

CS 692: Theory Exam Fall 2020

Answer any TWO of the three problems listed below. If you attempt all three, only questions one and two will be graded. Please show all work.

Q1. Answer the following questions. In all cases $a \wedge b$. (10 points each).

a)

9 & ^* *N 9 (LV DQ XQGLUHFWHG J U D S k of size Q W D L Q L Q k).

Prove that Vertex Cover (VC) is in NP.

Please note: You are being asked to prove that VC is in NP. You do NOT need to prove that VC is NP-Complete.

- b) How do you prove, in general, that a Problem X is NP-complete? Please give the steps and explain.