Exercise 1.3

Question 13:

Write the denominator of rational number $\frac{257}{5000}$ in the form $2^m \times 5^n$, where m, n are non-negative integers. Hence, write its decimal expansion, without actual division.

Answer 13:

Denominator of the rational number $\frac{257}{5000}$ is 5000.

Now,

$5000 = 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$

$= (2)^3 \times (5)^4$, which is of the type $2^m \times 5^n$,

where $m = 3$ and $n = 4$ are non-negative integers.

∴ Rational number

$$= \frac{257}{5000} = \frac{257}{2^3 \times 5^4} \times \frac{2}{2} = \frac{514}{2^3 \times 5^4} = \frac{514}{(10)^4} = \frac{514}{10000} = 0.0514$$

So, 0.0514 is the required decimal expansion of the rational $\frac{257}{5000}$ and it is also a terminating decimal number.