IIIT BHUBANESWAR

Theory of Computation

Mid Semester, F.M. – 30 | **27 February 2016** | **4th SEMESTER, CSE** | **Time – 90 minutes**

Q1.

a) Design a DFA for **octal numbers** divisible by 3. (5)

b) Design a DFA which accept the language over alphabet {0, 1} recognizing the set of all strings such that **every block of three consecutive symbols contains at least two zeros**. (5)

Q2.

a) Find whether the following two are **equivalent** or not. (5)

M	0	1
→1	2	2
2	2	3
(3)	3	3

M'	0	1
→0	1	3
1	3	2
(2)	2	2
3	3	4
(4)	4	4
5	5	4

b) Construct a **regular expression** for the following DFA. Using Arden's Theorem. (5)

δ	0	1
→A	A	B
B	C	B
(C)	C	C

Q3. Minimize the given DFA using **Myhill-Nerode** Theorem. (10)

Q\Σ	a	b
→1	2	3
2	4	5
3	6	7
4	4	5
5	6	7
(6)	4	5
7	6	7

Best of Luck