1.

a) VALID

b) ERROR, formatting is incorrect, b does not Union with anything

c) ERROR

d) ERROR, it is a set, not a regular expression

e) VALID, concatenation

2.

a) True

b) True

c) True

d) True, we can use ab^1ab^2

e) False, a is a prefix for any series of bs

3.

a) YES

b) NO, there is no c symbol in the DFA

c) YES

d) YES, q0

e) YES, only q0

4.

a) VALID

b) ERROR, it could infinite, ex. a*

c) VALID, $L(\varepsilon) = \{\varepsilon\}$

d) VALID

e) ERROR, our input string may be infinite