**Exercise 1**

A company makes two products (X and Y) using two machines (A and B).

Each unit of X that is produced requires 50 minutes of processing time on machine A and 30

Minutes of processing time on machine B. Each unit of Y that is produced requires 24 minutes of processing time on machine A and 33 minutes of processing time on machine B. Available processing time on machine A is forecasted to be 35 hours. The company expects a profit of birr 75 per unit from X and birr 95 from Y.

1. Formulate the problem as a linear programming.
2. Solve it using the graphical approach.

**Exercise 2**

**Graphical method for L.P minimization problem**

The agricultural institute suggested to a farmer to spread out at least 480kg of phosphate fertilizer and not less than 720kg of nitrogen fertilizer to raise productivity of crops in his field. There are tw sources for obtaining these mixtures A and B. Both of these are available in bags weighing 100kg each and they cost birr 40 and 24 respectively. Mixture A contains phosphate and nitrogen equivalent of 20kg and 80kg respectively, while mixture B contains these ingredient equivalent of 40kg each.

1. Formulate this as a linear programming problem.
2. Determine how many bags of each type the farmer should buy in order to obtain the required fertilizer at minimum cost.