Question 13 A15 Mid Term Exam

$D_{AW} = D_{AE} + D_{EW}$

frame size = 1300 + 100 + 100 = 1500 bytes X 8 = 12,000 bits

D_{AE} = proc + QD + TT + PD

$$TT = \frac{12000 \text{ bits}}{2000 \times 10^6 \text{ bits/sec}} = 6 \times 10^{-6} \text{ sec} = 6 \text{ microsec.}$$

$$PD = 8000 + 2000 + 5000 = \frac{15,000 \text{ m}}{150 \text{ m/microsec.}} = 100 \text{ microsec.}$$

Proc = 4 lookups X 500 microsec.   = 2,000 microsec.

QD = 5 X TT

D_{AE} = 3 TT + 5 TT + proc + PD

    = 8 x 6 + 2000 + 100 microsec   = 2, 148 microsec.

D_{EW} = proc + QD + TT + PD

Proc = delay when passing through node = 1 microsec.

QD = 0

$$PD = \frac{200 \text{ m}}{200 \text{ m/ microsec.}} = 1 \text{ microsec.}$$

$$TT = \frac{12000 \text{ bits}}{100 \times 10^6 \text{ bits/sec}} = 120 \times 10^{-6} \text{ sec} = 120 \text{ microsec.}$$

D_{EW} = 1 + 0 + 1 + 120 = 122 microsec

D_{AW} = D_{AE} + D_{EW}

D_{AW} = 2, 148 + 122 = 2,270 microsec.