



## KIIT UNIVERSITY

### Mid-Semester Questions- 3rd Semester -2019

Engineering Economics- HS 2002      Branch- ETC,CSC,IT,CIVIL   Time: 1hr 30 minutes

Question Number 1 is Compulsory and Answer Any 3 From the Rest. (F.M.-20)

Q1(a) If the demand function is given as  $P=120 - 1.5Q$ , find the output (Q) and price per unit(P) where total revenue of this producer is maximised. (1x5)

(b) Nitya Food has observed that the demand for his lunch package has been significantly affected by the income level of residents in the neighbourhood. After conducting the study he found that the daily sale of its number of lunch packages(Q) and average monthly income(I) are related as:  $Q= 500 + 0.2I$ . Find the income elasticity of the product if the income increases from ₹ 10,000 to ₹ 20,000.

(c) If 12 percent nominal interest is paid per year by an institution on a deposit scheme compounded monthly, find the effective rate of interest.

(d) Define the concepts of GDP at Market Price and NDP at market price to bring out their difference.

(e) Explain the concept of Marginal rate of Substitution of X for Y , which represents the two commodities consumed by the consumer.

Q2(a) JMC, a company dealing in audio systems has been selling 500 audio systems per month on average at a price of Rs 1000. Its main competitors, Kilachand Sounds, plans to reduce price of its audio system from 1050 to 900. JMC has come to know of this move and wants to know the impact of this change on its own sales. If the calculated cross elasticity of demand between the two product is 0.7, calculate the impact on JMC based on its revenue changes. (3+2)

(b) The annual turnover of a company is as follows( in thousand of rupees).Estimate the annual sales for 2020 by Least Square Method.

Year	2010	2012	2014	2016	2018
Sales	45	56	78	46	75

Q3(a) The demand for personal computers is characterized by the following: (3+2)

Price elasticity= -1.9 ; Cross elasticity (within software)= -1.1 ; Income elasticity= +2.1

Answer the following with adequate explanations:

(i) A price reduction for personal computer will increase both the number of units demanded and total revenue. Yes/No. Explain your answer.

(ii) Given the above Cross elasticity, how much will be the change in quantity demanded to a 10% reduction in price.

(iii) What type of good does the Personal Computer represent. Explain your answer.

(iv) Falling price for software will definitely increase both the number of computers brought and the revenue from software sells. Yes/No. Explain your answer

(v) If the demand for personal computer has increased by 3.8%, what and how much was the change in Price given?

(b) The demand and supply functions of cigarette in Delhi market are: (3+2)

$$D=5800 - 80P \quad \text{and} \quad S=1000 + 40P$$

(D and S are quantity demanded and quantity supplied respectively. P stands for price per pack of cigarette).

(i) Find the equilibrium price in the market.

(ii) If government imposes a GST (Goods and Services Tax) of ₹ 12, what will be its impact on the smokers? On the basis of your calculations indicate whether demand for cigarette is more or less elastic in nature?

Q4(a) Alex deposits an uniform amount of ₹ 50000 at the end of each year for 20 years. The rate of interest is 7.2% annual compounding. Find the compound amount that Alex will receive at the end of his deposit period. You want the same compound amount at the end of 12 years for your brother's marriage. You will get the same rate as Alex. Decide the annual equivalent amount that you should deposit at the end of every year. (3+2)

(b) Robert plans to deposit ₹ 100000 in the first year in his savings account. He reduces his deposit amount by ₹ 2000 thereafter for next 11 years. The bank gives 7.5% interest compounded annually. Find the single amount that I should deposit now so that I will get the same future sum as Robert will get at the end of his deposit period, at the same rate of interest.

Q5(a) You have received the bill amounts of your company as per the following schedule. If these amounts are deposited in your savings account as soon as they are received and grows at the rate of 4% compounded annually, what will be the compounded amount at the end of 7 years in your account? (3+2)

End of the Year	Bill amount Received(₹)
1	300000
2	-
3	350000
4	-
5	400000
6	-
7	450000

(b) Find the maturity amount and compound interest amount you will receive on ₹33280 deposited now for 8 years at a rate of 12.5% compounded annually.