Midterm

There are five problems each worth five points for a total of 25 points. Show all your work, partial credit will be awarded. Space is provided on the test for your work; if you use a blue book for additional workspace, sign it and return it with the test. No notes, no collaboration.
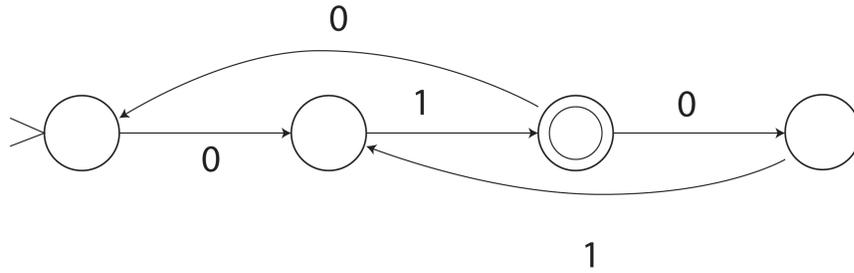
Name: _____

Problem	Credit
1	
2	
3	
4	
5	
Total	

1. Give an NFA accepting any string in $\{0, 1\}^*$ that contains the substring 10110111

2. Give a DFA accepting any string in $\{0, 1\}^*$ that contains the substring 10110111.

3. Write a Regular Expression that expresses the same language as the following FSA.

4. The language $\{(01)^i(10)^i \,|\, i \geq 0\}$ subset of $\{0,1\}^*$ is accused of being non-regular. Show how the Prosecutor proceeds in the Court of Logic under all arguments by the Advocate to get a guilty verdict (i.e. show that the language is non-regular).

5. The language $\{(01)^i(01)^i \,|\, i \geq 0\}$ subset of $\{0,1\}^*$ is accused of being not regular. Show how the Advocate proceeds in the Court of Logic under all arguments by the Prosecutor to get an acquittal (i.e. show that the language is regular).