1) Give an example of a node where betweenness centrality is higher than degree centrality in a graph.

2) In SIR model, given graph G=(V,E) suppose that the probability to infect is β and $M(t)$ is the number of infectees in next time step t'.

3) Given, $S = \{x1, x2, x3, x4\}$ and $H = \{\{x1, x2\}, \{x3, x4\}, \{x2\}, \{x1, x3, x4\}\}$ we have to pick two seeds in the set H that would cover most of the elements of set S?

4) Show that the activation function of Tipping model is a generalized version of Jackson Yariv model.

5) Explain the relation between $s - t$ connectivity problem and number of infectees in IC model.

6) Assume that there is a function that has to perform some computation task, but this function is turned to be a #P hard. You need to approximate this function's outcome. Discuss whether submodularity may or may not help in the approximation.

7) Zhang et al.'s Results encountered Ugander's Results with respect to diffusion. Show what these differences are and suggest a reason for this discrepancy.