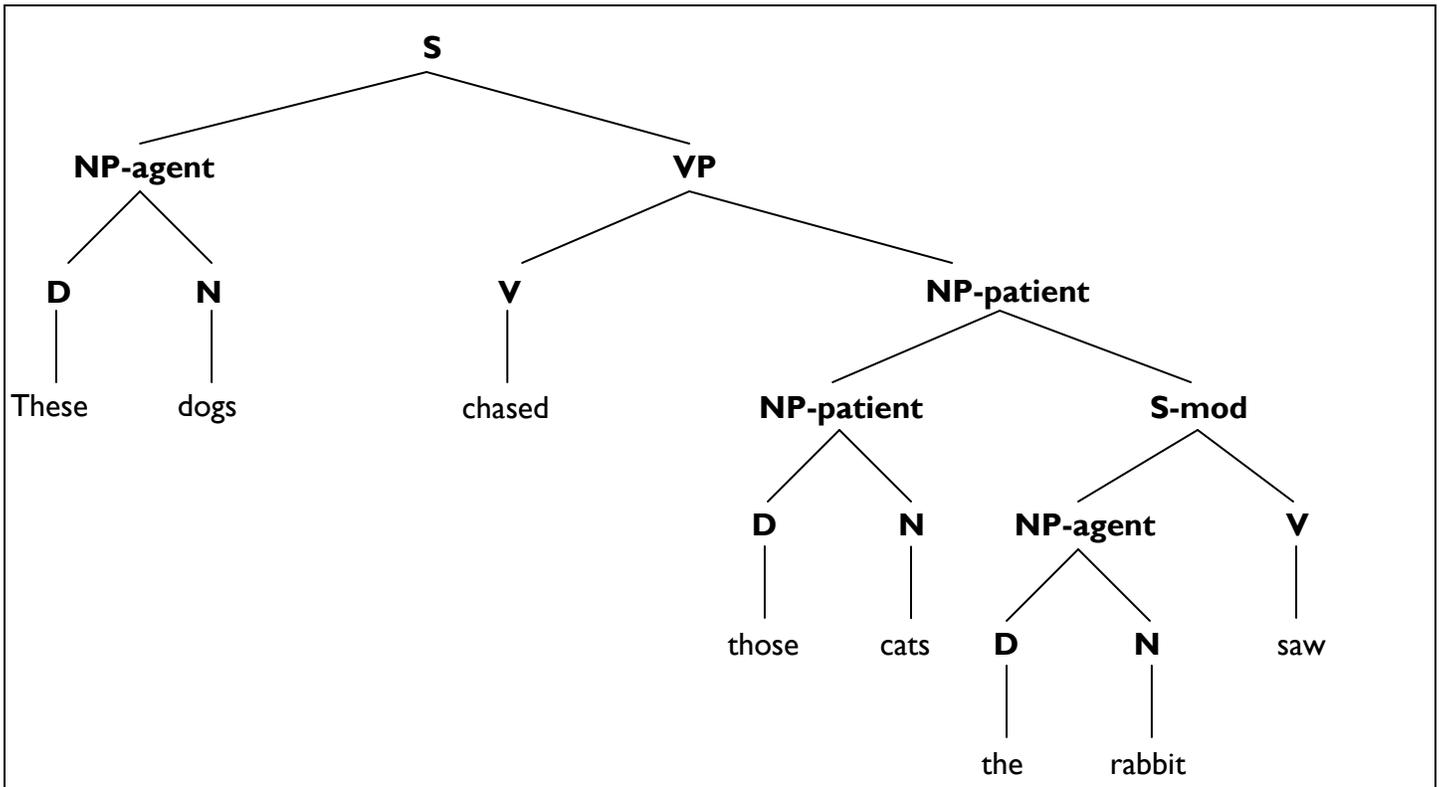


(5 points)

# (I) Dogs and cats on trees (1/5)

Linguists use diagrams called trees to represent the grouping of words within sentences. Here is a simple example from English:



The tree diagram shows that in the sentence “These dogs chased those cats the rabbit saw”, *these* is most closely related to *dogs*, *those* most closely related to *cats* etc.

The abbreviations S, NP-agent, VP, etc. stand for different types of words or groups of words. These abbreviations and a few others we will use in this problem are spelled out here:

**S:** sentence

**S-mod:** sentence which functions as a modifier

**NP-agent:** noun phrase denoting the agent (initiator) of an action

**NP-patient:** noun phrase denoting the patient (undergoer) of an action

**NP-location:** noun phrase denoting the location of an action

**N-agent:** noun denoting the agent of an action

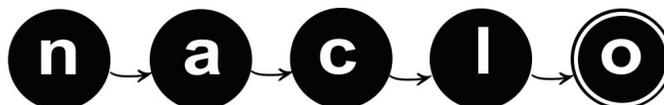
**N-patient:** noun denoting the patient of an action

