

Question 1:

Which of the following is/are False about the criteria of head (H) and dependants (D) in a construction (C) in a dependency graph?

1. H is obligatory; D is mandatory
2. H selects D and determines whether D is obligatory
3. The form of D depends on H
4. H specifies D

H: Head, D: Dependent , option 1) and 4)

Question 2:

Which of the following is/are True about formal conditions on Dependency graph G?

1. G can be cyclic
2. G is projective
3. G is disconnected
4. G obeys the rule: if $i \rightarrow j$ then not $k \rightarrow j$, for any k not equal to i

Option 2), 4) Only one head node i to node j

Question 3:

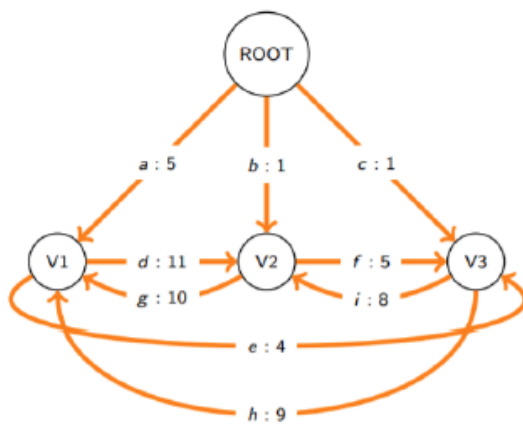
Which of the following is false?

1. Deterministic parsing requires an oracle and an oracle can be approximated by a classifier
2. Each vertex in the graph greedily selects the incoming edge with the highest weight in the Chu-Liu-Edmonds Algorithm
3. During the iteration of Chu-Liu-Edmonds Algorithm it never produces cycle
4. A multi-digraph is a digraph where multiple arcs between vertices are possible

Option 3)

Question 4:

Consider the following graph with a root node and 3 other vertices. I had drawn and put initial edge weights between all the pair of nodes at night as shown below. In the morning, my little brother added one (1) to each of the edge weight and said now the edge weight looks good. Suppose you use Chu-Liu-Edmonds algorithm to find the MST for the modified edge weighted graph by my brother. Which pair of nodes will have to be contracted in the modified edge weighted graph to form a single vertex during the algorithm in the 1st iteration?



1. (V1, V2)
2. (V2, V3)
3. (V1, V3)
4. (ROOT, V1)

Option 1: (V1, V2)

Question 5:

Question Suppose you are training MST Parser for dependency and the sentence, “I like online exam” occurs in the training set. The POS tags for these words are Pronoun, Verb, PropNoun and Noun, respectively. Also, for simplicity, assume that there is only one dependency relation, “rel”. Thus, for every arc from word w_i to w_j , your features may be simplified to depend only on words w_i and w_j and not on the relation label.

Below is the set of features

f1: $\text{pos}(w_i) = \text{Verb}$ and $\text{pos}(w_j) = \text{Noun|Pronoun}$

f2: $w_i = \text{Root}$ | w_i occurs before w_j in the sentence

f3: $w_i = \text{Root}$ and $\text{pos}(w_j) = \text{Verb}$

f4: w_j occurs before w_i in the sentence

The feature weights before the start of the iteration are: [5,20,15,12]

Suppose you are also given that after applying the Chu-Liu Edmonds, you get the following parse tree {Root \rightarrow like, like \rightarrow I, I \rightarrow online, online \rightarrow exam}

What would be the weights after this iteration?

1. [6, 19, 14, 13]
2. [6, 19, 15, 13]
3. [6, 19, 13, 13]
4. [6, 19, 15, 12]

[5, 19, 15, 13]

Question 6:

Question Suppose you write down the sequence of actions that generate the parse tree of the sentence "I prefer ChatGPT course" using Arc-Eager Parsing. The number of times you have to use Right Arc, Left Arc, Reduce, Shift is:

Format of the answer is [a, b, c, d] corresponding to the 4 values in the order specified in the query.

1. [3, 0, 2, 1]
2. [1, 2, 1, 3]
3. [1, 2, 0, 3]
4. [1, 2, 0, 2]

[Right arc, Left arc, Reduce, shift] == [1, 2, 0, 3], option 3)

Question 7:

Question Correct sequence of actions that generates the parse tree of the sentence "I prefer ChatGPT course" using Arc-Eager Parsing is:

Note: Right Arc (RA), Left Arc(LA), Reduce(RE), Shift(SH)

1. SH->LA->SH->SH->LA->RA
2. SH->LA->SH->RE->LA->RA
3. SH->LA->SH->SH->RA->LA
4. SH->LA->RE->SH->SH->LA

Shift —> Left arc —> shift —> shift —> left arc —> right arc (Option 1.)

