1.) [40 pts] Apply the PDSP min-cost flow algorithm to find the least cost solution to the transshipment problem in the above diagram.

Three suppliers (or factories) offer your product with upper limits on their production capacity given on the left. Three vendors have placed orders for the product, with exact demand values given on the right. One warehouse node is included in this small example. All arcs in this initial diagram have unlimited capacity but per-unit shipping costs are given in boxes.

(a) Convert this to a min-cost flow problem.

(b) Apply the PDSP method, showing all intermediate flows, all auxiliary networks and include, as in class, tables giving $f^j$ as well as $y^j$ and $d^j$.

(c) Produce a diagram, like the original, which gives the optimal solution to the original problem.
2.) [10 pts] Without computation, explain how to incorporate an upper limit on warehouse capacity. Suppose at most 220 units can pass through node $w$.

(a) First explain how to modify the network so as to solve this using software.

(b) Then give the new optimal solution, which you can find easily by hand.

BASIC RULES FOR MA3233 ASSIGNMENTS

I) Each student must compose his/her assignments independently. However, rough work may be done in groups;

II) Write legibly and use only one side of each sheet of paper;

III) Show your work. Explain your answers using FULL SENTENCES;

IV) Late assignments will be accepted for credit only under very rare circumstances.