2. The sum of all natural numbers 'n' such that $100 < n < 200$ and HCF $(91, n) > 1$ is

(a) 3203   (b) 3303

(c) 3221   (d) 3121

Exp. **(d)**

The natural numbers between 100 and 200 are 101, 102, 103, ..., 199.

Since, $91 = 13 \times 7$, so the natural numbers between 100 and 200 whose HCF with 91 is more than 1 are the numbers which are either divisible by 7 or 13.

So, the required sum of numbers between 100 and 200 = (sum of numbers divisible by 7) + (sum of numbers divisible by 13) − (sum of numbers divisible by 91)

$$= \sum_{r=1}^{14}(98 + 7r) + \sum_{r=1}^{8}(91 + 13r) - (182)$$

$$= (98 \times 14) + 7\left(\frac{14 \times 15}{2}\right) + (91 \times 8)$$

$$+ 13\left(\frac{8 \times 9}{2}\right) - (182)$$

$$= 1372 + 735 + 728 + 468 - 182$$

$$= 3303 - 182$$

$$= 3121$$