COL703: Logic for Computer Science

Sat 28 Aug 2021 **Quiz 2** 20+5+5 minutes Max marks 10

Instructions:
1. Download the paper.
2. Write your name and entry number in the designated space on top and *do not forget to sign the honour statement below*.
3. Answer the question(s) in the appropriate space provided starting from this page.
4. Scan the paper with your completed answer.
5. Upload it on Gradescope 2001-COL703 page within the given time. *Make sure the first page with your name, entry no and signature is also the first page of your uploaded file*
6. Late submissions (within 2 minutes of submission deadline) on the portal will attract a penalty of 2 marks out of 10.
7. Email submissions after the closing of the portal will not be evaluated (You get a 0).
8. Uploads without the first page details (including signature) will be awarded 0 marks.

I abide by the Honour code that I have signed on my admission to IIT Delhi. I have neither given any help to anybody nor received any help from anybody in solving the question(s) in this paper.

Signature: **Date:**

5+5=10 marks

Let $\Gamma = \{\phi_i \mid \phi_i \in \mathcal{P}_0, 1 \leq i \leq n\}$ be a finite non-empty set of propositions. Using the semantics of propositions (as given in definitions 3.1 and 3.2 of the Hyper-notes), prove that Γ is inconsistent if and only if $\bigwedge_{1 \leq i \leq n} \phi_i$ is a contradiction.