM

The sum of coefficients of integral powers of x in the binomial expansion of $(1-2\sqrt{x})^{50}$ is :

(1) $\frac{1}{2}(3^{50}-1)$

(2) $\frac{1}{2}(2^{50}+1)$

(3) $\frac{1}{2}(3^{50}+1)$ ✓

(4) $\frac{1}{2}(3^{50})$

DOPREP

$(1-2\sqrt{x})^{50}$

General term $= {}^{50}C_r (-2x^{1/2})^r$

$= {}^{50}C_r (-2)^r x^{r/2}$

$\therefore$ Coefficients of integral powers of x are

${}^{50}C_0(-2)^0$; ${}^{50}C_2(-2)^2$; ${}^{50}C_4(-2)^4$; ..... ; ${}^{50}C_{50}(-2)^{50}$

r is even

$\therefore$ Required sum is

$= {}^{50}C_0 2^0 + {}^{50}C_2 2^2 + {}^{50}C_4 2^4 + \cdots + {}^{50}C_{50}(2)^{50} = S$

$(1+X)^{50} + (1-X)^{50} = 2S$; where $X = 2$

$\therefore S = \frac{1}{2}\{3^{50}+1\}$

$\therefore$ Correct option is (3)