Cmpt 434   A2 - Part B

(1.)

```
11011 ⟌ 10111 0+0+0+0+0000
      ⊖ 11011
         1100
      ⊖ 0000 ↓
        11000
      ⊖ 11011
           11
      ⊖   00   ↓ ↓ ↓
           11101
      ⊖    11011
             110
      ⊖     000 ↓ ↓
             11001
      ⊖     11011
              10000
      ⊖      11011 ↓
               10110
      ⊖        11011
                1101
```

Remainder.

┌─────────────────────────┐
│ Checksum = 01101   │
└─────────────────────────┘

(2)

$S = d/p_S$

$t = S + (s/d_r)$

$sol = 299,792,458 \text{ m/s}$

i)

$S = 30m / (299,792,458 \text{ m/s})$

$\quad = 1.0 \times 10^{-7} s$

$t = 1.0 \times 10^{-7} s + (1.0 \times 10^3 b / 100 \times 10^6 b/s)$

$\quad = 1.0 \times 10^{-7} s + 1.0 \times 10^{-5} s$

$\quad = 1.01 \times 10^{-5} s$

$S/t = 1.0 \times 10^{-7} s / 1.01 \times 10^{-5} s$

$\quad = 0.0099$

$\therefore$ $\underline{CSMA}$ is likely to be more appropriate.

ii)

$S = 300m / (299,792,458 \text{ m/s})$

$\quad = 1.0 \times 10^{-6} s$

$t = 1.0 \times 10^{-6} s + (4.0 \times 10^3 b / 10 \times 10^9 b/s)$

$\quad = 1.0 \times 10^{-6} s + 4.0 \times 10^{-7} s$

$\quad = 1.4 \times 10^{-6} s$

$S/t = 1.0 \times 10^{-6} s / 1.4 \times 10^{-6} s$

$\quad = 0.71$

$\therefore$ $\underline{ALOHA}$ is likely to be more appropriate.

3.

a)

node	D(a)	D(b)	D(c)	D(d)	D(e)	D(f)	D(g)	D(h)
	–	–	–	–	⓪	–	–	–
e	–	8	–	2	(0)	6	2	–
g	–	8	8	2	0	6	(2)	3
h	–	8	8	2	0	4	2	(3)
f	–	8	8	2	0	(4)	2	3
d	–	4	8	(2)	0	4	2	3
b	7	(4)	5	2	0	4	2	3
c	6	4	(5)	2	0	4	2	3
a	(6)	4	5	2	0	4	2	3
	6	4	5	2	0	4	2	3

b)

time	$D^a(e)$	$D^b(e)$	$D^c(e)$	$D^d(e)$	$D^e(e)$	$D^f(e)$	$D^g(e)$	$D^h(e)$
	–	–	–	–	⓪	–	–	–
1	–	8	–	(2)	0	6	(2)	–
2	11	(4)	8	2	0	5	2	(3)
3	7	4	(5)	2	0	(4)	2	3
4	(6)	4	5	2	0	4	2	3
	6	4	5	2	0	4	2	3