Microeconomics

A. Case 1

Tourism development bank has introduce four different loan scheme[i.e. auto loan, SME loan, housing loan, education loan] as joint product since 2012. The figures of total loan disbursement on these loan scheme in 2012 and 2013 is given below

Loan scheme	2012		2013	
	Rate of interest	Amount of loan demand[in million]	Rate of interest	Amount of loan demand[in million]
Auto loan	12	20	10	30
SME loan	10	30	8	40
Housing loan	10	40	12	35
Education loan	12	32	13	30
Total		122		135

a. Compute interest elasticity in demand

→ Here

Rate of interest=Price of loan

Let

Q=loan

P= Rate of interest

Computation of interest elasticity by percent method

$$e=\frac{\Delta q}{\Delta p}*\frac{p1}{q1}$$

Auto loan=$\frac{30-20}{10-12}*\frac{12}{20}$

$=\frac{10}{-2}*\frac{12}{20}$

=-3

=|-3|

=3>1

SME loan=$\frac{40-30}{8-10}*\frac{10}{30}$

$=\frac{10}{-2}*\frac{10}{30}$

$=\frac{-5}{3}$

$=|\frac{-5}{3}|$

$=\frac{5}{3}>1$

Housing loan=$\frac{35-40}{12-10}*\frac{10}{40}$

$=\frac{-5}{2}*\frac{10}{40}$

$=\frac{-5}{8}$

$=|\frac{-5}{8}|$

$=\frac{5}{8}<1$

Education loan=$\frac{30-32}{13-12}*\frac{12}{32}$

=$\frac{-2}{1}*\frac{12}{32}$

=$\frac{-3}{4}$

=$|\frac{-3}{4}|$

=$\frac{3}{4}$<1

b. Let, you appointed as a loan manager in 2014. The board of director has directed you to revise existing interest rates in order to increase total loan disbursement in 2014[approximately 150 million] in comparison to 2013 on the basis of interest elasticity. How do you revise rate of interest for each loan schemes to meet this target? Explain with proper reasons

→ Since, interest elasticity of demand shows the degree of responsiveness in quantity demanded for loan due to change in rate of interest, other things being equal

Here, auto loan and SME loan are highly elastic but housing loan and education loan are less elastic[inelastic]. All these loans offered by bank can be considered as joint products

Thus, being a loan manager, I decide to reduce rate of interest on highly elastic loan scheme, i.e. auto loan and SME loan by which demand for these loans increases by high percent. Similarly, I decide to increase rate of interest on inelastic loan scheme, i.e. housing loan and education loan by which demand for these loans decreases by low percent

By adopting such type of revision in rate of interest, total loan disbursement will be increased. As a result, total revenue of bank obtained from the interest and non-interest earnings will also be increase

B. Case 2

Company 'A' established in 2014, with a view of concentrating its business in Kathmandu valley is operating its trading business for two goods, X and Y. The company management sets its goal to increase sell revenue in 2017. Thus, the company has decided to revise prices of two goods on the basis of their price elasticity. Explain how the company should revise prices of two goods. Do you agree that the company can achieve its goal by adopting a pricing policy on the basis of elasticity?

→ First of all, the company should take market survey[research] to identify the nature of both of the goods, either they are elastic or inelastic. Since, price elasticity of demand shows the degree of responsiveness in relation to its quantity demanded due to a change in its price, other things being equal. Thus, if outcome of the survey shows good X is highly elastic and Y is less elastic. Based on the result, company has reduce the price of X good by which quantity demanded for X good will increase by a larger quantity so as increasing the sales revenue of a firm

Similarly, if company charges high price to its inelastic product[i.e. Y good] by which quantity demanded for Y good decrease but by a low percent in relation to its price rise, increasing the total revenue of the company. By adopting such a policy, total revenue obtain from both of the goods will increase

