1) What is NLP? Explain two major approaches to NLP

NLP is a subfield of linguistics, computer science & artifical intelligence concerned with the interactions b/w computers & human languages

There are two major approaches to NLP:

i) Rule based approach

ii) Statistical approach

2) Explain Finite-state of Morphology

finite state morphology is an approach to modeling & analyzing the structure of words in natural language using finite-state automata.

In finite state morphology, words are treated as sequences of symbols or characters.

3) What is syntax analysis

syntax analysis, also known as parsing, is a fundamental process in NLP & compiler design.

Syntax analysis refers to the process of analyzing the grammatical structure of sentences or phrases in natural language.

4) What is dependency Graphs with example.

The dependency graph is a data structure formed by a directed graph that describes the dependency of an entity in the system on the other entities of the same systems.

It represents the flow of information among the entities in the space.

5) State homonymy & polysemy with example

Homonymy - occurs when two or more words have the same form but different meanings

Eg:- Bank: It can refer to a financial institution or the edge of a river

polysemy: polysemy refers to lexical terms that have the same spelling but multiple closely related meanings.

eg: 'man' may mean 'the human species' or 'a male human' or 'an adult male human' since all these different meanings bear a close association, the lexical term 'man' is a polysemy.

6) Explain in briefly semantic net?

semantic nets, also known as semantic networks are graphical representations used in NLP to represent the relationships b/w concepts or words in a language

Eg: "Dog", "Cat" and "Bird" are specific types of animal. The lines connecting them to the "Animal" node indicate the "is-a" relationship meaning that a Dog is a type of Animal.

7) what is predicate argument structure in syntax

Shallow semantic parsing / semantic role labeling is the process of identifying the various arguments of predicates in a sentence.

resources: 1) To import corpora that are semantically tagged
2) One is PropBank and other is propBank.
3) The researchers began a transition based on new based approach.

8) what is the work of word sense

In NLP, word sense refers to the different meanings that a word can have based on the context in which it is used

⇒ the work of word sense disambiguation in NLP is to determine the correct sense or meaning of a word in a given context

9) write a short note on N-gram Model

To understand this concept of n gram models consider the example sentence

please turn your home work.....

we want to predict the next word which can be 'in' but definitely it will not the word 'the'. this is known as word prediction and can be done using probabilistic models called n-gram models.

By considering the assumption of history equivalence class that n-1 are useful for predicting a given word, n-gram model can be defined as

$$P(w) = \prod_{i=1}^{+} P(w_i / w_{i-1} \ldots w_{i-n+1})$$

10) write a short note on Adaption

Adaption refers to the process of customizing or fine-tuning existing language models or NLP systems to better suit specific domains, task, or data sources.

⇒ It involves modifying & enhancing existing models to improve their performance & accuracy in specialized applications.