Sol:

It is given that the penalty for each succeeding day is 50 more than for the preceding day, so the amount of penalties are in AP with common difference ₹50

Number of days in the delay of the work = 30

The amount of penalties are ₹200, ₹250, ₹300,... up to 30 terms.

$\therefore$ Total amount of money paid by the contractor as penalty,

$S_{30} = ₹\ 200 + ₹\ 250 + ₹\ 300 + ...$ up to 30 terms

Here, $a = ₹\ 200, d = ₹\ 50\ and\ n = 30$

Using the formula, $S_n = \frac{n}{2}\left[2a + (n-1)d\right]$, we get

$S_{30} = \frac{30}{2}\left[2 \times 200 + (30-1) \times 50\right]$

$= 15(400 - 1450)$

$= 15 \times 1850$

$= 27750$

Hence, the contractor has to pay ₹27,750 as penalty