Case 3

Suppose that 200000 farmers are involved in producing tomato in Nepal. Similarly, market survey shows that large numbers of households are consuming tomato. It is assumed that tomato market is perfectly competitive. In this reference, answer the following questions

a. **How the equilibrium price and quantity of tomato determined**

→ The given case clearly stated that tomato market in Nepal is perfectly competitive. Hence, the equilibrium price and quantity of tomato are determined at a point where market demand equals market supply

b. **What will be the effect on equilibrium price and quantity of tomato when government provides subsidy at minimum level in agri-inputs like fertilizer, seeds etc.**

→ When government provides subsidy at minimum level in agri-inputs like fertilizer, seeds etc. cost of production of tomato decrease. As a result, supply of tomato increase and then supply curve shifts rightwards. But, at very short period, demand for tomato remains constant. It creates the condition of excess supply. As a result, price of tomato decrease. It encourages the consumers to purchase more quantity of tomato and then there is forward movement along a demand curve. This condition ultimately drives market towards equilibrium

c. **What will be the effect on equilibrium price and quantity of tomato when income of households increases by high percentage**

→ When income of households increases by high percentage, ability to pay of the households increases and then demand for tomato increase. It results rightward shifts in demand curve. But, at a same movement, supply of tomato remains constant. It creates the condition of excess demand and price of tomato increase. It induces the farmer to produce[sell] more quantity of tomato which result forward movement along a supply curve. This process ultimately drives market towards equilibrium

d. **What will be the simultaneous effect on equilibrium price and quantity of tomato when government provides subsidy at minimum level and income of households increases by high percentage**

→ When government provides subsidy, cost of production of tomato decrease. As a result, farmer produces more tomato and then supply curve shift rightwards. However, degree of response in supply will be less due to minimum level of subsidy. On the other hand, when income of the households increases, demand curve shift rightwards. Here, degree of response in demand is greater due to increases in income by high percentage. Thus, both equilibrium price and quantity increase

C. Case 4

The market for leather: A case study in demand and supply

Some markets are subject to considerable price fluctuation. The magnitude of these fluctuations depends on the amount by which demand or supply curves shift and the price elasticity of demand and supply. The following extract, taken from an article in The Independent

of 9 May 1994, considers price fluctuation in the market for sheepskin and cattle hides

Price of sheepskin and cattle hides have soared in recent months as suppliers have struggled to meet demand. According to the British Leather Confederation, UK abattoir price of sheepskin is now £7 to £7.50 compared with just under £1 in autumn 1990, Oxhides[teers and heifers] fetch £40 against a low of £17 to £18 in the first quarter of 1991, although traders and tanners believe the market has now peaked, at least for the movement

……… Now law of demand and supply do not apply as skin and hides are a by-product of the meat, wool and dairy industry. In the past 12 to 18 months, demand for leather goods has risen, yet the UK cattle kill was 9 percent down in 1993 from the previous year and the lamb kill was 7 percent down. Falling demand for red meat and a significant rise in the live export of UK lambs, particularly to France, are the main reasons

UK tanners have been left short of quality raw materials and prices have risen steeply. However, consumers' resistance to higher prices of finished goods prevented increases being passed on and tanner's margins have been squeezed

There is little prospect of the by-product status of skin and hides changing. In the UK, the value of cattle hide is only 7 to 10 percent of the total carcass and the values of a sheepskin 10 to 15 percent of the total carcass. Farmers are more concerned about selling the meat

Lack of homogenous raw material hampers the creation of an international market. Sheepskins are graded according to climate. Higher quality skins from temperate zones are further divided, with UK

skins usually fetching a premium price over New Zealand domestics. South African Capes are considered as high quality but the supply is limited

Questions

a. **Why had the supply of skins and hides fallen despite a rise in demand? Illustrate this using a demand and supply diagram**

→

b. **According to the article, which of the following are likely to be relatively elastic and which relatively inelastic of following and explain the reasoning behind your answer**

i. **The price elasticity of supply of raw skins and hides**

→

ii. **The price elasticity of demand of raw skins and hides**

→

iii. **The price elasticity of demand of finished product made with skins and hides**

