INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR
Algorithmic Game Theory: Second Class Test 2018-19

Date of Examination: 22 October 2019
Duration: 50 minutes
Full Marks: 20
Subject No: CS60025
Subject: Algorithmic Game Theory
Department/Center/School: Computer Science and Engineering
Special instruction (if any): You do not need to prove anything that is already proven in the class. If you wish to use some result which has not been proved in the class, you have to prove it first.

Answer all question.

1. State and prove the revelation principal for Bayesian incentive compatible mechanisms.

[5+5 Marks]

2. Suppose we have the set of outcomes as $\mathcal{X} = \{a, b\}$, $\mathcal{L}(\mathcal{X}) = \{a > b, b > a\}$, and we have n players for some integer $n \geqslant 5$. Give example of 2 social choice functions $f_1, f_2 : \mathcal{L}(\mathcal{X})^n \longrightarrow \mathcal{X}$ both of which are unanimous, non-dictatorship, and dominant strategy incentive compatible.

[5+5 Marks]