

# Model Question Paper-1 with effect from 2022-23 (CBCS Scheme)

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## Fifth Semester B.E. Degree Examination THEORY OF COMPUTATION

TIME: 03 Hours

Max. Marks: 100

- Note: 01. Answer any FIVE full questions, choosing at least ONE question from each MODULE.  
02. Draw transition diagrams wherever necessary.

Module - 1			*Bloom's Taxonomy Level	COs	Marks																											
Q.01	a	Obtain a DFA to accept strings of a's and b's having odd number of a's and even number of b's.	L3	CO1	5																											
	b	Draw a DFA to accept decimal strings divisible by 3.	L3	CO1	6																											
	c	Define the following terms with example: i) Alphabet ii) Power of Alphabet iii) Languages	L2	CO1	9																											
OR																																
Q.02	a	Obtain an $\epsilon$ -NFA which accepts strings consisting of zero or more a's followed by zero or more b's followed by zero or more c's.	L3	CO1	5																											
	b	Define Deterministic Finite Automata. Explain the two preferred notations for describing the Transition Function with an example.	L2	CO1	6																											
	c	Obtain a DFA for the following NFA using lazy evaluation method.	L3	CO1	9																											
<pre> graph LR     start((start)) -- 0 --&gt; q0((q0))     q0 -- 0,1 --&gt; q1((q1))     q1 -- 0,1 --&gt; q2(((q2)))     q2 -- 1 --&gt; q2     style start fill:none,stroke:none     style q2 fill:none,stroke:none     </pre>																																
Module-2																																
Q.03	a	List applications of RE. What are the notations used in UNIX Operation system? List few Regular expressions with its UNIX notations.	L2	CO2	5																											
	b	Obtain an $\epsilon$ -NFA for the Regular Expression $(a+b)^* bb(a+b)^*$	L3	CO2	6																											
	c	Find the minimized DFA of the following.	L3	CO2	9																											
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;"><math>\delta</math></td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">1</td> </tr> <tr> <td style="padding: 5px;">→ A</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">A</td> </tr> <tr> <td style="padding: 5px;">B</td> <td style="padding: 5px;">A</td> <td style="padding: 5px;">C</td> </tr> <tr> <td style="padding: 5px;">C</td> <td style="padding: 5px;">D</td> <td style="padding: 5px;">B</td> </tr> <tr> <td style="padding: 5px;">*D</td> <td style="padding: 5px;">D</td> <td style="padding: 5px;">A</td> </tr> <tr> <td style="padding: 5px;">E</td> <td style="padding: 5px;">D</td> <td style="padding: 5px;">F</td> </tr> <tr> <td style="padding: 5px;">F</td> <td style="padding: 5px;">G</td> <td style="padding: 5px;">E</td> </tr> <tr> <td style="padding: 5px;">G</td> <td style="padding: 5px;">F</td> <td style="padding: 5px;">G</td> </tr> <tr> <td style="padding: 5px;">H</td> <td style="padding: 5px;">G</td> <td style="padding: 5px;">D</td> </tr> </table>						$\delta$	0	1	→ A	B	A	B	A	C	C	D	B	*D	D	A	E	D	F	F	G	E	G	F	G	H	G	D
$\delta$	0	1																														
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*D	D	A																														
E	D	F																														
F	G	E																														
G	F	G																														
H	G	D																														
OR																																
Q.04	a	Define Pumping Lemma. Prove that below language is not a regular Language. $L = \{ a^i b^j \mid i > j \}$	L2	CO2	5																											
	b	Develop Regular expressions for the following Languages on $\Sigma = \{ a, b \}$ i) Accept strings of a's and b's whose fifth symbol from the right end is a. ii) Accept strings of a's and b's containing not more than 3 a's.	L3	CO2	6																											
	c	Find Regular language accepted by the following FA by eliminating states?	L3	CO2	9																											

# Model Question Paper

**South Australia. Parliament**



## Model Question Paper:

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where it occurs hydrogen can be produced from many different sources in different ways to use as a fuel the two most common methods for producing hydrogen are steam methane reforming and electrolysis splitting water

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