	UNIT-II
Q.No	**Questions**
1.	S -> NP VP NP -> Det N | 'Arjun' VP -> V NP | VP PP PP -> P NP Det -> 'a' |'the' N -> 'tiger' | 'forest' V -> 'hunts' P -> 'in' **Symbol — Meaning** S — sentence NP — noun phrase VP — verb phrase PP — prepositional phrase Det — determiner N — noun V — verb P — preposition a) Elimination of Left recursion (1 mark) b) Remove the null production (1 mark) c) Remove the unit production (1 mark) d) Convert to CNF (2 marks)
2.	Consider following grammar declarationlist → declaration | declarationlist declaration declaration → type idlist T idlist → idlist ',' I | I type → int | float | char T → ; I → ID (a) Identification of terminal and non-terminal (3 marks) (b) Simplification of Grammar (5 marks) (c) Conversion of CNF (6 marks)
3.	A telephone operator was asked to prioritize the calls based on the roles the people hold in the organization. The calls will be made by the personnel among the departments. The following are the Context Free Grammars that would assist the telephone operator in prioritizing the calls: Executive_Committee Risk Committee **manager** Security_Committee Security_Committee Security Committee **chief_ operating_ officer** Local_Security_Committees Security_Committee Security_Committee **chief_ operating_ officer** Information_Security| Security_Committee Information_Security Information_Security **zonal_officers| nodal_officers | regional_officers**

	Local_Security_Committees Information_Asset_Owners **marketing_officer** Site_Security
	Risk Committee **guards**
	Site_Security **guards**
	Information_Asset_Owners **information_manager**
	Local_Security_Committees **monitoring_guard**
	[terminals are in bold]
	Convert the grammar to CNF
4.	Consider the following grammar

	S1->S1 FW S2|S2
	S2->S2 PW S3|S3
	S3->**cat|dog**
	FW-> **Fought with**
	PW->**Played with**
	[Hint: terminals are indicated in bold]
	    a. Can the string " Cat Fought With dog" be derived unambiguously.
	    b. Optimize the grammar – 3 marks
	    c. Convert the given grammar to Chomsky Normal Form (CNF) – 5 marks
	    d. Write Leftmost Derivation, Rightmost Derivation and Parse Tree for the string "the boy went to the school" – 3 marks

5.	Engineering is all about Engineering added with Technology or only knowing Technology. Likewise, to know about Technology, one should be strong in both Technology and Fundamentals or at least Fundamentals. Finally, that Fundamentals what we learn gives the best outcome as knowledge. From the above scenario, construct the Grammar and write down the productions. Check whether input string id+id*id can be derived unambiguously. Also optimize the grammar.