

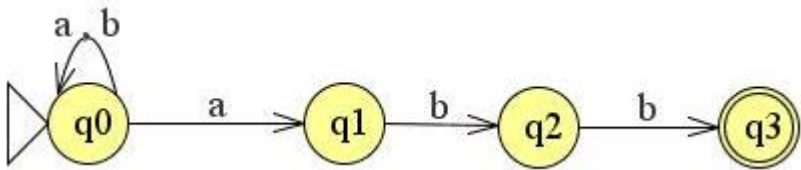
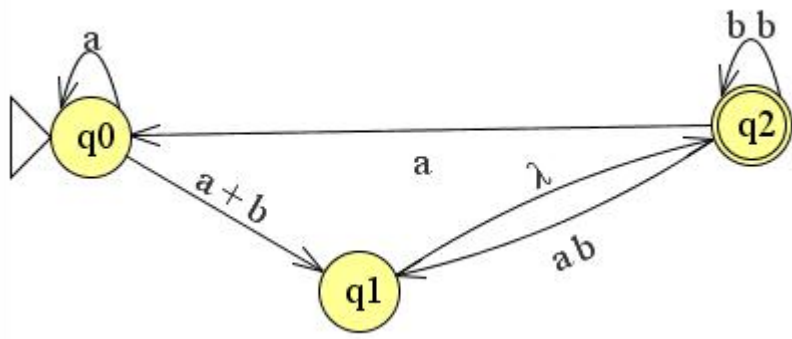


End Semester Examination – Nov/Dec – 2016

Code : **14CS2047**
 Sub. Name : **Theory of Computation**

Semester : **2016-17 ODD**
 Duration : **3hrs**
 Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Find the DFA for the language $L = \{ ab^3wb^2 : w \in \{a, b\}^* \}$	CO1	10
	b.	Draw NFA for i. $L((a+ab)a^*)$ ii. $L(0^*1^*(0+1)^*)$	CO1	10
(OR)				
2.		Convert the following NFA into DFA and minimize it. 	CO1	20
3.	a.	Find the regular expression for the following NFA 	CO1	10
	b.	Construct right linear, left linear and s- grammar for the following language. $L((aab^*ab)^*)$	CO1	10
(OR)				
4.	a.	Find $L1/L2$ for the following languages $L1 = L(a^*baa^*)$ and $L2 = L(ab^*)$	CO2	10
	b.	Write the Context Free Grammar for the language $L = \{ a^n b^{n+2} : n \geq 0 \}$	CO2	5
	c.	Show that the following grammar is ambiguous $S \rightarrow SS \mid aSb \mid bSa \mid \lambda$	CO2	5
5.	a.	Convert the following grammar into Chomsky's and Greibach's Normal Form $S \rightarrow a \mid aA \mid B \mid C$ $A \rightarrow aB \mid \lambda$ $B \rightarrow Aa$ $C \rightarrow cCD$ $D \rightarrow ddd$	CO2	20
(OR)				
6.	a.	Use CYK membership algorithm to find whether "abaa" is a member of the language represented by the grammar.	CO2	10

		$S \rightarrow AS \mid a$ $A \rightarrow AB \mid a$ $B \rightarrow BA \mid b$		
	b.	Construct NPDA for the following grammar and find whether “aaabb” is accepted by the NPDA $S \rightarrow aABB \mid aAA$ $A \rightarrow aBB \mid a$ $B \rightarrow bBB \mid b$	CO3	10
7.	a.	Construct NPDA for the following languages i) $L1 = \{wcw^r : w \in \{a,b\}^*\}$ ii) $L2 = \{a^n b^m c^{n+m} : n \geq 1; m \geq 1\}$	CO3	20
(OR)				
8.	a.	Construct DPDA for $L = \{a^n b^n : n \geq 1\} \cup \{a\}$	CO3	20
		<u>Compulsory:</u>		
9.	a.	Construct the turing machine for the following languages i) $L1(aba^*b)$ ii) $L2((ab)^*)$	CO3	10
	b.	Briefly discuss about the variants of the Turing Machines.	CO3	10

ALL THE BEST