Solution-

Given-

- Bandwidth = 1 Mbps
- Distance = 2 x 36504 km = 73008 km
- Propagation speed = 3 x 10^8 m/sec
- Efficiency (η) = 25% = 1/4
- Go back N is used where N = 127

Calculating Transmission delay-

Let the packet size be L bits.

We know-

Transmission delay (T_t)

= Packet size / Bandwidth

= L / 1 Mbps

= L μsec

Calculating Propagation delay-

We know-

Propagation delay (T_p)

= Distance / Speed

= (73008 x 10^3 m) / (3 x 10^8 m/sec)

= 24336 x 10^{-5} sec

= 243360 μsec

Calculating value of 'ß'-

We know-

ß = T_p / T_t

ß = 243360 μsec / L μsec

ß = 243360 / L

Calculating Packet Size-

We know, Efficiency (η) = N / (1+2ß)

Substituting the values, we get-

1/4 = 127 / (1 + 2 x 243360 / L)

1/4 = 127 x L / (L + 486720)

L + 486720 = 508 x L

507 x L = 486720

L = 960 bits

L = 120 bytes