

### UNIT-III

S.No	Questions	BT	CO
<b>Part-A:ShortAnswerQuestions</b>			
1	Prove the grammar is ambiguous. $S \rightarrow a Sa bSS SSb SbS$	L1	CO3
2	Convert the following grammar to Greibach normal form $S \rightarrow ABA AB BA AA B, A \rightarrow aA a, B \rightarrow bB b$	L2	CO3
3	Construct the PDA for the following grammar $S \rightarrow AA aA \rightarrow SA b$	L3	CO3
4	What is DPDA?	L1	CO3
5	What are the difference between PDA and DPDA?	L1	CO3
6	For the CFG remove the production $S \rightarrow aSa/bSb/\epsilon$	L2	CO3
7	Explain Chomsky's normal form with example.	L1	CO3
8	Explain Greibach normal form with example.	L1	CO3
9	When a CFG is said to be GNF?	L2	CO3
10	List out the properties of CFG?	L2	CO3
<b>Part-B:LongAnswerQuestions</b>			
11	a) What is Chomsky's normal form explain.?	L1	CO3
	b) Define Chomsky Normal Form (CNF). Convert the following CFG into an equivalent grammar in Chomsky Normal Form (CNF): $S \rightarrow ASB   \epsilon$ $A \rightarrow aAS   a$ $B \rightarrow SbS   A   bb$	L1	CO3
12.	a) Define Context-Free Grammar (CFG). Explain the components of a CFG with a suitable example.	L2	CO3
	b) Construct a CFG for the language: $L = \{a^n b^n   n \geq 1\}$ and derive the string <b>aaabbb</b> using Left Most Derivation.	L3	CO3
13.	a) Define Ambiguous Grammar. Explain ambiguity with a suitable example.	L1	CO3
	b) Show that the grammar $E \rightarrow E + E   E * E   id$ is ambiguous by constructing two different parse trees for the same string.	L4	CO3

14.	a)	Define Pushdown Automata (PDA) and explain its components.	L1	CO3
	b)	Design a PDA that accepts: $L = \{a^n b^n \mid n \geq 1\}$ by final state.	L3	CO3
15.	a)	Prove that PDA and CFG are equivalent in computational power.	L3	CO3
	b)	Convert the following CFG into an equivalent PDA: $S \rightarrow aSb \mid \epsilon$	L2	CO3