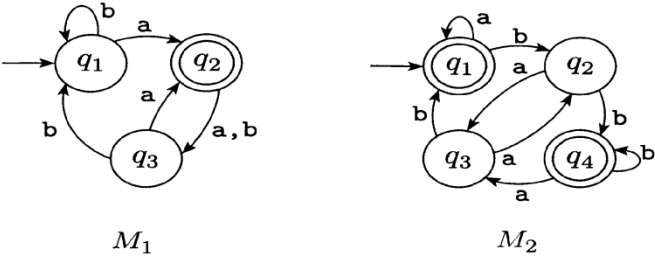


<p>Q1. Short Questions</p> <p>(a) Formal definition of Regular Expression. Give two examples.</p> <p>(b) Formal definition of Context-Free Grammar (CFG). Give two examples.</p> <p>(c) Consider the language $\{ 0^n1^n / n > 0 \}$. Construct a CFG of this language.</p> <p>(d) Formal definition of NFA. Give one example</p>	<p>5</p> <p>5</p> <p>5</p> <p>5</p> <p>(20)</p>
<p>Q2. $\Sigma = \{a, b\}$</p> <p>Consider the following Regular Expressions: $a.b^*. a.b^*.a$</p> <p>Write the language (i.e. set of words) generated by this Regular Expression.</p> <p>Construct NFA that accepts this Regular Expression.</p> <p>Also write the complete formal description of the constructed NFA</p>	<p>(10)</p>
<p>Q3. Describe the major role of Lexical analysis, Syntax analysis, and Semantic analysis. Give an example.</p>	<p>(10)</p>
<p>Q4. The following are the state diagrams of two Finite Automates, M_1 and M_2</p> <div data-bbox="492 1298 1143 1555"></div> <p>(a) Give the complete formal description of machines M_1 and M_2 pictured above</p> <p>(b) Write the Transition Functions of machines M_1 and M_2.</p> <p>(c) What sequence of states M_1 and M_2 go through on input aaabb ?</p> <p>(d) Do M_1 and M_2 accept the string ϵ (Epsilon)?</p>	<p>3</p> <p>3</p> <p>3</p> <p>1</p> <p>(10)</p>