

MA 103**QUIZ 1**

Consider the preference schedule given by

# of voters	3	4	9	9	2	5	8	3	12
	A	A	A	B	B	B	C	C	D
	B	B	C	C	A	C	D	A	C
	C	D	B	D	C	A	B	D	A
	D	C	D	A	D	D	A	B	B

1. How many voters are there?
2. How many first place votes are needed for a majority?
3. Which candidate has the most first place votes?
4. Which candidate has the least first place votes?
5. Which candidate has the least last place votes?
6. Which candidate has the most last place votes?
7. Which candidate would win using the plurality method?
8. Which candidate would win using pairwise comparison method?

Consider the preference schedule given by

# of voters	153	102	55	202	108	20	110	160	175	155
	A	A	A	B	B	B	C	C	D	D
	C	B	D	D	C	C	A	B	A	B
	B	D	C	A	D	A	D	A	C	C
	D	C	B	C	A	D	B	D	B	A

9. Which candidate wins using Borda count method?
10. Which candidate wins using plurality-with-elimination method?

Consider the preference schedule given by

# of voters	14	10	8	4	1
	A	C	D	B	C
	B	B	C	D	D
	C	D	B	C	B
	D	A	A	A	A

11. Rank the candidates using extended plurality method
12. Rank the candidates using extended Borda count method
13. Rank the candidates using extended plurality-with-elimination method
14. Rank the candidates using extended pairwise comparison method.

(OVER)

Consider the weighted voting system [5; 3, 2, 1, 1].

1. What is the weight of the coalition formed by P_1 and P_3 ?
2. Which players are critical in the coalition $\{P_1, P_2, P_3\}$?
3. Which players are critical in the coalition $\{P_1, P_3, P_4\}$?
4. Write down all winning coalitions.
5. Find the Banzhaf power distribution of this weighted voting system.

Consider the weighted voting system [8; 7, 6, 2]

6. Write down all sequential coalitions involving all three players.
7. In each of these coalitions, underline the pivotal player.
8. Find the Shapley-Shubik power distribution of this weighted voting system.

Consider the weighted voting system [6; 4, 3, 2, 1].

9. Find the Shapley-Shubik power distribution of this weighted voting system.