**Jyothy Institute of Technology**

**Tataguni, Bangalore – 560 082**

**First Internal Test**

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| **Program** | **:** | **Information Science & Engineering** | **Date** | **:** | **3/08/2016** | **Time** | **:** | **1Hour** |
| **Course** | **:** | **Formal Languages & Automata Theory** | **Course Code** | **:** | **10CS56** | **Maximum Marks** | **:** | **25** |

**Answer the following questions.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Q No** | **Question** | **CO’s** | **Marks** |
| Q 1a  Q 1b | i) What is DFA? Explain with an example. What are the applications of DFA?  ii) Obtain a DFA to accept the set of all strings such that the number of 1’s is even and the number of 0’s is a multiple of 3 on ∑={0, 1}  OR  i) What is NFA? Explain with an example. What is the difference between DFA & NFA?  ii)Construct the DFA given ∑={a, b},that accept the language L={w,|w|mod3=0} | CO1  CO1  CO1  CO1 | 6  6  6  6 |
| Q 2a  Q 2b | i) Convert the following NFA to DFA   |  |  |  | | --- | --- | --- | | **δ** | **0** | **1** | | * **p** | **{p,q}** | **{p}** | | **q** | **-** | **{r}** | | **\*r** | **{p,r}** | **{q}** |   ii)Construct the DFA to accept the language L={w| w is of even length and begins with 01}  OR  i) Convert the following NFA to DFA    ii) Construct a DFA given ∑={a,b}, that accepts set of all strings with atleast one ‘a’ and exactly two b’s. | CO1  CO1  CO1  CO1 | 6  7  6  7 |

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| **Department** | **:** | **Information Science & Engineering** | **Date** | **:** | **3/08/2016** | **Time** | **:** | **1Hour** |
| **Subject Name** | **:** | **Formal Languages & Automata Theory** | **Subject Code** | **:** | **10CS56** | **Maximum Marks** | **:** | **25** |

**Answer the following questions.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q No** | **Question** | **CO’s** | **Marks** | **RBT**  **Level** |
| Q 1a  Q 1b | i) What is DFA? Explain with an example. What are the applications of DFA?  ii) Obtain a DFA to accept the set of all strings such that the number of 1’s is even and the number of 0’s is a multiple of 3 on ∑={0, 1}  OR  i) What is NFA? Explain with an example. What is the difference between DFA & NFA?  ii)Construct the DFA given ∑={a, b},that accept the language L={w,|w|mod3=0} | CO1  CO1  CO1  CO1 | 6  6  6  6 | 1,2  4,5  1,2  4,5 |
| Q 2a  Q 2b | i) Convert the following NFA to DFA   |  |  |  | | --- | --- | --- | | **δ** | **0** | **1** | | * **p** | **{p,q}** | **{p}** | | **q** | **-** | **{r}** | | **\*r** | **{p,r}** | **{q}** |   ii)Construct the DFA to accept the language L={w| w is of even length and begins with 01}  OR  i) Convert the following NFA to DFA    ii) Construct a DFA given ∑={a,b}, that accepts set of all strings with atleast one ‘a’ and exactly two b’s. | CO1  CO1  CO1  CO1 | 6  7  6  7 | 4,5  4,5  4,5  4,5 |

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| --- | --- | --- | --- | --- | --- |
|  | **CO 1** | **CO 2** | **CO 3** | **CO 4** | **CO5** |
| **Q1 a (i)** |  |  |  |  |  |
| **Q1 a (ii)** |  |  |  |  |  |
| **Q1 b (i)** |  |  |  |  |  |
| **Q1 b (ii)** |  |  |  |  |  |
| **Q2 a (i)** |  |  |  |  |  |
| **Q2 a (ii)** |  |  |  |  |  |
| **Q2 b (i)** |  |  |  |  |  |
| **Q2 b (ii)** |  |  |  |  |  |