2. Size of a TCP Segment = 10 kB

Header length = 6

Seq no. = 4000

URG Flag = 1

URG Pointer = 46

sequence no. of the first byte = 4000

URG pointer = 46

upto seq. no. of 4000+46 = 4046 data is urgent

total of 41 bytes

41 bytes of urgent data seq no. is

4000 - 4046

3. current size of congestion window is terms of no. segmen

= (size in bytes) / (Maximum segment size)

= 32/2

= 16 mss

= 7 (1100 to 1300)

4. (a) The bandwidth of the STs. 768 link 46 hbps.

All change the bandwidth from Giga bit per sec (Gbps) to Giga byte per second (Gb ps)

1 byte is speed equal to 8 bits so, converting bandwidth from bps to BPS:

$$4b = \frac{40}{8} = 5 \text{ GBps}.$$

b) $1GB = 1000 \times 1000 \times 1000$

The bandwidth of the link in BPS would be:

5×10^9 BPS.

The total number of required chunks will be 12^{32}.

5. a) Data are 20 bytes, length of UDP header, is 8 bytes, so the ratio is,

$$\frac{20}{20+8} = \frac{20^{\cancel{5}}}{28^{\cancel{7}}} = 5/7$$

b) Data 20 bytes, length of TCP header (no options) is 20 bytes, so the ratio is

$$= \frac{20}{20+20} = \frac{20^1}{40^2} = \frac{1}{2}$$