

1. Be able to identify the following:
 - (a) majority criterion.
 - (b) Condorcet criterion.
 - (c) monotonicity criterion.
 - (d) independence of irrelevant alternatives criterion.
2. An election is among five candidates (V , W , X , Y , and Z), and X gets a majority of the first-place votes. Which of the following is false?
 - (a) X must be the winner of the election under the method of pairwise comparisons.
 - (b) X must be the winner of the election under the plurality-with-elimination method.
 - (c) X must be the winner of the election under the Borda count method.
 - (d) X must be the winner of the election under the plurality method.

Questions 3 through 8 refer to an election with four candidates (A , B , C , and D), and with the following preference schedule:

Number of voters	8	6	5	3
1 st choice	A	B	C	B
2 nd choice	C	D	A	C
3 rd choice	B	C	D	D
4 th choice	D	A	B	A

3. Using the plurality method, which candidate wins the election?
4. Using the pairwise comparison method, which candidate wins the election?
5. Is there a Condorcet candidate in this election? If so, who?
6. The ranking of the candidates using the extended plurality-with-elimination method is:
7. The ranking of the candidates using the extended Borda count method is:
8. Using the recursive plurality ranking method, which candidate comes in last?
9. An election involving 5 candidates and 30 voters is held and the results of the election are to be determined using the Borda count method. The maximum number of points a candidate can receive is:
10. In the weighted voting system $[20 : 7, 5, 4, 4, 2, 2, 1, 1]$, how many players are there?
11. What is the quota in the weighted voting system $[20 : 7, 5, 4, 4, 2, 2, 1, 1]$?
12. The total number of votes in the weighted voting system $[20 : 7, 5, 4, 4, 2, 2, 1, 1]$ is:

13. In the weighted voting system $[13 : 12, 7, 2]$,
- every player has veto power.
 - some player has veto power.
 - P_1 is a dictator.
 - P_3 is the only player with no veto power.
14. In the weighted voting system $[q : 10, 9, 8, 1, 1]$ a two-thirds majority of the votes is needed to pass a motion. The value of the quota q is:

Questions 15 and 16 refer to the weighted voting system $[8 : 6, 3, 2]$ and the Shapley-Shubik definition of power. (The three players will be called P_1 , P_2 , and P_3 .)

15. Which member of the sequential coalition $\langle P_3, P_2, P_1 \rangle$ is pivotal?
16. The Shapley-Shubik power distribution of the weighted voting system is:

Questions 17 through 20 refer to the weighted voting system $[25 : 22, 12, 6, 3]$ and the Banzhaf definition of power. (The four players will be called P_1 , P_2 , P_3 , and P_4 .)

17. The weight of the coalition $\{P_2, P_3, P_4\}$ is
18. The winning coalitions can be described as:
- All coalitions with two or more members.
 - All coalitions with three or more members.
 - All coalitions with two or more members one of which is P_1 .
 - All coalitions.
19. Which of the members of the coalition $\{P_1, P_3, P_4\}$ are critical players?
20. The Banzhaf power distribution of the weighted voting system is

Questions 21 and 22 refer to the following situation: A committee consists of 5 members (A , B , C , D , and E). Each member has one vote except that members A and B have veto power. For a motion to pass it must have the support of both A and B plus at least one additional member.

21. Identify the losing coalitions.
22. Which are the critical players in the coalition $\{A, B, D, E\}$?