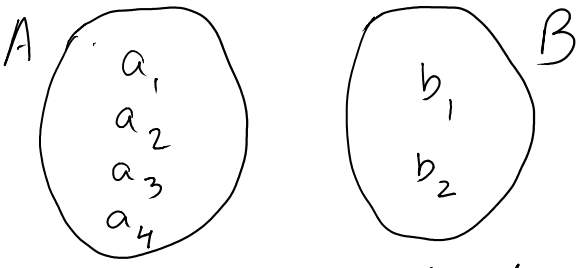
Let A and B be two sets containing four and two elements respectively. Then the number of subsets of the set $A \times B$, each having at least three elements is :

(1) 275
(2) 510
(3) 219 → Correct option
(4) 256



$\therefore n(A \times B) = 8$

$\therefore$ Total subsets $= 2^8$

$\therefore$ Required number of subsets

$= 2^8 - {}^8C_0 - {}^8C_1 - {}^8C_2$

$= 256 - (1 + 8 + 28) = 219$

$\therefore$ Correct option is (3)