

Assessment I
CS551K – Software Agents and Multi-Agent Systems
2020-2021

Instructions:

- Your solution should be one single PDF file which you should upload onto MyAberdeen by the established time/deadline. Please do not email us your solution.
- Your PDF file should be named “CS551K-ASMNT1-Day-X-YourSurname-YourName-YourIDNo”. For instance, “CS551K-ASMNT1-Day-1-Smith-John-999999.pdf”, where Day 1-5 should be the day of the class test in question, and 999999 is your student ID. Please try to make your submission file less than 10MB as you may have issues uploading large files onto MyAberdeen.
- Indicate clearly in your submission which item each solution is for. If we cannot identify this, you may be marked down.

5. **(Making Group Decisions)** Suppose we have the partial preferences of 15 voters for four candidates **A**, **B**, **C** and **D**:

Voters	Preferences of Candidates			
	A	B	C	D
1	2			4
2	1	3		
3	1		3	4
4	1		3	4
5		4		1
6	4		1	
7		4	1	
8	3	4	1	
9				1
10	3			1
11			4	
12		2		1
13	2		1	
14			4	
15			3	

Your tasks are to provide the missing preferences (that is, the values for the blank cells in the table above) so that:

- a) Candidate **B** wins using the **plurality** voting procedure, if that is possible. (1 mark)
- b) Candidate **C** wins using the **runoff** voting procedure, if that is possible. (1 mark)
- c) Candidate **B** wins using the **pairwise** voting procedure, if that is possible. (1 mark)
- d) Candidate **D** wins using the **Borda count** voting procedure, if that is possible. (1 mark)
- e) Candidate **A** wins **in all 4 voting procedures** (i.e., plurality, runoff, pairwise comparison and Borda count), if possible. (1 mark)

You must justify your answers with a complete table of preferences (as an example) and the calculations involved or a general assessment of the best/worst outcomes. Answers without an appropriate justification will merit 0 marks.