COMPUTER ENGINEERING DEPARTMENT

ASSIGNMENT NO-06

Sub: Theory of Computer Science

COURSE: T.E. Year: 2020-2021 Semester: V

DEPT: Computer Engineering

SUBJECT CODE: CSC504 DUE DATE: 22/11/2020

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Class: TE-Comps B Date of Submission: 20/11/2020

Tutorial 6

1. What is ambiguous grammar? Give one example

2. Let G be the grammar

S → aB | bA

A → a laSl bAA

B→ b lbSl aBB

Find leftmost derivation, rightmost derivation and parse tree for the string "bbaaabbaba".

3. The following grammar generates the language of RE 0*1(0+1)*

S - AIB

A - DAIE

B → OBI1BIE

Give leftmost and rightmost derivations of the following strings a) 00101 b) 1001 c) 00011

4. Consider the grammar

S → aSlaSbSle

Show that derivation for the string aab is ambiguous

5. Consider the grammar where P=

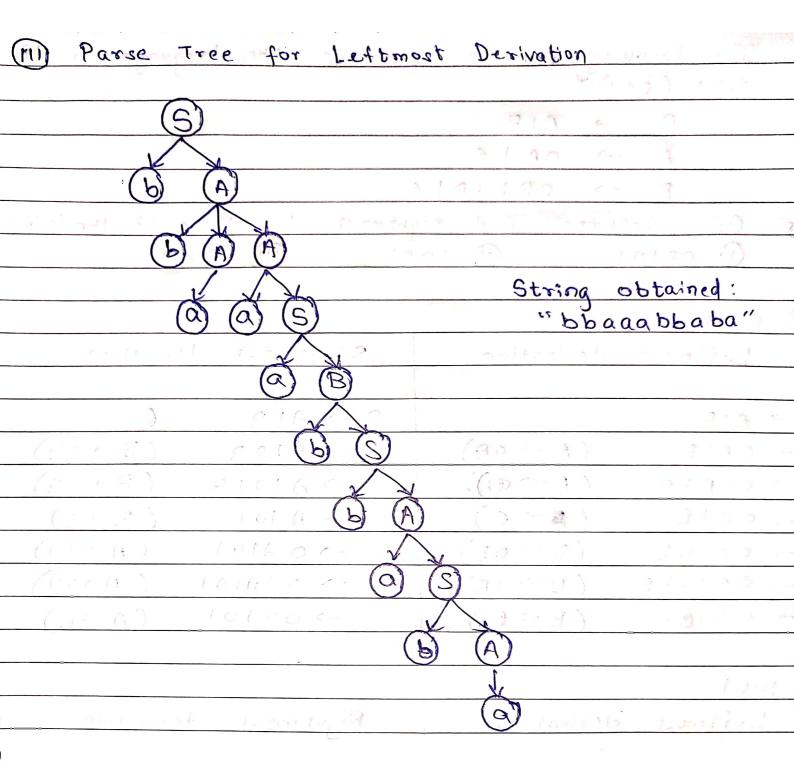
S → aAS I a

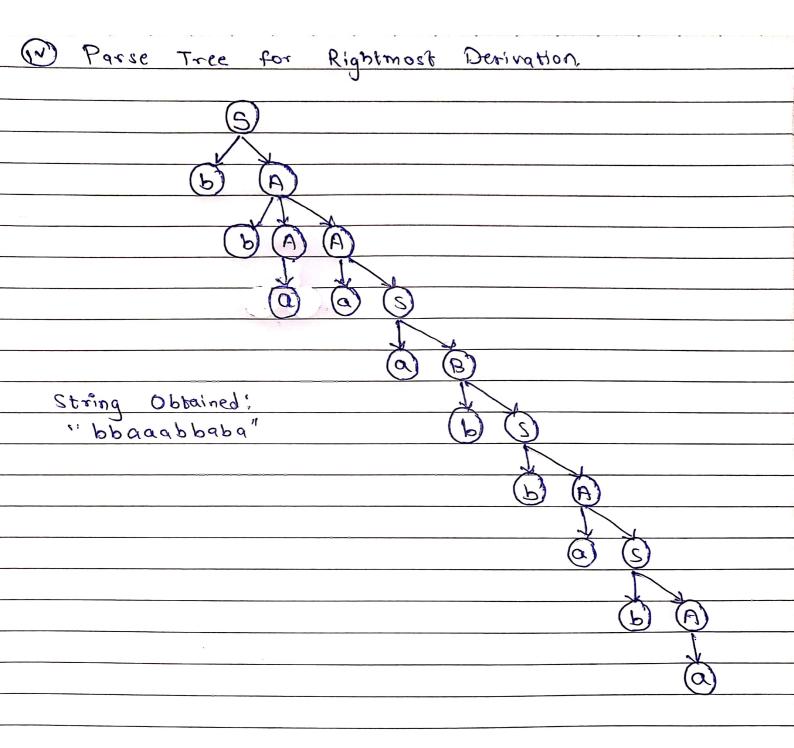
A → SbA | SS |ba

Perform LMD, RMD and construct Parse Tree for string 'aabbaa'

a. What is Ambiguous Grammar & Give one example.
Ans:
Ambiquous Grammar
A Grammar is said to be Ambiguous if there exists
two or more desiration tree for a string w
(that means two or more left derivation trees)
graduation and the transfer of the
Example: G = ({55}, {9+6, +, + }, P, 5} where P consists of
6-> s+2 s*s a b
The string at a to be can be generated as:
To a part below so
$S \rightarrow S \rightarrow$
In a tos 229 gardonal como stos + s + s
2 # 2 + p Condition langue # 214 10 Thing
$-> \alpha + \alpha + S$
d * p = 2 a + a * b
dancal appoints diana smee sel agains 200
Thus, this Grammar is Ambiguous.
balandingly to as 9 and association and the 23 days

