

FIRST TEST. ECON 353, SPRING 2014. NAME: _____

Answer in the spaces provided. Show your work.

Example 1

34: A>C>B

36: B>A>C

6: C>A>B

24: C>B>A

1-1. Positional rules. Find the plurality, Borda, and anti-plurality winners in example 1.

1-2. Elimination rules. Find the Hare, Baldwin, and Coombs winners in example 1.

1-3. Condorcet analysis. Construct a tournament diagram and pairwise matrix from example 1. Use this to find the Smith set (A.K.A. minimal dominant set), and the minimax, ranked pairs, beatpath, Condorcet-Hare, and Black winners.

1-4. Strategy in Hare. Given example 1 and the Hare rule, is there a group of voters who can gain through strategy? Explain.

Example 2: 600 voters. 4 seats to be filled. 366 voters for party A, and voters 234 for party B.

2-1. Hare quota. Find the outcome of example 2 in a party list system with the Hare quota.

2-2. Droop quota. Find the outcome of example 2 in a party list system with the Droop quota.

2-3. STV. If we have an STV system instead of a party list system, is the outcome different? Explain.

2-4. D'Hondt. Find the outcome of example 2 in a party list system using the D'Hondt method.

2-5. Sainte-Laguë. Find the outcome of example 2 in a party list system using the Sainte-Laguë method.

2-6. Block voting. Discuss the outcome of example 2 if block voting is used.

2-7. SNTV, cumulative voting. Discuss the outcome of example 2 if SNTV or cumulative voting is used.

3. Approval and range. Create an example in which approval and range lead to different results given sincere voting.

4. Monotonicity. Define the monotonicity criterion. What does it mean for a voting rule to pass?

5. Smith criterion.

a) Define the Smith criterion. What does it mean for a voting rule to pass? Define all of your terms.

b) Name a voting rule that passes the Smith criterion. Explain as clearly as possible why it passes.

6. Gibbard-Satterthwaite theorem.

a) Precisely speaking, what does the Gibbard-Satterthwaite theorem demonstrate? Define all the terms you use.

b) How would you explain the Gibbard-Satterthwaite theorem to someone not familiar with the material in this class? What are its socially important implications?

7. Borda and Hare. Give an example in which Borda and Hare lead to different results given sincere voting.

8. Condorcet loser criterion.

a) Define the Condorcet loser criterion. What does it mean for a voting rule to pass? Define all of your terms.

b) Explain as clearly as possible why Hare passes the Condorcet loser criterion.

c) Give an example which demonstrates that plurality fails the Condorcet loser criterion.

9. Single transferable vote.

a) Explain how the single transferable vote (STV) system works.

b) What advantages does STV have over single non-transferable vote (SNTV)?

c) What advantages does STV have over a party list system?