**CE349: THEORY OF COMPUTATION**

**Unit: Finite Automata**

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|  | **Conversion from RE to DFA** |
| 1. | Define DFA. Draw DFA  a. (1+110)\*0  b. (1+10+110)\*0  c . |
| 2. | Draw the minimal DFA for the language |
| 3. | Draw DFA from following RE.   |  |  | | --- | --- | | 1. |  | | 2. | 0 | |  |  | |
| 4. | Draw DFA for binary number divisible by 5. |
| 5. | Draw DFA for. |
|  | **Conversion from NFA to DFA** |
| 1. | Convert below given NFA to DFA. |
| 2. | Design an equivalent DFA corresponding to the following NFA.  where is as follows.   |  |  |  | | --- | --- | --- | |  | Next State | | | Present State | 0 | 1 | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |
| 3. |  |
| 4. |  |
| 5. | Construct a DFA equivalent to NDFA whose transition table is defined by following table.   |  |  |  | | --- | --- | --- | | State\∑ | a | b | | q0 | q0, q1 | q0 | | q1 | q2 | q1 | | q2 | q3 | q3 | | q3 | -- | q2 | |
| 6. | M=( {q1,q2,q3},{0,1}, d,q1,{q3}) is a NFA where d is :  (q1,0)={q2,q3}  (q1, 1)={q1}  (q2,0)={q1,q2} (q2,1)= Ø (q3,0)={q2}  (q3,1)={q1,q2)  Convert it to DFA. |

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|  | **Conversion from NFA-^ to NFA** |
| 1. |  |
| 2. | With reference to following transition table for NFA-^, Find α (q2, aba). Let δ denote the transition function and α denoted the extended transition function of the ε-NFA.  [g2017_10](https://www.geeksforgeeks.org/wp-content/uploads/gq/2017/02/g2017_10.png) |
|  | **Construction of NFA-^ Using Kleene’s Theorem** |
| 1. | Using Kleene's Theorem, Convert regular expression into NFA- ^. |
| 2. | Using Kleene's Theorem, Convert regular expression into NFA- ^. |
| 3. | Using Kleene's Theorem, Convert following regular expression into NFA- ^.  (a) (b) |
| 4. | Using Kleene's Theorem, Convert regular expression into NFA- ^. |
|  | **Minimization of DFA** |
| 1. |  |
| 2. |  |
| 3. |  |
| 4. |  |
| 5. | Construct a minimum state automaton equivalent to a given automaton M whose transition table is :   |  |  |  | | --- | --- | --- | | State\∑ | Input | | | a | b | | q0 | q0 | q3 | | q1 | q2 | q5 | | q2 | q3 | q4 | | q3 | q0 | q5 | | q4 | q0 | q6 | | q5 | q1 | q4 | | q6 | q1 | q3 | |
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