Natural Language Processing

Assignment- 8

TYPE OF QUESTION: MCQ

Number of Questions: 9 [Question 4 carries 2 marks] **Total Marks: 10**

Question 1:

Consider the following sentences:

1. I need to **write** an essay tonight to make sure I get everything **right** for the upcoming exam.
2. Near the river **bank**, I sat on the grass and thought I need to visit the **bank** to deposit a check today.

The lexical relation between the highlighted words in sentences 1, 2 are

a. Homophones, Homonymy
b. Homograph, Synonym
c. Homonymy, Homophones
d. Synonym, Hyponym

Answer: a
Solution:

Question 2:

Consider the following sentences. Which of the following is/are True?

a. Dog is a hyponym of animal.
b. Fruit is a hypernym of apple.
c. Animal is hyponym of dog.
d. Guava is hypernym of fruit.

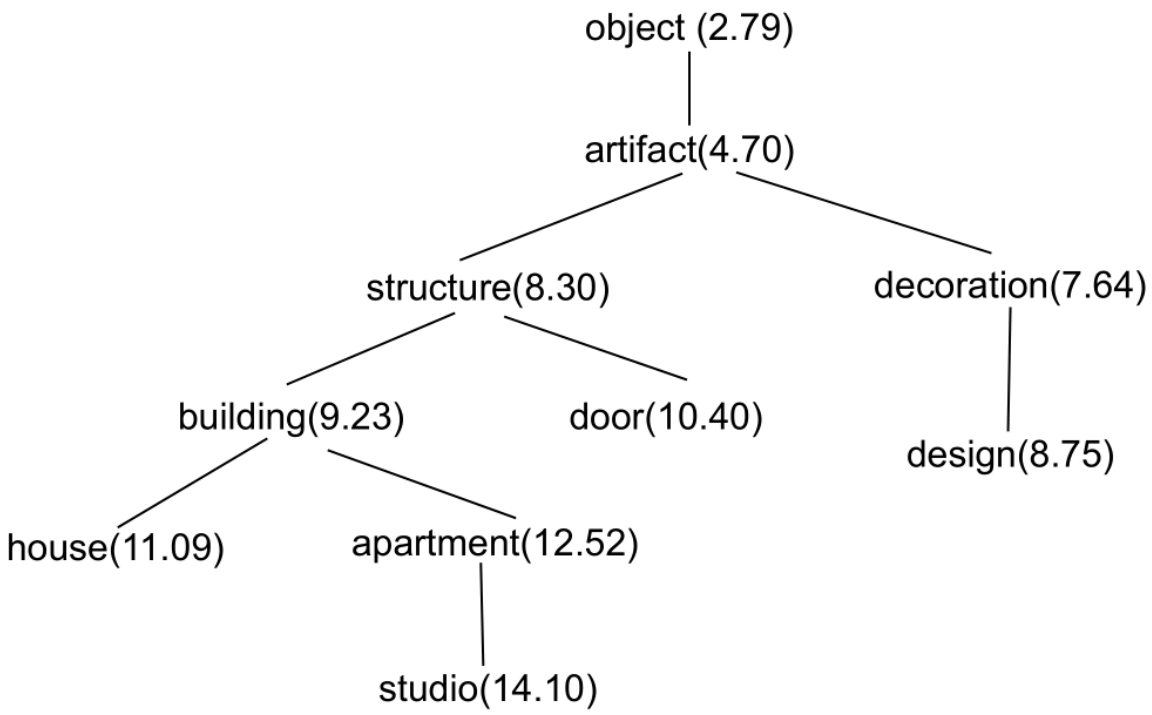
Answer: a, b

Question 3:
Two concepts along with their glosses are given below. Find the similarity score between concepts “currency” and “money” with the Extended Lesk’s algorithm. (Note: Do not consider the stop words.)
currency : the metal or paper medium of exchange that is presently used
money : the most common exchange medium presently used

a. 2
b. 3
c. 6
d. 9

Answer: c
Solution:
commom words are : medium, exchange, presently used score = 1^2 + 1^2 + 2^2= 6

