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Answer

*. Solution:-

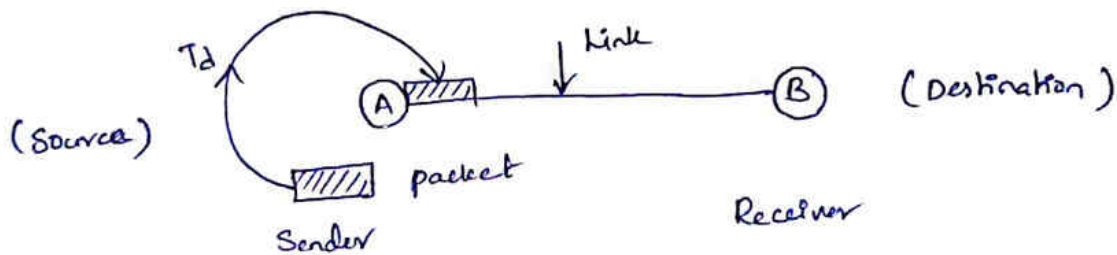
⇒ List of delay components in the end-to-end delay.

The delay components are:-

- i) Transmission delay.
- ii) Propagation delay.
- iii) processing delay.
- iv) queuing delay.

i) Transmission delay:- (T_d)

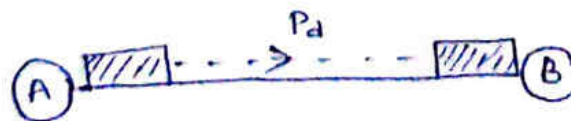
Amount of time taken to transfer a packet on the outgoing link is called as transmission delay



ii) Propagation delay:- (P_d)

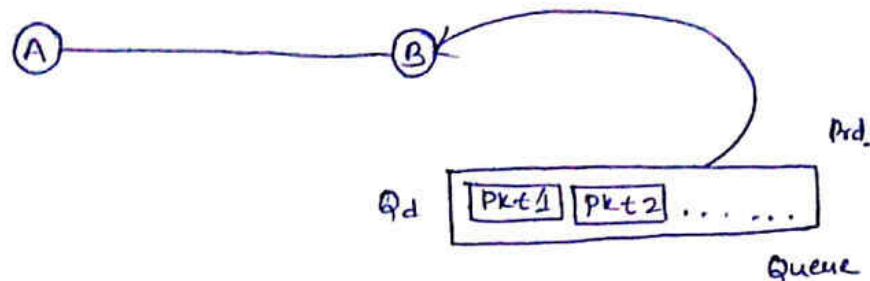
Amount of time to transfer a packet from Sender to receiver

$$\therefore P_d = \frac{\text{distance}}{\text{velocity}}$$



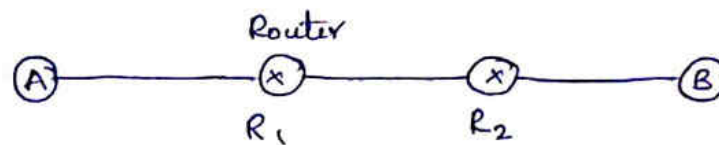
iii) Queuing delay :- (Q_d)

Amount of time packet will wait in the queue before being taken up for processing is called as queuing delay



iv) Processing delay :- (Prd)

Amount of time taken to process a packet by the router is called as processing delay



⇒

All these delays are constants, except for the queuing delay, which are variable.

Because it depends on forwarded packet execution.