MA 2nd. Year, 3rd. Semester 2017

Economics

Games and Information.

Full Marks: 30. Time: 2 hours.

Answer all questions.

1. (a) Define the following.

Social Network; Sub-network; Component; Pairwise Stable Network; Nash Stability; Strong Stability; Efficient Network; Pareto Efficient Network. **[8×1= 8]**

(b) Let (N, g), #N = n > 1, be a finite complete network. Show that for any non-empty subset S of N with #S ≤ n, the (n - #S -1) neighbourhood of S contains all points in N − S. **[4]**

2. Prove that if c > 0, the unique efficient network in a distance based utility model is:

   I.   The complete network if $b(2) < b(1) - c$;

   II.   A star encompassing all nodes if $b(1) - b(2) < c < b(1) + (1/2)(n-2)b(2)$;

   III.   The empty network if $b(1) + (1/2)(n-2)b(2) < c$. **[3 × 3 =9]**

3. Consider the case of a monopoly bank that faces two kinds of borrowers. Each borrower has a project whose payoff is subject to market risk: the payoff is either R > 0 or 0, with probability p Ɛ (0, 1) that the payoff is R. Suppose that the project of a Type r (risky) borrower is given by (p_r, R_r) and that of a Type s (safe) borrower by (p_s, R_s). Let, $p_s > p_r$, $R_s > R_r$ and $p_s R_s > 1 > p_r R_r$.

Show that Credit rationing can occur in this market for loans. **[9]**