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Task: 5

(a) Switch 6

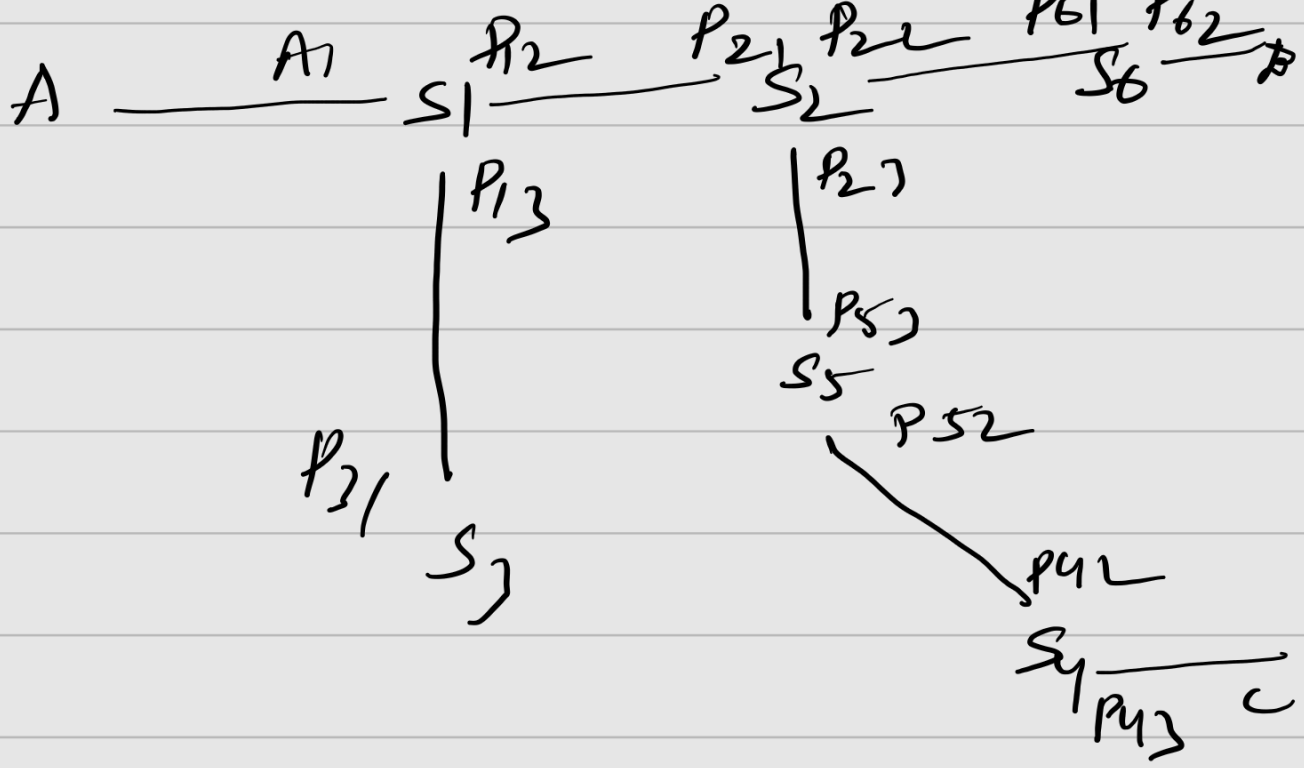
(b) Root bridge is switch 6

switches	via	cost
S_6 to S_1	6-2-1	20
	6-2-5-4-1	130
	6-2-5-4-3-1	140
S_6 to S_2	6-2	10
S_6 to S_3	6-2-1-3	30
	6-2-5-3	120
	6-2-5-4-3	130

S_6 to S_4	6-2-5-4	30
	6-2-5-3-4	220
	6-2-1-3-4	120
	6-2-1-3-5-4	140

S_6 to S_5	6-2-5	20
	6-2-1-3-5	130
	6-2-1-3-4-5	140

(c)



(d) Host C Sends a frame to Host A

Switches	S1	S2	S3	S4	S5	S6
C → A	C P12	C P23	C P31	C P43	C P53	C P61

(e) Host B sends a frame to Host A

Switches	S1	S2	S3	S4	S5	S6
B-A	C P12	C P23	C P31	C P43	C P52	C P61
	b P12	b P22	b P31	b P42	b P53	b P62

f) Host A replies with a frame to Host C

switches	S1	S2	S3	S4	S5	S6
A→C	C P12	C P23	C P31	C P43	C P52	C P64
	b P12	b P22	b P31	b P42	b P53	b P62
	a P11	a P21	a -	a P42	a P53	a -

g) Host A replies with a frame to Host B

Switches	S1	S2	S3	S4	S5	S6
A→B	C P12	C P23	C P31	C P43	C P52	C P61
	b P12	b P22	b P31	b P42	b P53	b P62
	a P11	a P21	a -	a P42	a P53	a P61

Task: 6:

Maximum Ethernet frame length

= data + header

1500 + 26

= 1526 byte

= 1526 × 8 bit

10×10^9 bit moves in 1 second

1 bit moves in $\frac{1}{10 \times 10^9}$ sec

Then,

1526 × 8 bit moves in $\frac{1}{10 \times 10^9} \times 1526 \times 8$ sec

$$= \frac{12,208}{10^{10}} \text{ sec}$$

$$= 1.2208 \times 10^{-6} \text{ sec}$$

1.2208×10^{-6} sec → 1 frame transmitted

1 sec → $\frac{1}{1.2208 \times 10^{-6}}$

$$= 0.819134 \times 10^{6}$$

$$= 819134 \text{ frames/s}$$

Maximum Ethernet frame length

$= 46 + 26$ ch.

/data

$= 72$ byte

$= 72 \times 8$ bit

10×10^{9} bit Maximum in 1 second

1 bit moves in $\frac{1}{10 \times 10^9}$ sec

then

72x8 bit moves in $\frac{1}{10 \times 10^9} \times 72 \times 8$ sec

$= \frac{576}{10^{10}}$ sec

$= 57.6 \times 10^{-9}$ sec

57.6×10^{-9} Sec → 1 frame transmitted

1 sec → $\frac{1}{57.6 \times 10^{-9}}$

$= 0.0173611 \times 10^9$

$= 17361111$ frames/s