Answer ALL questions. Each question counts 25 points.

1. Indicate whether the following statements are true or false.

(a) Unrelated machine scheduling problem has a PTAS.
(b) If a problem, with the present technology, does not have a pseudo-polynomial time algorithm, then the problem must be NP-complete in the strong sense.
(c) Both 2SAT and 3SAT are NP-complete.
(d) There is no polynomial-time (5/4)-approximation algorithm for the precedence constrained scheduling problem.
(e) There is no FPTAS for the Vertex Cover problem.

2. Show that 3SAT is reducible to Vertex Cover.

3. Give a FPTAS for the knapsack problem. Show that your algorithm has the running time and performance bound requirement defined by FPTAS.

4. Prove or Disprove: There is a polynomial-time (3/2)-approximation algorithm for the traveling salesman problem; i.e., a polynomial-time algorithm with a worst-case bound of 3/2. Show all your work that justify your answer.