Name: JOSHIKA
Register No: 21BCE5179

VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test II – March 2023

Programme	:	**B.Tech CSE**	**Semester**	:	WS 2022-23
Course	:	Theory of Computation	**Code**	:	BCSE304L
			Slot	:	D2+TD2
Faculty	:	Dr. R Jothi Dr. Anita X Dr. Sureshkumar WI Dr. Smrithy Dr. Maria Anu Dr. K Sathyarajasekaran	**Class Nbr**	:	CH2022235000706 CH2022235000707 CH2022235000710 CH2022235000712 CH2022235000714 CH2022235000716
Time	:	90 Minutes	**Max. Marks**	:	50

Answer ALL the questions

Q.No.	Questions	Marks
1.	Design a Push Down Automata for the language L. $L=\{(ab)^{2n}(ba)^{3n} \mid n\geq 1\}$.	10
2.	Let the language L be defined as, $L \rightarrow L_1 \mid L_2$ Were, $(0+1)^{*}11(0+1)^{+}$ is the regular expression for the language L_1 $(01)^{*} \mid (10)^{*}$ is the regular expression for the language L_2 Construct a Context-Free Grammar that generates all strings in L.	10
3.	Consider the language $L= \{a^{n} b^{2n} \mid n\geq 1\}$ a) Construct the context free grammar G for the above language. b) Generate a string applying n=2 in the language L. Validate the string using CYK algorithm.	4 6
4.	Given the following Context Free Grammar $G_1= (\{X, Y, Z, S\}, \{0,1\}, P, X)$ with the set of all productions, $X \rightarrow 0Y1 \mid 1Y0 \mid Z11$ $Y \rightarrow 0Y \mid 1Y \mid \varepsilon$ $Z \rightarrow 0Z0$ $S \rightarrow ZS \mid SY$ For the above given grammar G_1 provide an equivalent grammar G_2 in Greibach Normal Form.	10

Name:
Register No:

5.	Prove that the following languages are not regular. a) L= {w | w{a,b}* and $\|w\|_a \neq \|w\|_b$} b) L= {$0^i 1^j 2^{i+j}$ | i,j≥0}	5 5

⇔⇔⇔