

NCERT EXEMPLAR SELECTED PROBLEMS :

PROBLEM 1

Q34. The value of $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$ is

- (a) 0
- (b) 1
- (c) $1/2$
- (d) Not defined

Sol: (b)

$$\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$$

$$= [\tan 1^\circ \tan 2^\circ \dots \tan 44^\circ] \tan 45^\circ [\tan (90^\circ - 44^\circ) \tan (90^\circ - 43^\circ) \dots \tan (90^\circ - 1^\circ)]$$

$$= [\tan 1^\circ \tan 2^\circ \dots \tan 44^\circ] [\cot 44^\circ \cot 43^\circ \dots \cot 1^\circ]$$

$$= 1 \cdot 1 \dots 1 \cdot 1 = 1$$