Q2. Let G be the grammar				
$5 \rightarrow \alpha B \mid bA$				
A -> a las I ban				
$B \rightarrow b bs aBB$				
Find leftmost derivation, alghtmost derivation and parse				
tree for the string "bbaaabbaba".				
Ans > 1 1 3 = 12 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				
1) Leftmost derivation				
5 -> bA				
-> bbAA (A > bAA)				
bbaA (A > a)				
→ bbaas (A → as)				
→ bbaaaB (5→aB)				
→ bbaaabs (B → bs)				
bbaaabbA (S->bA)				
→ bbaqabbas (A→as)				
→ bbaaabbabA (S→bA)				
→ bbaaabbaba (A→a)				
and seed of whether from I now to some and the seed of the				
(1) Rightmost derivation				
$S \rightarrow bA \qquad fight the second of the second $				
$\rightarrow bbAA$ $(A \rightarrow bAA)$				
-> bbAas (A -> as)				
> bbAaaB (S → aB)				
$\rightarrow bbAaabs$ (B $\rightarrow bs$)				
$\rightarrow bbAaabbA$ (S $\rightarrow bA$)				
→ bbAaabbas (A→as)				
→ bbAaabbabA (s → bA)				
→ bbAaabbaba (A→a)				
→ bbaaabbaba (A → a)				





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Q.3 The following	grammar generat	es the language	of
	+1)*	J. J.	
$s \rightarrow$	AIB		
$A \rightarrow$	OALE		
B	08 18 6		
Crive leftmost	and rightmost den	rivation of the f	ง)ใจบริกฤ
(1) 00/01	1001	(1) 00011	7
Ans:			
10000			
	4		did.
leftmost desi	vation		
S -> B	•	Note:	
→ 0 B	(B→0B)	Rightmost	derivation
→ 00B	$(B \rightarrow 0B)$	is same	2.1
→ 001B	(B → 1B)	leftmost	derrightion
→ 0010B	(B→0B)		
→ 00101 B	$(B \rightarrow 1B)$		
→ 00101	$(B \rightarrow E)$		
1001			
leftmost deriv	ation		
$S \rightarrow B$	·	Note!	
→ 1B	(B → 1B)	Rightmost	derivation
→ 10B	(B→0B)	is same a	2.
> 100 B	(B→0B)	leftmost.	derivation
→ 1001B	(B→1B)		
→ 1001	(B→ €)		•

		5	
000	11 PIA 2		914 - 7
(80111)	sci A -	(9 = 9)	31 =
(et left	most Ederivation	(90-9)	2.71
(81 S≥ →	8 0 1001A x	(97 - 91	Nobe:
(· · · · · · · · · · · · · · · · · · ·	0812016	(B > OB)	Rightmost derivation
(3 × (1)	0 0 Baar as	(B → OB)	is same as
->	000B	$(B \rightarrow OB)$	leftmost derivation
4	0001B	$(B \rightarrow 1B)$	
٠	000118	(B -> 1B)	
⇔	00011	(B→6)	
			-

Q.4. Consider the	gramma	(a)	730 TO	-10	post		7.4	* 3
s -> as	A	- Sperior	7	1100		* 33	70	
Show the	derivation	to-	the	Stein	19 a	ab is	amb	lguous
Ans:				100				3
		<u> </u>	91	90	~~~	£7		
Leftmost De	crivation	figuring.	1 tper	1 min	1 2 c/ vi	1401) v. ()	
L Marie Co	(1)	1.0		7		10100		
(1) s → as			(1)	S ->	01263	3		12-14
-> aagbs	$(s \rightarrow$	asbs)		\rightarrow	gasi	20	S -> 0	(868)
→ aabs	(5->	e)	9	oitori	aab.	520ml	1877	6)
-> aab	(2->	6)		1100	aab	i m t	3->	e)
1.81.17						3	<	2
There	exists	-two	dogu	24,00	tree	for o	given	gramme
on This						300	<u> </u>	0
u di	٠	(8) 1			3	100	ć	

Q.5 Consider the grammar where P= S > aAs | a A -> SBA 1 SS 1 ba Perform LMD, RMD and construct Parse Tree for String 'aabbaa'. Ans: Leftmost Derivation S -> aAS → asbas (A → SbA) → aabAS (S→a) → aab bas (A→ ba) - aabbaa (A -> a) Parse Tree for Leftmost Derivation Storing Obtained: "aabbaa"

