** KIIT DEEMED TO BE UNIVERSITY 4th semester CSC,IT,ETC,EEE,CSSE**

**SOLUTION Mid-semester ENGINEERING ECONOMICS HS 2002 B-TECH**

**Question Number 1 is compulsory and answer any four Questions from the rest. (FM- 25)**

1. (a) Students have to explain any two factors showing inelastic demand.

(b) Q =10,000 + 12Y, Y = 40,000, Q = 4, 90,000

EY = (dQ/dY )(Y/Q) = 12 x 40,000/4,90,000 = **0.97**

(c) Students have to explain the concept of cross elasticity of demand.

(d) TR = 9Q – Q2

MR = d(TR)/dQ = **9 – 2Q**, At Q = 10, MR = **-11**, AR = **-1**

(e) F = P(1+i)n, F = 20,000(1 + 0.05)10 = **32,577.892/-**

1. (a)

|  |  |  |  |
| --- | --- | --- | --- |
| Combination | Units of X | Units of Y | MRSYX |
| A | 30 | 1 | - |
| B | 26 | 2 | 4 |
| C | 23 | 3 | 3 |
| D | 21 | 4 | 2 |
| E | 20 | 5 | 1 |

(b) e = ( Q / Q) ( P / P) = **2.5**

MR = P(1-1/2.5) = P(1.5/2.5) = **0.6P**

MR will increase by 0.6 times of price.

**As the revenue is increasing, he can go for price reduction.**

1. (a)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Sales(inlakhs) | X | XY | X2 |
| 2009 | 20 | -2 | -40 | 4 |
| 2010 | 36 | -1 | -36 | 1 |
| 2011 | 42 | 0 | 0 | 0 |
| 2012 | 56 | 1 | 56 | 1 |
| 2013 | 65 | 2 | 130 | 4 |
| N = 5 | ∑Y = 219 | ∑X = 0 | ∑XY = 110 | ∑X2 = 10 |

∑Y = Na + b∑X ∑XY = a∑X + b∑X2

* 219 = 5a + 0 => 110 = 0 + 10b
* **a= 43.8** => **b = 11**

Y = a + bX => Y = 43.8 + 11X

Y2015 = 43.8 + 11(4) = **87.8**

Y2016 = 43.8 + 11(5) = **98.8**

(b) ecross = ( Qx / QX) ( PY / PY)= 0.2 x 0.50/0.10 = 1

Both the goods are substitute goods.

1. (a) At equilibrium point, Qd = Qs => 25,000 – 400P = 7,000 + 1200P => **P = 11.25, Q =20,500**

If the demand declines, then new equilibrium price and quantity are:

22000 – 400P = 7,000 + 1200P => **P = 9.375, Q = 18,250**

(b) Both equilibrium price and quantity will increase. Student will show these changes with the help of a suitable diagram.

1. (a)

|  |  |  |  |
| --- | --- | --- | --- |
| Price | Quantity demanded | Price elasticity of demand | Total Revenue |
| Increase | Decrease | More than one | Decrease |
| Decrease | Increase | Less than one | Decrease |
| Decrease | Increase | More than one | Increase |
| Increase | Decrease | one | Constant |

(b) F = 10,00,00, i = 8%, n = 4

P = 10,00,000[1 / (1+0.08)4] = **7,35,029.852**

If received amount will be doubled , then P = 20,00,000[1 / (1+0.08)4] = **14,70,058**

6. (a) MUX/MUY  = PX/PY => y/x = 4/5 or y = 4/5 x

100 = 4x + (4/5x) 5 => 8x = 100 => x = 100/8 = **12.5**

y = 4/5 x => y = **10**

(b) Students have to explain the difference between inferior and prestigious goods with examples.

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