For Question 4 to 6, consider a hypothetical wordnet noun taxonomy with their information content as shown in Figure 1. Question 4 carries 2 marks
Note: Use base 10 in logarithmic calculations



Question 4:

What is the Lin similarity between **house** and **design**?

a. 0.564
b. 0.433
c. 0.466
d. 0.473

Answer: d

Solution: (2×4.7)/(11.09+8.75) ≈ 0.473

Question 5:

What is the Resnic similarity between **building** and **door**?

a. 11.09

b. 8.30

c. 9.23

d. 4.70

Answer: b

Solution:

Question 6:

What is the Leacock–Chodorow similarity between **building** and **design**?

a. 0.398

b. 0.699

c. 0.097

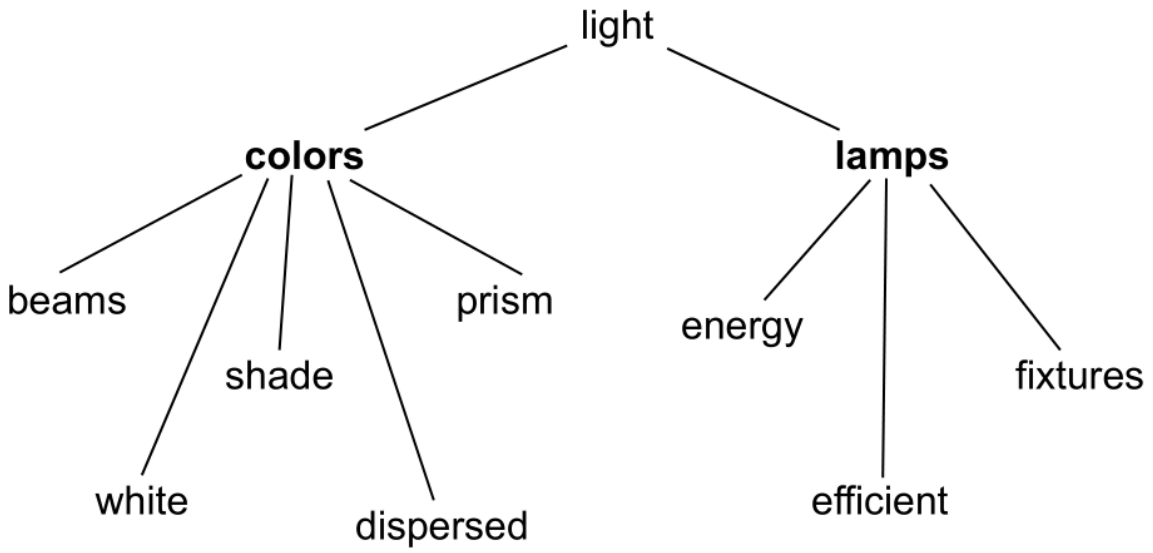
d. None of the above

Answer: a

Solution:

LC similarity = −log pathlen(c1,c2)/2d = −log 4/(2×5) ≈ 0.398

For Question 7 to 9 consider the network of words for disambiguation of the word "light" as shown in Figure 3. The hubs are "colors" and "lamps". Note: Take the distance between two words as the path length between them.



Question 7:
udiCompute the scores for (i) the hub "colors" and the component "white" and (ii) the hub "colors" and the component "fixtures".

a. 0.2, 0.25
b. 1.0, 0.0
c. 0.5, 0.25
d. None of the above

Answer: d
Solution:
(i) 1/(1+1) = 0.5
(ii) 0 as "colors" is not an ancestor of "fixtures"

Question 8:

What are the scores of the hubs “colors” and “lamps” respectively?

a. 0.6, 0.4
b. 0.20, 0.33
c. 2.5, 1.5
d. None of the above

Answer: c
Solution: Each component’s score is 0.5

Question 9:

Which is the most appropriate sense for the word “light”?

a. colors
b. lamps
c. both colors and lamps are appropriate
d. Not enough data

Answer: a
Solution: “colors” has the highest score