Related Questions with Solutions

Questions

Quetion: 01

The number of terms which are free from radical signs in the expansion of
$\left(x^{\frac{1}{5}} + y^{\frac{1}{10}} \right)^{55}$ is:

A. 6
B. 7
C. 8
D. None of these

Solutions

Solution: 01

General term in $[x^{1/5} + y^{1/10}]^{55}$ is

$$t_{r+1} = {}^{55}C_r x^{1/5[55 - r]} y^{r/10} \quad [0 \le r \le 55]$$

For the terms free from all radical sings, we must have

$$\frac{1}{5}(55 - r) = I \text{ and } \frac{1}{10}r = I'$$

Where, I and I' are both integers

$\Rightarrow \quad r = 5[11 - I]$ and $r = 10I'$

i.e. r is both multiple of 5 and 10,

$\Rightarrow \quad$ r is a multiple of 10.

$\therefore \quad$ Number of terms free from radical are 6

where $0 \le r \le 55$ and r is a multiple of 10 are

$r = 0, 10, 20, 30, 40, 50$

Correct Options

Answer:01

Correct Options: A