(1) How does “non-persistent algorithm” work?

The non-persistency algorithm works in the following way:

- Listen to the cable (①)
- If you do not see anyone in the middle of its transmission, immediately start transmission (②)
- If you see someone in the middle of its transmission, immediately give up (③)
- After you give up at ③, wait for a set time interval, Δ, without listening to the cable (④)
- After you wait for Δ-time interval, go back to ① (⑤)

Note: since this question asks a definition of a particular algorithm, all of the five above (① through ⑤) are required for full credit.

(2) How does “p-persistent algorithm” work?

The non-persistency algorithm works in the following way:

- Listen to the cable (①)
- If you do not see anyone in the middle of its transmission, you transmit at a probability of $p$ (②)
- If you see someone in the middle of its transmission, continuously listen to the cable until the one who is currently transmitting finishes (③)
- When you see the current transmitting host finishes (its transmission), go back to ① (④)
- If you chose not to transmit at ② above, wait for a set time interval, Δ, without listening to the cable (⑤). Then, go back to ① (⑥)

Note: since this question asks a definition of a particular algorithm, all of the six above (① through ⑥) are required for full credit.
(3) What is the major problem in CSMA/CD?

The major problem in CSMA/CD is the **guaranteed packet collisions after a packet collision is detected**.

When a packet collision is detected, transmitting host computers will start their re-transmissions (of the collided packets) as soon as a collision is over. Since two (or more) host computers will start their re-transmissions almost at the same timing, the next round of packet collision(s) is guaranteed (which means that transmitting host computers will never be able to successfully transmit their packets after a packet collision occurs).

(4) What particular problem in CSMA/CD does BEB solve and how?

BEB solves that problem of the guaranteed packet collisions after a collision in CSMA/CD by **inserting random delay** at each host computer for re-transmitting their collided packets after a collision is detected (to avoid the guaranteed packet collisions after a collision is detected).

(5) If you have (too) many packet collisions in your LAN, what should you do (to alleviate the negative impacts from a large number of packet collisions)? Tell me what. Tell me why it is a reasonable solution.

When a large number of packet collisions are (frequently) observed (taking place), the **p value in the p-persistent algorithm** (CSMA/CD uses the p-persistent algorithm by default) should be lowered.