# Natural Language Processing
## Assignment 8
## Type of Question: MCQ

**Number of Questions: 10** **Total Marks: 10×1=10**

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

1. The room smelled of cinnamon and **incense**.
2. It **incenses** me when you call me names.
3. He **giggles** nervously in reply.
4. He had a hearty **laugh**.
5. We serve coffee, tea, and other hot **drinks**.
6. The **beverage** is often colored with caramel.

The lexical relation between the highlighted words in sentences 1&2, 3&4, and 5&6 are:

a. Homograph, troponymy, synonym
b. Homograph, synonym, troponymy
c. synonym, hypernym, hyponym
d. synonym, hyponym, hypernym

**Answer:** a
**Solution:**

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**Question 2:** Match the followings

| | |
|---|---|
| 1. Hyperlex | i. Supervised |
| 2. Naive Bayes | ii. Unsupervised |
| 3. Lesk Algorithm | iii. Knowledge-based |

a. 1-iii, 2-ii, 3-i
b. 1-i, 2-iii, 3-ii

c. 1-i, 2-i, 3-iii
d. 1-ii, 2-i, 3-iii

**Answer:** d
**Solution:**

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**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; functions as legal tender

a. 2
b. 3
c. 4
d. 9

**Answer:** a
**Solution:**
commom words are : medium, and exchange
score = $1^2 + 1^2 = 2$

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

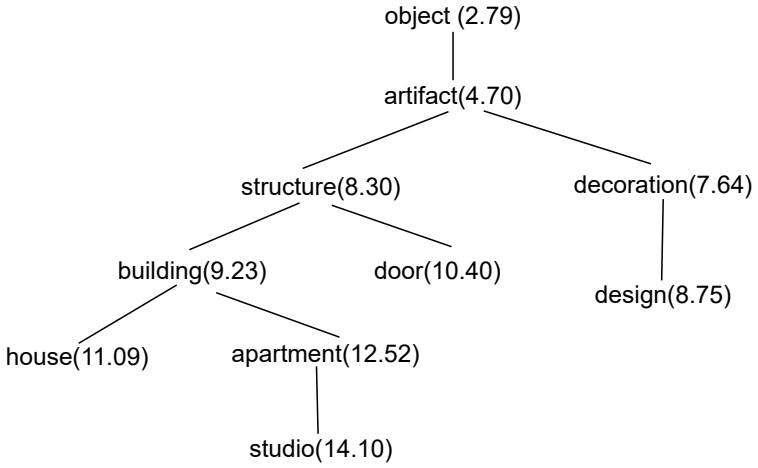


Figure 1

**Question 4:** What is the Lin similarity between **apartment** and **decoration**?

a. 0.764
b. 0.933
c. 0.466
d. None of the above

**Answer:** c
**Solution:** $\frac{2\times 4.7}{12.52+7.64} \approx 0.466$

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**Question 5:** What is the Resnic similarity between **house** and **structure**?

a. 11.09
b. 8.30
c. 9.23
d. 4.70

**Answer:** b
**Solution:**

**Question 6:** What is the Leacock–Chodorow similarity between **door** and **design**?

a. 0.398
b. 0.699
c. 0.097
d. None of the above

**Answer:** a
**Solution:**
LC similarity $= -log\ \frac{pathlen(c_1,c_2)}{2d} = -log\ \frac{4}{2\times5} \approx 0.398$

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**Question 7:** Detect the hubs in the co-occurrence graph shown in Figure 2.

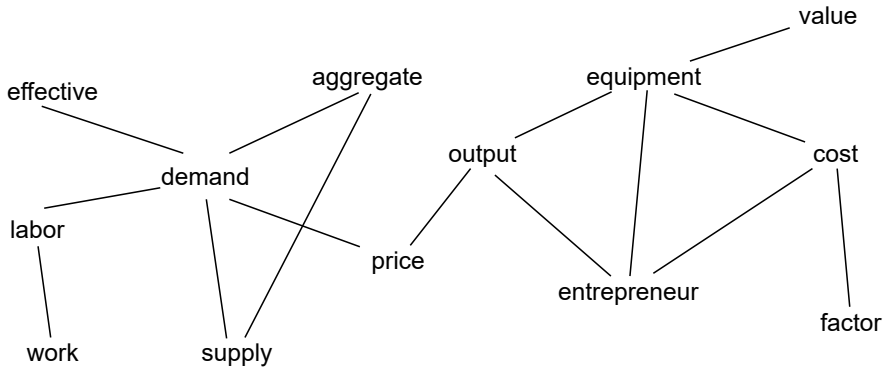


Figure 2

a. demand
b. demand, equipment
c. price, entrepreneur
d. value, effective

**Answer:** b
**Solution:**

**For Question 8 to 10 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.

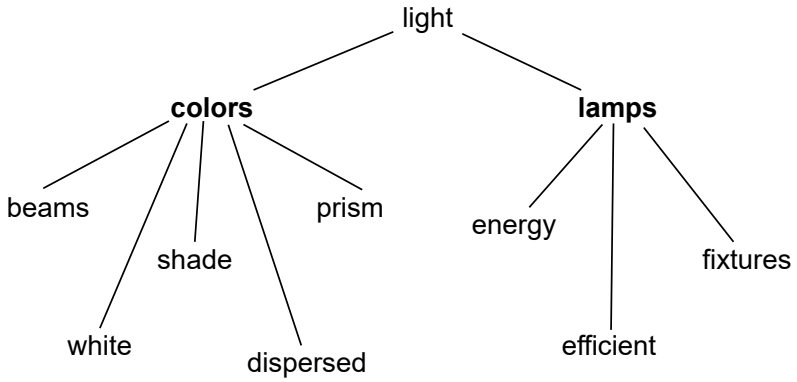


Figure 3

**Question 8:** 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) $\frac{1}{1+1} = 0.5$
(ii) 0 as "colors" is not an ancestor of "fixtures"

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**Question 9:** 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

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**Question 10:** 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

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