→

c. **Given the answer to Q-2, demonstrate with demand and supply curves why there had been a substantial rise in price of raw skins and hides which had nevertheless not been passed on in higher prices for finished goods made with skins and hides**

→

D. Case 5

In Nepal there are large numbers of smokers. The policy of government is to reduce the numbers of smokers

One day to reduce smoking is to decrease the demand for cigarettes and the other is to decrease the tobacco products. Public service announcements, mandatory health warnings on cigarette packages and prohibition of cigarette advertising on televisions are all policies aimed at reducing the quantity of cigarettes demanded at any given price

Alternatively, policy makers can try to raise the price of cigarettes. If the government imposes the tax to the manufacturer to cigarettes, for example, cigarette companies pass much of this tax on to the consumers in the form of higher prices. A higher price encourages smokers to reduce the number of cigarettes they smoke. In this case, the reduced amount of smoking represents movement along the same demand curve

Here the point is how the price of cigarettes affects the demand for illicit drugs, such as marijuana. It seems that higher cigarette prices are associated with greater use of marijuana

Question

a. What are the ways to reduce the quantity of smoking demanded

→

b. What is the relationship between cigarette and marijuana

→

c. What is the impact of imposing tax to the quantity of cigarettes

→

d. What policy is better to reduce the quantity of smoking demanded

→

E. Case 6

Consider the following preference schedule

Schedule I			Schedule II		
Combination	X Goods	Y Goods	Combination	X Goods	Y Goods
A	10	72	G	20	90
B	20	42	H	30	62
C	30	20	I	40	44
D	40	8	J	50	30
E	50	4	K	60	22
F	60	2	L	70	16

a. Graph schedule I and II and level them by IC_1 and IC_2

→

b. Sketch the budget line when P_x=Rs 80 and P_y=Rs 40 and consumer's budget=Rs 3200 and identify that what combination of X Goods and Y Goods will put the consumer at an optimum point at IC_1

→ Since, budget equation is $P_XQ_X+P_YQ_Y=B$

Here

$P_X=80$

$P_Y=40$

$B=3200$

At $Q_Y=0$

$Q_X = \dfrac{B}{PX}$

$= \dfrac{3200}{80}$

=40

B[40,0]

At Q_X=0

$Q_Y = \dfrac{B}{PY}$

$= \dfrac{3200}{40}$

=80

B[0,80]

c. **Let the price of X Goods drop to Rs 40 per unit at constant price of Y Goods and consumer's budget. Draw the new budget line and identify that combination of X and Y Goods will put the consumer at an optimum point at IC₂. Does it reflect price effect**

→ Here

P_X=40

P_Y=40

B=3200

At Q_Y=0

$Q_X = \dfrac{B}{PX}$

$$=\frac{3200}{40}$$

=80

B[80,0]

Due to fall in price of X good, demand for X good increases by 20 units and demand for Y good also increases by 10 units. This condition reflects income effect. Here, X and Y goods are normal compliments

d. Let government impose 40% tax on consumer's income. Draw the new budget line at P_x=Rs 40 and P_y=Rs 40 and also identify what combination of X and Y Goods will put the consumer at an optimum point? Does it reflect income effect

→ Let the government impose 40% tax on consumer's income

40% of 3200

$$=\frac{40}{100}*3200$$

=40*32

=1280

Now

New

B=3200-1280

=1920

Then

P_X=40

P$_Y$=40

B=1920

At Q$_Y$=0

$Q_X = \dfrac{B}{PX}$

$= \dfrac{1920}{40}$

=48

B[48,0]

At Q$_X$=0

$Q_Y = \dfrac{B}{PX}$

$= \dfrac{1920}{40}$

=48

B[0,48]

Due to fall in income after tax, demand for X good decreases by 10 units and demand for Y good also decreases by 22 units. This condition reflects positive income effect. Here, X and Y goods are normal goods

e. Identify the range of substitution. Does it prove that price effect is decomposed into income and substitution effect? Give reasons

