

Name: \_\_\_\_\_ score: \_\_\_\_\_ / 10

There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

1. (5 points) The student government is holding elections for president. There are four candidates (A,B,C and D for convenience). The preference schedule is below.

| number of voters | 7 | 6 | 5 | 11 | 13 |
|------------------|---|---|---|----|----|
| 1st choice       | C | B | C | D  | A  |
| 2nd choice       | D | A | A | B  | C  |
| 3rd choice       | B | D | B | C  | B  |
| 4th choice       | A | C | D | A  | D  |

(a) How many voters participated? \_\_\_\_\_

(b) Does any candidate win a **majority**? **Justify** your answer.

(c) Find the winner under the Instant Runoff Voting / Ranked Choice Voting method. For each round, state the vote tally and identify the candidate eliminated.

2. (5 points) A large family is voting on where to have the next family reunion. The preference schedule is below.

|                  |    |    |    |   |
|------------------|----|----|----|---|
| number of voters | 30 | 10 | 10 | 5 |
| 1st choice       | C  | B  | D  | D |
| 2nd choice       | D  | D  | A  | B |
| 3rd choice       | B  | A  | B  | A |
| 4th choice       | A  | C  | C  | C |

- (a) How many voters participated? \_\_\_\_\_
- (b) Find the winner under the Borda Count Method. (Show your calculations to earn full credit.)

- (c) Pick a fairness criterion that is violated in this case and provide a short explanation with supporting computation.

Condorcet Criterion

Monotonicity Criterion

Majority Criterion

Independence of Irrelevant Alternatives (IIA) Criterion