Indian Statistical Institute, Bangalore

MS (QMS) First Year

First Semester - Operations Research I

Midterm Exam — Date: September 12, 2018
Maximum marks: 30 — Duration: 1.5 hours

1. What are the different O R Techniques available for application in industries? Give one example each. (5)

2. A belt manufacturer has to schedule the production of belts for the ensuing period. His options involve two types of belts A and B. Company believes that belt A gets twice the profitability of belt B and they do not wish to be claiming how much is the unit profit on each of belts. Each belt of type A requires twice as much time as that of belt B. If all units were of type B the company would produce 1000 belts per day with existing capacity. However the supply of leather is sufficient for producing 800 belts per day. Belt A requires fancy buckle each of which costs RS 2/ and the company's working capital permits only Rs 775 for this buckle per day. Belt type B requires a buckle for which the manufacturing capacity is 700 per day. Formulate the Company's optimization problem in order to maximize the profit. (10)

3. Maximize $Z = 2X1 + 6X2 + X3$

   S.to $X1 + X2 < 15$
   $2X2 + X3 = 20$
   $3X2 < 9$
   All Xi's > 0 (15)
