Branch : CSE & IT | Batch : Hinglish

Computer Network

Flow Control

DPP 02

[NAT]

1. A satellite has a propagation delay of 800ms and the bandwidth of the satellite is 40 Kbps. The transmission uses the "Go Back N- ARQ" protocol with N has a value of 10. If the size of each frame is 100 bytes then what is the maximum data rate possible in Kbps.

[MCQ]

2. If the maximum sequence number in Go-Back-N-ARQ is 'S' that what will be the receiver window size?

(a) $\frac{S+1}{2}$ (b) $S + 1$

(c) S (d) 1

[MSQ]

3. Which of the following statement(s) is/are correct about Go-Back-N-ARQ?

(a) In Go-Back-N-ARQ if the maximum sequence number is K then sender window size will be K.

(b) Go-Back-N-ARQ uses cumulative acknowledgment.

(c) In Go-Back-N-ARQ time out timer is maintained only for the first frame of the window.

(d) None of the above

[NAT]

4. If the maximum sender window size in Go-Back-N-ARQ is 15 then what will be the number of sequence bit?

[MSQ]

5. In Go-Back-N protocol if the maximum window size is 16. Then what will be the range of sequence number.

Note: If the range is from a to b then write the answer in the from the $\frac{a+b}{2}$.

(a) 16 (b) 4

(c) 8 (d) None of these

Answer Key

1. **(Range 4.92 to 4.94)**
2. **(d)**
3. **(a,b,c)**
4. **(4)**
5. **(c)**

Hints & Solutions

1. (Range 4.92 to 4.94)

Tp = 800 msec.
Bandwidth = 40 Kbps
Frame size = 100 bytes
N = 10

$$T_{t(frame)} = \frac{\text{framesize}}{\text{Bandwidth}} = \frac{100\times 8 \text{ bits}}{40\times 10^3 \text{ bits/sec.}}$$
$$= 20\times 10^{-3} \text{ sec.}$$
$$= 20 \text{ msec.}$$

$$\text{Maximum data rate} = \frac{N \times \text{frame size}}{T_t + 2\times T_p}$$
$$= \frac{10\times 100\times 8 \text{ bits}}{(20 + 2\times 800)\text{m sec.}}$$
$$= \frac{8000}{1620}\text{Kbps} = 4.938 \text{ Kbps}$$

2. (d)

In Go-Back-N-ARQ if the maximum sequence number is S then

Sender window size = S

Receiver window size = 1 (always)

3. (a,b,c)

All the given statement are true about Go-Back-N-ARQ.

4. (4)

$S.W.S \le 2^m$
$S.W.S = 2^m - 1$
$15 = 2^m - 1$
$2^m = 15 + 1$
$2^m = 16$
$2^m = 2^4$
$\boxed{m = 4}$

5. (c)

Maximum window size = 16
Then range of sequence number will be
0 – 16
a = 0 b =16

$$\Rightarrow \frac{a+b}{2} = \frac{0+16}{2} = 8$$