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Q.3.

Ans. Natural language Processing (NLP) is a branch of Artificial Intelligence that helps computers understand, interpret and manipulate and respond to human in their natural language. The input and output of an NLP system can be
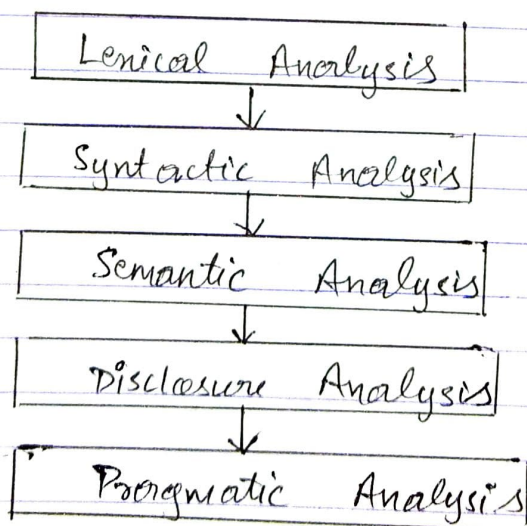- Speech.
- Written text.

Also, The two components of NLP as given :-
i) Natural language Understanding
ii) Natural language Generation.

The NLP consists of generally five steps :-

Lexical Analysis

↓

Syntactic Analysis

↓

Semantic Analysis

↓

Disclosure Analysis

↓

Pragmatic Analysis

Tokenization :-
  Tokenization is essentially splitting a phrase, sentence, paragraph, or an entire text document into smaller units, such as individual words or

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terms. Each of these smaller units are called tokens. The tokens could be words, numbers, or punctuation marks. These smaller units are created by locating word boundaries. These are the ending point of a word and starting of next word.

For example,
    Consider the string "This is a cat".
When we will perform tokenization, we get
    ["This", "is", "a", "cat"].

There are numerous uses of doing this. We can use this to :-
i) count number of words in the text
ii) count frequency of the word.

Stemming :-
        It is a technique used to extract the base form of the words by removing affixes from them. It is just like cutting down the branches of tree to its stems. For example, the stem of the words eating, eats, eaten is eat.

Search engines uses stemming for indexing the words. That why rather than storing all forms of a word, search engine can store only the stems.

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Example:-

Playing → Play ⎫
Plays → Play   ⎬ Common root
Played → Play   ⎭ from 'play'.

Lemmatization :-

This technique is like stemming. The output we get after lemmatization is called 'lemma'. which is a root word rather that root stem, the output of stemming. After this we will be getting a valid word that means same thing.

NLTK provides .WordNetLemmatizer. class which is a thin wrapper around .the. wordnet corpus. Class uses morphy() function for the WordNet .Corpus.Reader class to find lemma.

For example:-
If we pass the words like eating, books the output will be 'eating', 'book' respectively.

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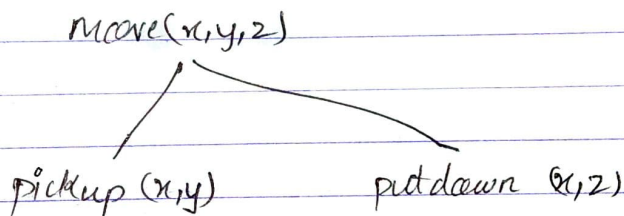Artificial Intelligence
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Q.3. (i.)

Ans B. i) Hierarchial Planning is also called as plan decomposition. Generally plans are organized in hierarchial format.

ii) Complex actions can be decomposed into more primitive actions and it can be denoted with the help of links between various states at different levels of the hierarchy. This is called as operator expansion.

For example :-

Move(x,y,z)

pickup (x,y)   putdown (x,z)

Operator expansion.

Example for hierarchial plan :

If a person wants to travel from source to destination. Also at the entry level that have to follow some sequence of actions.
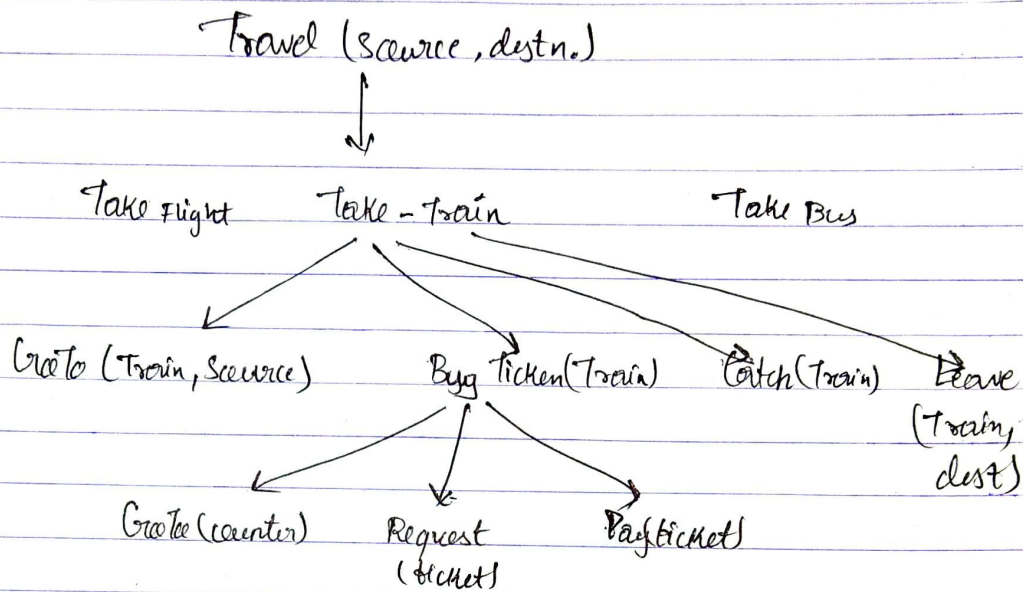
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Travel (source, destn.)

Take Flight   Take - train   Take Bus

Go To (Train, Source)   Buy Ticket(Train)   Catch(Train)   Leave
(Train, dest)

Go To (counter)   Request   Pay(ticket)
(ticket)

Hierarchical Planning.

Ans [2] In Air Cargo Transport, the planning and the decision taken is to be precise. It needs all the particular information about the destination. Also we need to select the criterion for process.

Airline Selection Criteria

Seviality	Price		Speed		Reliability		Flexibility		Risk

Hierarchial . Structure in Air Cargo

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Req. refused

Customer req. → Requirement Analysis

Resource & organize planning

Preparation. cargo and documents

Cargo handling process

Final Activities

fulfilment req.