**N-location:** noun denoting the location of an action

**V:** verb

**V-mod:** verb in a sentence which functions as modifier

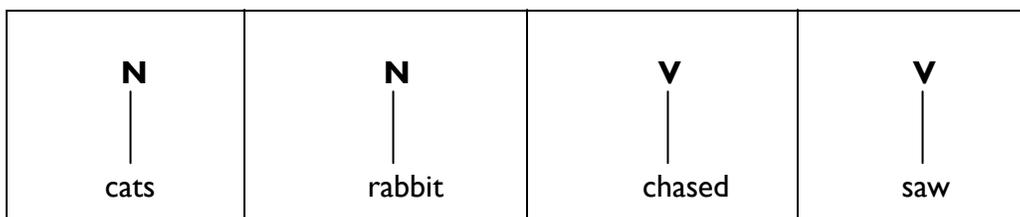
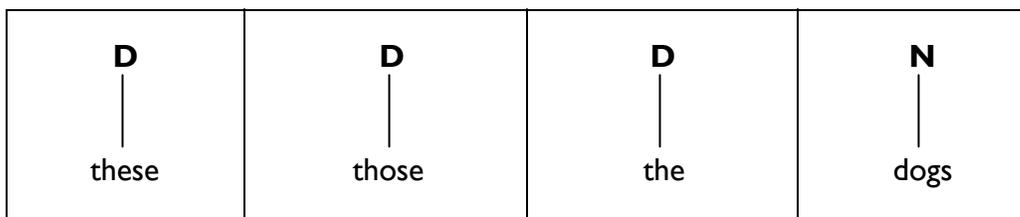
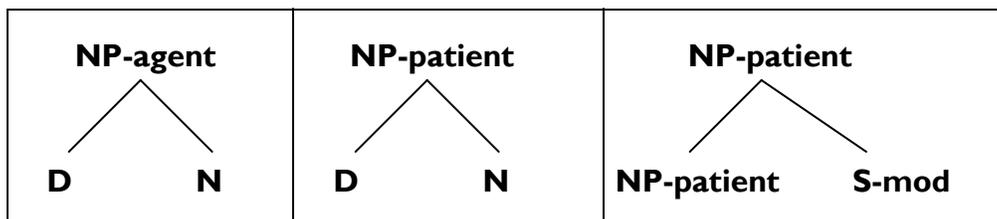
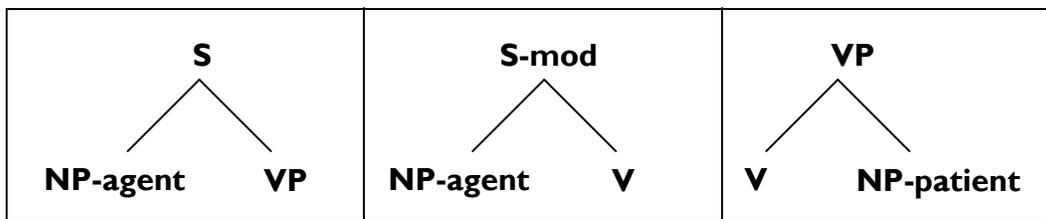
**VP:** verb phrase



# (I) Dogs and cats on trees (2/5)

These labels give information about the part of speech of a word or group of words (e.g., noun, verb etc) as well as the role that that word or group of words plays in the meaning of the sentence.

When working with trees, linguists write systems of rules (called 'grammars') which describe sets of trees. Each rule in the system is a building block. Any tree which can be constructed out of those building blocks is in the set of trees described by the grammar. For example, the tree given above for *These dogs chased those cats the rabbits saw*. requires the following building blocks or rules:



# (I) Dogs and cats on trees (3/5)

**II (3 points).** Your first task is to translate the following sentences from Malayalam, a Dravidian language spoken by about 37 million people, primarily in India. There are two sources of information provided to you: a list of translations of the Malayalam words and a small grammar (set of rules) in the style above for Malayalam. Note that the set of abbreviations used in the Malayalam grammar is not the same as the set used in the English grammar. This is due to grammatical differences between the languages.

There is one twist, however. Some of these sentences are not actual Malayalam sentences. Use the grammar to figure out which ones they are.

For any sentence that is not an actual Malayalam sentence, you should not provide a translation. Write 'Not a Malayalam sentence' instead.

1. ആന സിംഹത്തെ ഓടിച്ചു
2. ആനയെ സിംഹം ഓടിച്ചു
3. ആനയെ സിംഹത്തെ ഓടിച്ചു
4. സിംഹം ഓടിച്ച ആനപ്പുറത്ത് ബാലൻ സഞ്ചരിച്ചു
5. ബാലൻ ഓടിച്ചു ആനപ്പുറത്ത് സിംഹം



YOUR NAME:

REGISTRATION #:

# (I) Dogs and cats on trees (4/5)

**12 (1 point).** Draw the tree for any sentence that uses the V-mod rule. (You may use the English translations in place of the Malayalam words at the bottom of the tree.)

**13 (1 point).** Explain what is wrong with the examples that are not actual sentences of Malayalam.



# (I) Dogs and cats on trees (5/5)

Word translations:

ആന	elephant	ബാലൻ	boy
ആനയെ	elephant	ഓടിച്ചു	chased
ആനപ്പുറത്ത്	elephant's back	ഓടിച്ചു	chased
സിംഹം	lion	സഞ്ചരിച്ചു	rode

