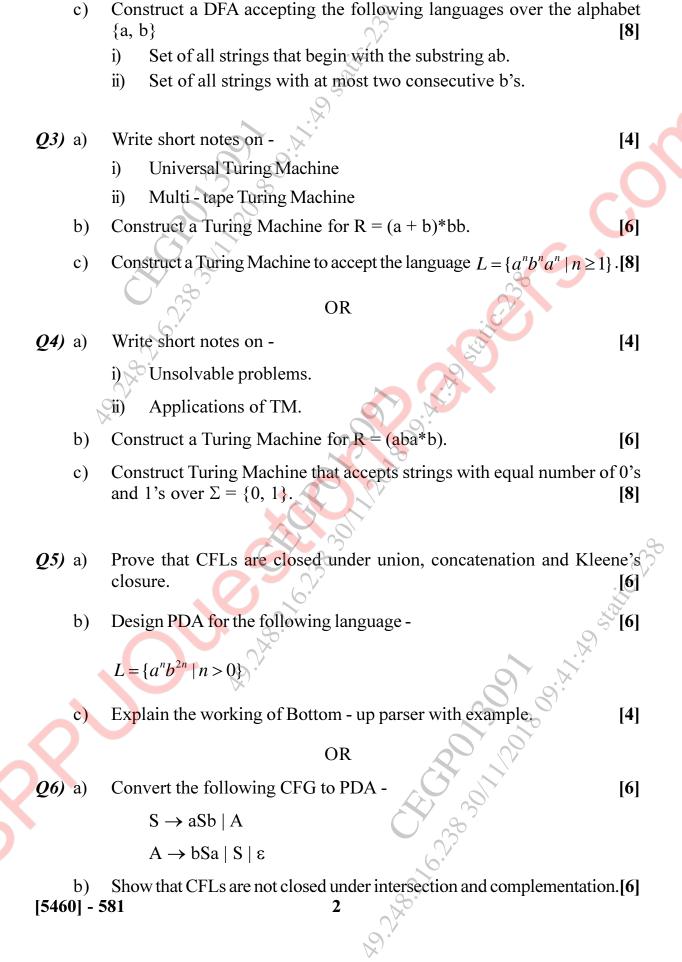
Total No.	of Questions : 8]	SEAT No. :			
P1751		L	No. of Pages : 3		
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	[5460] - 581	. ~)			
T.E. (Computer Engineering) THEORY OF COMPUTATION					
	(2015 Pattern)	ION			
	(2013 I attern)				
Time : 21/2	2 Hours	[M	lax. Marks :70		
	ons to the candidates:	7			
1)	Attempt questions Q.1 or Q.2, Q.3 or Q.4, Q.5 or	Q.6 and Q.7	or Q.8.		
2)	Neat diagrams must be drawn wherever necessor	ary.			
3)	Assume suitable data, if necessary.				
		(Ka)			
Q1) a)	Define the following terms with example -	X	[6]		
	i) Alphabets				
	ii) String iii) Regular Expression				
b)	Design a DFA which accepts a ternary number	r divisible b	y 4. [6]		
c)	Design FA accepting the following language of				
	i) Set of all strings having at least three cor	nsecutive ze	ros.		
	ii) Set of all strings that begin and end with	same symbol	ol.		
	OR				
Q2) a)	Define the following terms with example		[6]		
• ,	i) DFA		8		
	ii) NFA		×.		
	v	0	9		
	iii) NFA - ε	2 3			
b)	Eliminate the useless symbols in the grammar	below-	[6]		
	$S \rightarrow aA \mid bB$				
	$A \rightarrow aA \mid a$ $B \rightarrow bB$	3			
	$D \rightarrow ab \mid Ea$				
	$E \rightarrow aC \mid d$				
	26.				
			P.T.O.		



	c)	Explain acceptance by PDA -	[4]		
		i) By final state			
		ii) By empty state			
Q7)	a)	Explain Tractable and Intractable problem.	[6]		
	b)	How the Kruskal's Algorithm can be solved by using Turing machine?[6]			
	c)	Explain the Satisfiability Problem with an example.	[4]		
		OR			
Q8)	a)	Prove that the Satisfiability Problem is NP - complete.	[6]		
	b)	What do you mean by Polynomial Time reduction? Explain with suita	able		
		example.	[6]		
	c)	Differentiate between P and NP classes.	[4]		
		* * * * * * * * * * * * * * * * * * *			
			200		
		6.			
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