

## Natural Language Processing

### Assignment- 8

TYPE OF QUESTION: MCQ

Number of Questions: 8 [Question 4, 7 carries 2 marks]      Total Marks: 10

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**Question 1:** Consider the following sentences:

1. After a hectic day, she found **peace** in finishing the last **piece** of her puzzle.
2. He used a **bat** to hit the ball out of the park, then later that evening, he saw a **bat** flying in the night sky.

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

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

**Answer:** d

**Solution:**

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**Question 2:** Consider the following sentences. Which of the following is/are False?

- a. Fruit is a hypernym of mango.
- b. Animal is hyponym of cat.
- c. Homographs are the words with the same pronunciation but different spelling
- d. Bank (financial organization) vs Bank (riverside) is an example of homonym

**Answer:** b, c

**Question 3:**

**Which of the following is /are True?**

1. Synonymy is a binary relation
2. Thesaurus-based algorithms are based on whether words are nearby in Wordnet
3. Synset is a set of antonyms representing sense
4. Troponym is from a verb to a specific manner elaboration of that verb

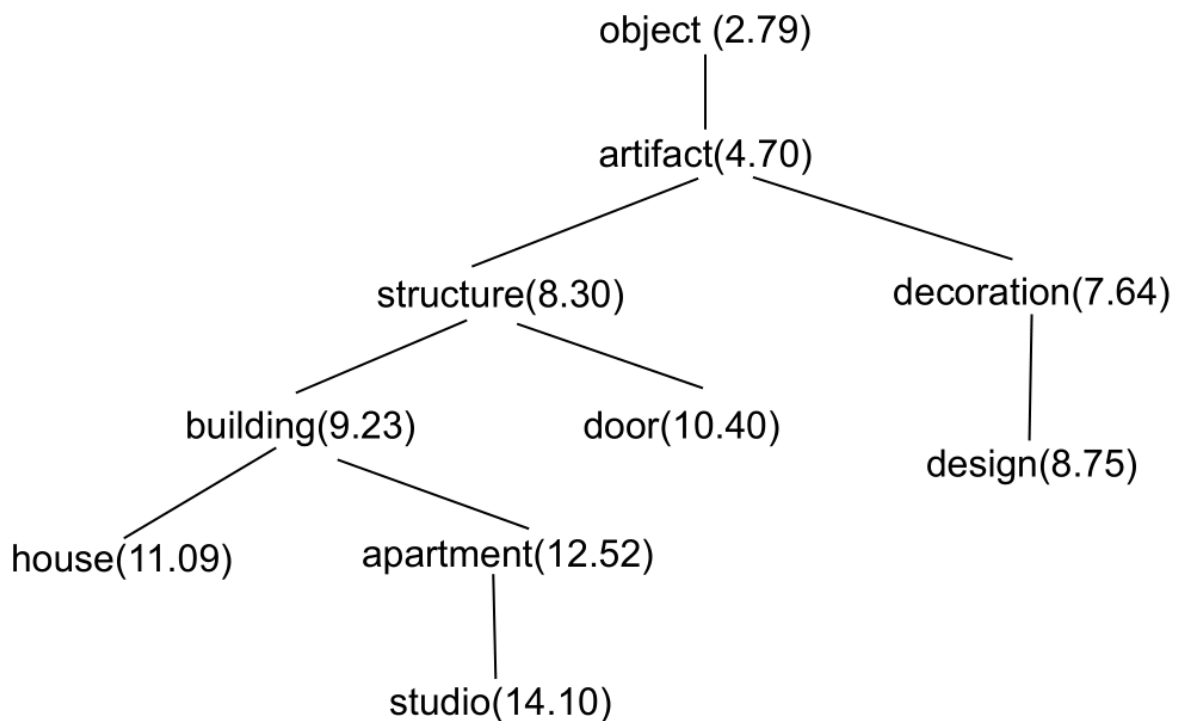
**Answer: 1,2,4**

Solution: Refer lecture 3

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**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 **decoration**?

- a. 0.564
- b. 0.433
- c. 0.501
- d. 0.473

**Answer: c**

**Solution:**  $(2 \times 4.7) / (11.09 + 7.64) \approx 0.501$

**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 **house** and **design**?

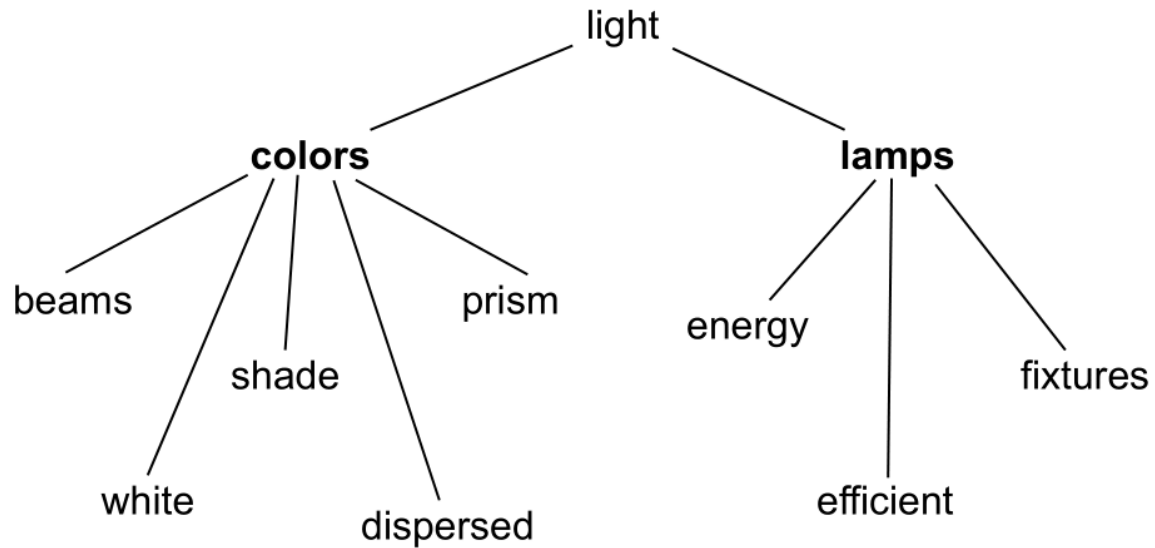
- a. 0.694
- b. 0.398
- c. 0.097
- d. None of the above

**Answer: b**

**Solution:**

LC similarity =  $-\log \text{pathlen}(c1, c2) / 2d = -\log 4 / (2 \times 5) \approx 0.398$

For Question 7 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:** Compute 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”

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**Question 8: Which of the following is/are false?**

1. Hyponym is also called superordinate
2. Hypernym is also called subordinate
3. Snore→ Sleep is an example of entails
4. Meal→ lunch is a example of hyponym

**Answer: 1,2**

Solution: Refer lecture 37

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