

2 Attempt any **four** parts : **5×4=20**

(a) Explain Top Down parsing techniques with examples.

(b) Explain different type of Chomsky's hierarchy grammars.

(c) Differentiate between deterministic and nondeterministic parsers.

(d) Develop a parse tree for the sentence "Mr. Kushwaha on the table" using the following rules :

$S \rightarrow NP VP$

$NP \rightarrow N$

$NP \rightarrow DET N$

$VP \rightarrow VPP$

$PP \rightarrow PREP NP$

$N \rightarrow \text{Mr. Kushwaha / table}$

$V \rightarrow \text{Slept}$

$DET \rightarrow \text{the}$

$PREP \rightarrow \text{ON}$

(e) Explain Fillmore's case grammar with example.

(f) Write short notes on sentence generation.

3 Attempt any **two** parts : **10×2=20**

(a) (i) Explain semantic Nets with example.

(ii) Draw a hierarchical network to represent the information.

Mouse is a rodent; rodent is a mammal;
A mammal has color and also drinks water.

(b) Explain Inference Rules in brief with example. Represent such expression in FOPL.

(i) All employees earning \$500 or more per year pay taxes.

(ii) Some employees are sick today.

(c) Explain Horn clause. What is the procedure of clausal conversion with example ?

4 Attempt any **two** parts : **10×2=20**

(a) Differentiate between expert system and problem solving system. Why is it important that an expert system be able to explain the why and how question related to a problem solving session ?

(b) Write short notes on :

(i) MYCIN

(ii) Compare the different type of problem solved by MYCIN and DENDRAL.

(c) Explain Meta knowledge. Under what conditions would it make sense to use both forward and backward chaining ? Give an example where both are used.