Answer

Transmission Rate = T_R = 2 Mbps
Size of the packet = S = 5 Kb
} given

$\Rightarrow$ Transmission delay = $T_t = \frac{S}{T_R} = \frac{5\text{Kb}}{2\text{Mbps}}$
(of one packet)

$= \frac{5\text{Kb}}{2\times10^3\text{ Kbps}}$

$= 2.5\times10^{-3}$ sec

$\Rightarrow$ T_t = 2.5 ms

Propagation delay = 15 ms (given)

a)

waiting time of 200th packet = Transmission delay of 199 packets

$= 199 * T_t$

$= 199 \times 2.5$

$= 497.5$ ms

b)

Time taken in transmitting 200 packets = $200 * T_t$

$= 200 \times 2.5$

$= 500$ ms

∴ Time taken by one packet to reach the node B after transmission from node A = T_p

⇒ In 500ms, No. of packets Recieved by node B =

$$= \frac{500\ ms}{T_p}$$

$$= \frac{500\ ms}{\frac{15\ ms}{3}} = \frac{100}{3} = 33.33$$

(33) packets will be completely recieved.

c) Total time = (Time taken to transmit one packet from A to link) + (300)* Propagation delay

$$= T_t + 300 T_p$$

$$= 2.5ms + (300) \times 15ms$$

$$= 2.5ms + 4500ms$$

$$= 4502.5\ ms$$

for conversions:

1 ms = 10^{-3} sec

1 Mbps = 10^{3} Kbps

==> Go through the solution and let me know if you have any doubt in this through comments :)

==> Please give us a "Good rating" if you are satisfied with our response.

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