Unit 14 - Week 10 - Power law (contd..) and Epidemics

Week10- Assignment 1

1) In rich get richer phenomenon, a node having ..... attracts more connections ***1 point***

- High degree
- Low degree
- Average degree
- Does not matter

Accepted Answers:
High degree

2) If we plot percentage usage of words versus words in English (where x-axis shows the words sorted as per their usage in English and y-axis shows that what is the percentage of the usage of that word in the language), what kind of curve this is? Answer based on the content covered in the nptel lecture video.: ***1 point***

- Normal Distribution
- Zipf's Law
- Gaussian Distribution
- Depends on the language

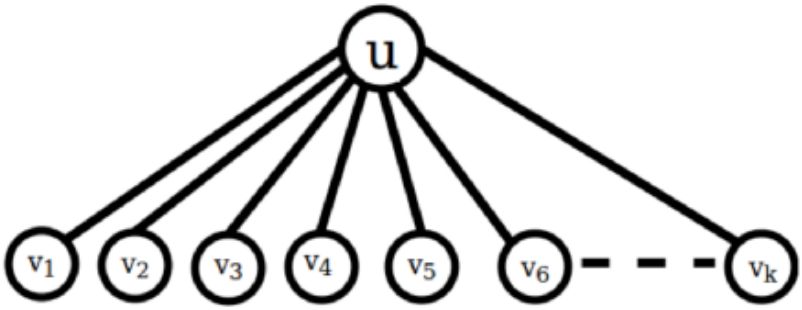
Accepted Answers:
Zipf's Law

3) As per the research, if your friend is obese your chances of being obese is increased by ***1 point***

- 12%
- 25%
- 33%
- 45%

Accepted Answers:
45%

4) In figure 1, the node u is infected and it has k children. The probability that the node u infects one of its neighbors is p. What is the expected number of neighbors infected in the next round? (Here we assume that in each round node u will try to infect each of its neighbor with the given probability.) ***1 point***



- pk
- p
- 1/p
- 1/(pk)

Accepted Answers:
pk

5) What is the full name of SIR model? ***1 point***

- Susceptible-Infected-Reinfected
- Suspecious-Infected-Recovered
- Susceptible-Infected-Recovered
- Susceptible-Infection-Recovered

Accepted Answers:
Susceptible-Infected-Recovered

6) Let's assume, in the given network, the probability of a node infecting its neighbor is p. In the SIR model, we see that the node u is recovered at time t1 , what is the probability of it being infected again? ***1 point***

- p
- 0
- 1
- 1-p

Accepted Answers:
0

7) There is an epidemic in Jordan city. In this infectious disease, once people are infected they can take the drugs to overcome but they are again susceptible to get infected. Which spreading model should be used to model such scenario? ***1 point***

- SIR
- SI
- Linear threshold
- SIRS

Accepted Answers:
SI

8) In the Branching Process, what is the reproductive number (R 0) if the disease persists in the network with some positive probability (p > 0). ***1 point***

- R 0 > 1
- R 0 = 1
- R 0 < 1
- R 0 = p

Accepted Answers:
R 0 > 1

9) In the Braching Process, q_n represents the probability that the disease reaches at level n. If each node has k children and the probability that a node infects its neighbor is p, then q_n is defined as ***1 point***

- $q_n = 1 - (1 - p \cdot q_{n-1})^k$
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- $q_n = 1 - (p \cdot q_{n-1})^k$

Accepted Answers:
$q_n = 1 - (1 - p \cdot q_{n-1})^k$

10)In a network, the spread of an idea and the spread of a disease ***1 point***

- is similar
- is different
- depends on the network
- might be similar or different

Accepted Answers:
is different

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