Quiz 6

1. Let $L \subseteq \{0,1\}^*$. Which of the following statements is necessarily true about L^*?

   (A) L^* is an infinite set.
   (B) L^* is a finite set.
   (C) L^* is non-empty.
   (D) None of the above.

   Correct answer is (C).

2. Let $L = \{0\}$. Which of the following statements is true?

   (A) $L^* = (LL)^*$
   (B) $L^* = L(L^*)$
   (C) $L^* = (L^*)L$
   (D) $L^* = L^*L^*$

   Correct answer is (D).

3. Consider $r = a(ab^*a \cup b^*)^*$. Which of the following is true about $\mathbf{L}(r)$?

   (A) $a \in \mathbf{L}(r)$
   (B) $aa \in \mathbf{L}(r)$
   (C) Every string in $\mathbf{L}(r)$ has at least one b.
   (D) None of the above.

   Correct answer is (A).

4. Consider $r = (ab^*a \cup b^*)^*$. Which of the following is true about $\mathbf{L}(r)$?

   (A) $a \in \mathbf{L}(r)$
   (B) $aa \in \mathbf{L}(r)$
   (C) Every string in $\mathbf{L}(r)$ has at least one b
   (D) None of the above.

   Correct answer is (B).