CS323 Written Assignment 1 Sample Answer

Exercise 1

$aabb, abab, abba, baab, baba, bbaa$

Exercise 2

$\epsilon, a, ab, abb, abba, abbab$

$b, ab, bab, bbab$

$aab, aba, abb, bab, bba, bbb$

Exercise 3

$\epsilon, a, ab, abc, abcd$

Exercise 4

There are multiple valid answers.

$(\epsilon|0|1)|(0|1)^*(00|10|11)$

$1^*(01^*01^*)^*$

$0^*10^*(10^*10^*)^*$

$(1|01|001|0001)^*(\epsilon|0|00)$

Exercise 5

$letter \rightarrow [a-zA-Z]$

$word \rightarrow letter^+$

$email \rightarrow word(.word)^*@word(.word)^+$

Exercise 6

Yes. It is easy to prove by induction that for every $k \geq 0$, $(01)^k 0 = 0(10)^k$.