SRI KRISHNA INSTITUTE OF TECHNOLOGY

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No. 57, Chimney Hills, Hesaraghatta Main Road, Chikkabanavara Post, Bengaluru- 560090

Department of Computer Science & Engineering

Subject Name : Theory Of Computation
Subject Code : BCS503
SEM: 5th
Faculty: Prof. Shweta S B

MODULE 3 - Question Bank

SL. NO	Questions	CO	RBT	
1.	Make use of the definition of Context-free Grammar to construct the CFG for $L=\{a^nb^n \mid n\geq 1\}$ $L=\{w\in\{(,)\}^*\}$ the parentheses are balanced. $L=\{w:\lvert w\rvert \bmod 3>0$ where $w\in \{a\}^*$ $L=\{a^nb^{2n} \mid n\geq 0\}$ $L=\{ww^R \mid w\in\{a,b\}^*]$ $L=\{a^nb^nc^m \mid n,m\geq 1\}$	CO3	L3	5*6 =30
2.	Obtain the grammar to generate string consisting of any number of a's and b's.	CO3	L3	5
3.	Obtain the grammar to generate strings of a's and b's such that string length is multiple of 3.	CO3	L3	5
4.	Make use of the definition of derivation to obtain the left most(LMD) and right most derivation (RMD)for the given string id+id*id using below grammar E->E+E|E-E|E*E|E/E|E^E|id And also construct the parse tree.	CO3	L3	10

5.	5.Obtain the LMD and RMD for the given grammar using the string aabbab and check whether the Grammar is ambiguous or not justify your answer. S->aB|bA A->aS|bAA|a B->bS|aBB|b	CO3	L3	7
6.	Is the following grammar ambiguous? justify your answer by considering the input string ibtibtaea. S->iCtS|iCtSeS|a C->b	CO3	L3	7
7.	Show that following grammar is ambiguous for the string aababb S->aSbS S->bSaS S->€.	CO3	L3	7
8.	Make use of the definition of push down automata(PDA) to construct PDA for the following language $L=\{a^nb^n\|n\geq 1\}$ and show the Instantaneous description (ID) for the input aaabbb.	CO3	L3	10
9.	Obtain the PDA for $L=\{wCw^R\|w€\{a,b\}^*\}$ and also validate the PDA by considering any input.	CO3	L3	10
10.	Construct a PDA for $L=\{wCw^R\|w€\{a,b\}^*\}$ and also validate the PDA by considering any input.	CO3	L3	10
11.	Design a PDA for L={w:na(w)=nb(w)|n≥1} and write ID for aababb.	CO3	L3	10
12.	.Design a PDA for $L=\{a^nb^nc^m\|n,m\geq 1\}$ and validate the PDA by considering any input.	CO3	L3	10
13.	Obtain the PDA for $L=\{a^nb^{2n}\|n\geq 1\}$ consider any input to write the ID.	CO3	L3	
14.	For the grammar S->aABC A->aB|a B->bA|b C->a Obtain the corresponding PDA and validate the same for the string aabba	CO3	L3	7

15.	For the grammar S->aSb S->ab Obtain the PDA and validate the same by considering any input.	CO3	L3	7
16.	Convert the grammar S->0S1|A A->1A0|S|€ to a PDA that accepts the language by empty stack.	CO3	L3	7
17.	Convert the grammar to a PDA S->aAA A->aS|bS|a.	CO3	L3	7
18.	Explain the languages of PDA.	CO3	L2	5
19.	Make use of the definition of Deterministic PDA to check whether the PDA corresponding to the Language $L=\{a^nb^n\|n\geq 1\}$ is deterministic.	CO3	L3	10
20.	Make use of the definition of Deterministic PDA to check whether the PDA corresponding to the Language $L=\{ a^nb^{2n}\|n\geq 1\}$ is deterministic	CO3	L3	10