

**MAT 118 Fall 2013, Sample Chapter 2 Exam, Power Indices,  
Chapter 2 exam is on Monday, Sept. 23, 2013**

- (1)  This UCLA professor (and affiliated member of Stony Brook's Center for Game Theory) won the 2012 Nobel Prize for Economics and helped invent a measure of power based on sequential coalitions.
- (a) John Banzhaf
  - (b) Kenneth Arrow
  - (c) Lloyd Shapley
  - (d) Martin Shubik
  - (e) Paul Samuelson
  - (f) none of these
- (2)  What is a weighted voted system?
- (a) any voting system where each voter has more than one vote
  - (b) any voting arrangement where each voter has one vote
  - (c) any voting arrangement in which voters may have unequal number of votes
  - (d) any voting system where there are more than two candidates
  - (e) a voting system that prevents some voters from influencing the outcome
  - (f) none of these
- (3)  What is the quota in a weighted voting system?
- (a) the minimum number of voters needed to approve a motion
  - (b) the total number of votes in the election
  - (c) the number of votes each voter casts
  - (d) the largest number of votes possessed by any voter
  - (e) the minimum number of votes needed to pass a motion
  - (f) none of these
- (4)  Four partners form a company and each has voting power equal to the number of shares they own. Shares cost \$25,000 and the partners invest \$50,000, \$100,000, \$25,000 and \$50,000 respectively. If decisions are made by a majority vote, then the partnership can be described mathematically as a voting system of the form:
- (a) [11: 4,3,2,2]
  - (b) [6: 4,2,2,1]
  - (c) [5: 4,2,2,1]
  - (d) [275: 50,100,75,50]
  - (e) [275: 100,75,50,50]
  - (f) none of these

- (5)  What is veto power?
- (a) when one voter has more than half the total votes
  - (b) when some voter has more than the quota of votes
  - (c) when no voter has more than the quota of votes
  - (d) when a motion can't pass without the support of a particular voter
  - (e) when one voter has more votes than all the other voters put together
  - (f) none of these
- (6)  What is a dummy?
- (a) a stupid voter
  - (b) a voter with less than the quota of votes
  - (c) a voter who is needed to pass any motion
  - (d) a voter is never part of a winning coalition
  - (e) a voter who's vote can never change the outcome
  - (f) none of these
- (7)  What is the Banzhaf power index of voter  $P_1$  in  $[5: 3,2,1,1,1]$ ?
- (a) 0
  - (b)  $1/25$
  - (c)  $3/25$
  - (d)  $5/25$
  - (e)  $11/25$
  - (f) none of these
- (8)  What is the Shapley-Shubik power index of voter  $P_1$  in  $[6: 4,3,2,1]$ ?
- (a) 0
  - (b)  $2/24$
  - (c)  $6/24$
  - (d)  $10/24$
  - (e)  $12/24$
  - (f) none of these
- (9)  How does the Shapley-Shubik power index differ from the Banzhaf power index?
- (a) Shapley-Shubik is more accurate
  - (b) Shapley-Shubik is easier to calculate
  - (c) Shapley-Shubik uses sequential coalitions and Banzhaf uses unordered coalitions
  - (d) Shapley-Shubik ignores voters with few votes
  - (e) none of these