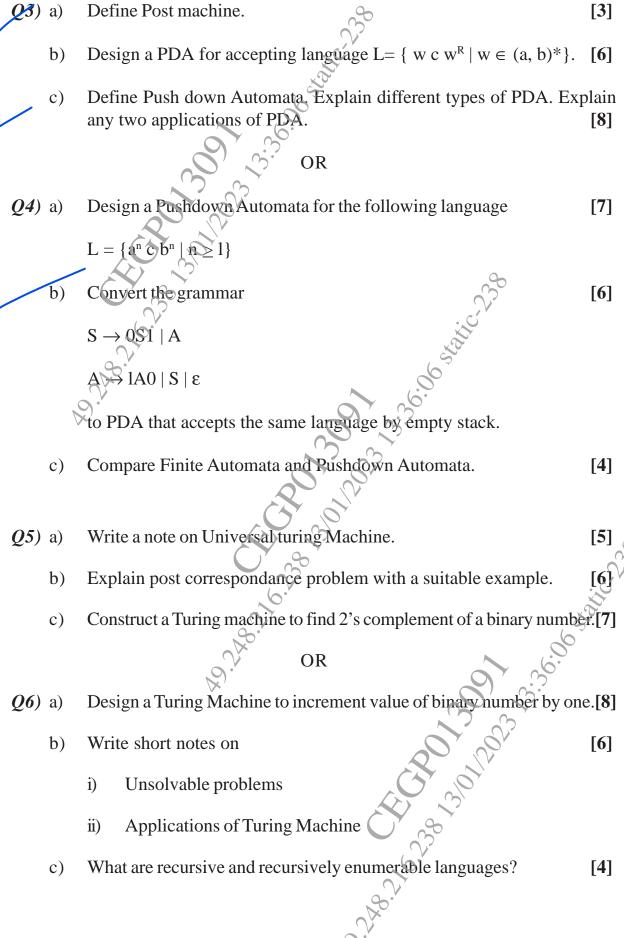
Total No	o. of Questions : 8]	SEAT No. :			
PA-14	499	[Total No. of Pages : 3			
	[5926] 119				
T.E. (Information Technology)					
THEORY OF COMPUTATION					
(2019 Pattern) (Semester - I) (314441)					
		,			
	½ Hours]	[Max. Marks : 70			
	ions to the candidates:	0			
1) 2)	Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q. Neat diagrams must be drawn wherever necessary.	0.			
3)	Figures to the right indicate full marks.				
<i>4</i> )	Assume suitable data, if necessary.				
,					
0.1)					
<b>Q1</b> ) a)	What is a Regular Grammar? Explain types	of regular grammar. [5]			
b)	Simplify the following CFG.	[6]			
	$S \rightarrow ABA$				
	$A \rightarrow aA \mid \epsilon$				
	$B \rightarrow bB \mid \epsilon$				
c)	What is ambiguous grammar? Show that ambiguous and find the equivalent unambiguous				
	$E \rightarrow E + E E * E (E) 1$				
	$I \rightarrow a \mid b$				
	$r \rightarrow a + b$ OR	2 60			
	<b>×</b> ′				
<b>Q2</b> ) a)	Write CFG for the language L= $\{a^i b^j c^k   i =$	$\{j+k\}, \{j,k\}=1\}.$ [6]			
b)	Check whether the given language is CFL of	r not L= $\{a^nb^nc^n   n>=0\}$ . [6]			
c)	Covert the following RLG to FA.	[6]			
	$S \rightarrow 0A \mid 1B \mid 0 \mid 1$	3			
	$A \rightarrow 0S \mid 1B \mid 1$	3			
	$B \rightarrow 0A   1S$	o <sup>®</sup>			

*P.T.O.* 



<i>Q7</i> )	a)	What is a Traveling Salesman Problem? Justify that it is a NP-c problem.	lass [ <b>8</b> ]
		şçi	
	b)	Write short notes on	[9]
		i) A Simple Un-decidable problem	
		ii) Measuring Complexity	
		OR	
<b>Q</b> 8)	a)	Explain Cook's theorem in detail.	[8]
	b)	Explain Cook's theorem in detail.  Explain in detail the Node-Cover Problem.	[9]
		9.750	
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