→ Price effect=Income effect + Substitution effect

It is prove that Price effect is decomposed into Income effect and Substitution effect

F. Case 7

Consider the following preference schedule

Schedule I			Schedule II		
Combination	X Goods	Y Goods	Combination	X Goods	Y Goods
A	5	36	G	10	45
B	10	21	H	15	31
C	15	10	I	20	22
D	20	4	J	25	15
E	25	2	K	30	11
F	30	1	L	35	8

a. **Graph schedule I and II and level them by IC_1 and IC_2**

→

b. **Sketch the budget line when P_x=Rs 40 and P_y=Rs 20 and consumer's budget=Rs 800 and identify that what combination of X Goods and Y Goods will put the consumer at an optimum point at IC_1**

→ Since, budget equation is $P_XQ_X+P_YQ_Y=B$

Here

P_X=40

P_Y=20

B=800

At Q_Y=0

$Q_X = \dfrac{B}{PX}$

$$=\frac{800}{40}$$

=20

B[20,0]

At $Q_X=0$

$$Q_Y=\frac{B}{PY}$$

$$=\frac{400}{20}$$

=40

B[0,40]

c. Let the price of X Goods drop to Rs 20 per unit at constant price of Y Goods and consumer's budget. Draw the new budget line and identify that combination of X and Y Goods will put the consumer at an optimum point at IC$_2$. Does it reflect price effect

→ Here

P_X=20

P_Y=20

B=800

At $Q_Y=0$

$$Q_X=\frac{B}{PX}$$

$$=\frac{800}{20}$$

=40

B[40,0]

Due to fall in price of X good, demand for X good increases by 20 units and demand for Y good also increases by 10 units. This condition reflects income effect. Here, X and Y goods are normal compliments

d. Let government impose 40% tax on consumer's income. Draw the new budget line at P_x=Rs 20 and P_y=Rs 20 and also identify what combination of X and Y Goods will put the consumer at an optimum point? Does it reflect income effect

→ Let the government impose 40% tax on consumer's income

40% of 800

$=\dfrac{40}{100}*800$

=40*8

=320

Now

New

B=800-320

=480

Then

P_X=20

P_Y=20

B=480

At $Q_Y=0$

$$Q_X=\frac{B}{PX}$$

$$=\frac{480}{20}$$

$$=24$$

B[24,0]

At $Q_X=0$

$$Q_Y=\frac{B}{PX}$$

$$=\frac{480}{20}$$

$$=24$$

B[0,24]

Due to fall in income after tax, demand for X good decreases by 10 units and demand for Y good also decreases by 22 units. This condition reflects positive income effect. Here, X and Y goods are normal goods

e. **Identify the range of substitution. Does it prove that price effect is decomposed into income and substitution effect? Give reasons**

→ Price effect=Income effect + Substitution effect

It is prove that Price effect is decomposed into Income effect and Substitution effect

G. Case 8

A firm can use three different production technologies with capital and labor at each level of output as follows

Daily output	Technology I		Technology II		Technology III	
	K	L	K	L	K	L
400	6	14	8	10	10	8
500	6	20	8	14	10	10
600	8	22	10	16	12	12
700	10	26	12	20	14	16

a. **For each level of output, which technology is the cheapest, when a firm is operating in a high-wage country, with capital cost Rs 200 per unit per day and labour cost Rs 160 per worker per day**

→ For technology I

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	6	14	6*200+14*160=3440
500	6	20	6*200+20*160=4400
600	8	22	8*200+22*160=5120
700	10	26	10*200+26*160=6160

For technology II

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	8	10	8*200+10*160=3200
500	8	14	8*200+14*160=3840
600	10	16	10*200+16*160=4560
700	12	20	12*200+20*160=5600

For technology III

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	10	8	10*200+8*160=3280
500	10	10	10*200+10*160=3600
600	12	12	12*200+12*160=4320
700	14	16	20*200+14*160=5360

