Answers (Elasticity)

1.P=2000-50Q.

50 Q=2000-P
Q=40-(1/50)P

dq/dp = -1/50
ep = dq/dp * P/Q
= (-1/50) *(500/30)
= -1/3

TR = P*Q= 2000Q-50Q^2
MR = d(TR)/dq
MR = 2000-100Q
MR = 0,
2000-100Q = 0,
Q = 20
P = 2000-50*20 = 1000
P =1000

TR is maximum at price Rs 1000

2. Qsat = 152.5-0.9*50 +1.05*30 +1.10*30
Qsat = 172,000

TR = Psat* Qsat = 172,000* 50 = Rs 8.6 million

8.6 million<12 million

Cannot cover cost now as revenue for Psat = $50 is $ 12 million

b. TR maximum, When MR = 0, ep = -1

Ep = (dq/dp) * (P/Q)

-1 = -0.9 * Psat/(152.5- 0.9Psat++1.05*30 +1.10*30)

-0.9Psat = 0.9PSat- 1.05*30 -1.10*30 – 152.5

1.8Psat = 1.05*30 +1.10*30 + 152.5

1.8Psat = 31.5 + 33+152.5 = 217

Psat = 120.55

Qsat = 152.5-0.9(120.55)+1.05*30+1.10*30

Qsat = 217 – 0.9 (120.55) = 108.5

TR max = Psat* Qsat

=120.55* 108.5 = 13079.68

Total revenue is close to13 millions

It is more than 12 million

13.06 million > 12 million so it is possible at price of Psat = 120.55

3. Qd=150-2PX +0.001I +1.5 PY

Qs =60 + 4PX - 2.5 W

Apple Bonker is a substitute

Qd=150-2PX +0.001I +1.5 PY = 150-2Px +0.001 *25000+ 1.5*5= 150-2Px+25+7.5 = 182.5-2Px

Qs =60 + 4PX - 2.5 W = 60+4Px -2.5*8.60 = 60-21.5 +4Px= 38.5+4Px

182.5-2Px= 38.5+4Px

6Px= 182.5-38.5

Px = 24

Qx = 134. 5

Initial Expenditure = 24*134.5 = 3228

New Price = 19

New Q = 150-2 *19+0.01* 2500+ 1.5*5 = 112+ 25+ 7.5 = 144.5

New Expenditure = 19* 144.5 = 2745.5

Expenditure falls by = 3228-2745.5 = 482.5

Expenditure falls by $ 482.5

4. Let the price of low grade steel be Rs p per tone

The price of high grade steel = 2p

Total Revenue = px+2py =px +2p (40-5x/10-x)

For Max TR, MR = d/dx(TR) = 0

Solving,

x= 14.5 or x= 5.5

d^2/dx^2(TR) = -40p/((10-x)^3)

When x = 14.5, {-40p/((10-14.5)^3)} >0

And when x= 5.5 , {-40p/((10-5.5)^3)}<0

So at x= 5.5 TR is maximum

5.

Ea = (dQ/dP) * P/Q = -1/4

Eb = 6*(-1/4) = -3/2

-3/2= delta Q/delta p * 10/40

-3/2 = deltaQ/-2 *10/40

Delta Q = 12

Delta Q = Q2-Q1

Q2= Delta Q+Q1

Q2= 12+40 = 52