

Q2) ①  $P(\text{cold} \cap \text{fever}) = P(\text{Fever} | \text{cold}) \times P(\text{cold})$

$$= 0.307 \times 0.02$$

$$= 0.00614 \rightarrow \text{Ans.}$$

②  $P(\text{cold} | \text{cough}) = \frac{P(\text{cough} | \text{cold})}{P(\text{cough})}$

$$\frac{P(\text{cough} | \text{cold})}{P(\text{cough})} \quad \text{--- (1)}$$

$$P(\text{LD}) = 0.2 \times 0.1009 + 0.8 \times 0.001$$

$$= 0.02098 \quad \text{--- (1)}$$

$$P(\text{cold}) = 0.02098 \times 0.02 \times 0.7525 +$$

$$0.02098 \times 0.08 \times 0.505 +$$

$$0.97902 \times 0.08 \times 0.505 +$$

$$0.97902 \times 0.02 \times 0.01.$$

$$= 0.0003 + 0.0004 + 0.0098$$

$$+ 0.0095$$

$$= 0.03 \quad \text{--- (2)}$$



$$P(\text{cough} \cap \text{cold}) = 0.0003 + 0.0098$$

$$= 0.0101$$

— (3)

Putting (2) & (3) in (1), we get.

$$P(\text{cold} | \text{cough}) = \frac{0.0101}{0.03}$$

$$= 0.3366 \text{ — Ans.}$$