Above schedules show that for 400 level of output, Technology II is the cheapest and for 500, 600 and 700 level of output, Technology III is the cheapest

b. **For each level of output, which technology is the cheapest, when a firm is operating in a low-wage country, with capital cost Rs 200 per unit per day and labour cost Rs 80 per worker per day**

→ For technology I

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	6	14	6*200+14*80=2320
500	6	20	6*200+20*80=2800
600	8	22	8*200+22*80=3360
700	10	26	10*200+26*80=4080

For technology II

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	8	10	8*200+10*80=2400
500	8	14	8*200+14*80=2720

600	10	16	10*200+16*80=3280
700	12	20	12*200+20*80=4000

For technology III

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	10	8	10*200+8*80=2640
500	10	10	10*200+10*80=2800
600	12	12	12*200+12*80=3360
700	14	16	14*200+16*80=4080

Above schedules show that for 400 level of output, Technology I is the cheapest and for 500, 600 and 700 level of output, Technology II is the cheapest

c. **Is there application of law of substitution in the process of employment change when the firm moves from a high-wage country to a low-wage country in order to produce level of output 600 units**

→ For 600 level of output:

At high wage country, Technology III is the cheapest

At low wage country, Technology II is the cheapest

When a firm from high wage country to low wage country due to low cost of production or low wage, it employs more labour and less capital. Hence, there is application of law of substitution in the process of employment change when the firm moves from a high-wage country to a low-wage country

H. Case 9

A firm can use three different production technologies with capital and labor at each level of output as follows

Daily output	Technology I		Technology II		Technology III	
	K	L	K	L	K	L
400	12	28	16	20	20	16
500	12	40	16	28	20	20
600	16	44	20	32	24	24
700	20	52	24	40	28	32

d. For each level of output, which technology is the cheapest, when a firm is operating in a high-wage country, with capital cost Rs 400 per unit per day and labour cost Rs 320 per worker per day

→ For technology I

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	12	28	12*400+28*320=13760
500	12	40	12*400+40*320=17600
600	16	44	16*400+44*320=20480
700	20	52	20*400+52*320=24640

For technology II

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	16	20	16*400+20*320=12800
500	16	28	16*400+28*320=15360
600	20	32	20*400+32*320=18240

700	24	40	24*400+40*320=22400

For technology III

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	20	16	20*400+16*320=13120
500	20	20	20*400+20*320=14400
600	24	24	24*400+24*320=17280
700	28	32	28*400+32*320=21440

Above schedules show that for 400 level of output, Technology II is the cheapest and for 500, 600 and 700 level of output, Technology III is the cheapest

e. **For each level of output, which technology is the cheapest, when a firm is operating in a low-wage country, with capital cost Rs 400 per unit per day and labour cost Rs 160 per worker per day**

→ For technology I

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	12	28	12*400+28*160=9280
500	12	40	12*400+40*160=11200
600	16	44	16*400+44*160=13440
700	20	52	20*400+52*160=16320

For technology II

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	16	20	16*400+20*160=9600

500	16	28	16*400+28*160=10880
600	20	32	20*400+32*160=13120
700	24	40	24*400+40*160=16000

For technology III

Daily output	Capital[k]	Labour[l]	Total cost[C]=rk+wl
400	20	16	20*400+16*160=10560
500	20	20	20*400+20*160=11200
600	24	24	24*400+24*160=13440
700	28	32	28*400+32*160=16320

Above schedules show that for 400 level of output, Technology I is the cheapest and for 500, 600 and 700 level of output, Technology II is the cheapest

f. **Is there application of law of substitution in the process of employment change when the firm moves from a high-wage country to a low-wage country in order to produce level of output 1200 units**

→ For 1200 level of output:

At high wage country, Technology III is the cheapest

At low wage country, Technology II is the cheapest

When a firm from high wage country to low wage country due to low cost of production or low wage, it employs more labour and less capital. Hence, there is application of law of substitution in the process

of employment change when the firm moves from a high-wage country to a low-wage country