Uva Wellassa University
Faculty of Management

Degree of Bachelor of Business Management in Hospitality Tourism and Events Management
SECOND YEAR SECOND SEMESTER EXAMINATION –SEPTEMBER/OCTOBER 2012

HTE 232 -2 Quantitative Techniques-Repeat

Answer **only three (03)** questions from Part C **including question 1.**

1.

a. A company makes three products X, Y and Z. Each product must be processed on two machines M_1 and M_2. The total machine time available weekly on each machine is 100 hours. The company can earn profit of Rs.40 per unit on X, Rs.30 per unit on Y and Rs.45 per unit of Z. product X requires 1 hour of machine time from M_1 and 3 hours of machine time from M_2. Product Y requires 2 hours of M_1 and 1 hour on M_2. Product Z requires 2 hours of machine time from each machine.
Each Product X and Y needs one unit of a special component and there are only 150 of those units available for a week.
There is an agreement with a trade association to produce no more than 60 units of product X in the period.

i. Formulate this production problem as linear programming model

ii. Setup the initial simplex tableau

b. Consider the following linear programming problem.

Maximize: $Z = 3X_1 + 2X_2$

Subject to: $2X_1 + X_2 \leq 18$

$2X_1 + 3X_2 \leq 42$

$3X_1 + X_2 \leq 24$

$X_1 \geq 0, X_2 \geq 0$

Graphically solve the problem. Using your results, demonstrate that "the optimal solution to a linear programming problem is feasible, but a feasible solution is not necessarily optimal".

[20 marks]