

Engineering Economics:

→ Engineering economics deals with the methods that enable one to take economic decisions towards minimizing the cost and maximizing benefits to business organization.

* Economics is a science, but it is more art than science as:

* Economics is a science as:

- the methodology of science is also methodology of economics
- has its cause & effects relationship
- hypothesis can be formulated
- can be tested and verified
- It has two methodologies i.e induction & deduction
 - induction → particular to general (increase)
 - Deduction → general to particular

* Economics is arts as:

- to formulate national policy, monetary policy, fiscal and tax policy economics is very important as it gives the knowledge about related matters in relevant way.
- fiscal policy - Allocate money
- national policy - More than 3 to 5 year
- Tax policy - when budget increase tax increase

Principles of Engineering Economics:

1) Time Value of Money:

→ A rupee in hand today is not equal to a rupee of tomorrow. The difference between them is the interest.

2) Marginal revenue must be greater than marginal cost:

→ Marginal revenue is the ratio of changes in total revenue with the change in output i.e. $M.R = \frac{\Delta TR}{\Delta Q}$

Marginal cost is the ratio of changes in the total cost with the change in output i.e $MC = \frac{\Delta TC}{\Delta Q}$

2. Ceteris Paribus:

→ It means "all other things remaining constant".
It is important in economics because in real world, it is very hard to isolate only one factor. for example we expect exchange rate to be affected by interest rate. However, there are many factors that affect exchange rate.

3. Economy is always in equilibrium condition/state

→ In economics, economic equilibrium is a state where economic forces such as supply and demand are balanced and in the absence of external influences the equilibrium values of economic variable will not change.

4. Rationality:

→ In economics, rationality is the state of being reasonable based on facts and reason.

5. Consistency of Transitivity of choices:

→ It is assumed that the consumer is consistent in his choices. i.e if in one period one chooses bundle A over bundle B, he will not choose B over A in another period if both bundles are available to him.

6. Monopolistic Market:

- A situation where any one company offers its products or services to the public creating a monopoly.

8) Risk ~~return~~ return Trade off

- This principle states that potential return rises with the increase in risk.

9) Non-Satisfaction:

H Important usages of Engineering Economics:

- In decision making process. It helps to make decisions in following grounds:
 - Understand the problem
 - Define objective
 - collect relevant information/ data
 - Identify the criteria of decision making
 - Develop feasible alternative
 - Evaluate each alternative
 - Select best alternative
 - Effective implementation of selected alternative

These informations obtained can be used in different situations like:

- ① Equipment & process selection
- ② Equipment replacement
- ③ Product expansion
- ④ Cost reduction
- ⑤ Budget allocation
- ⑥ Project evaluation
- ⑦ Service improvement

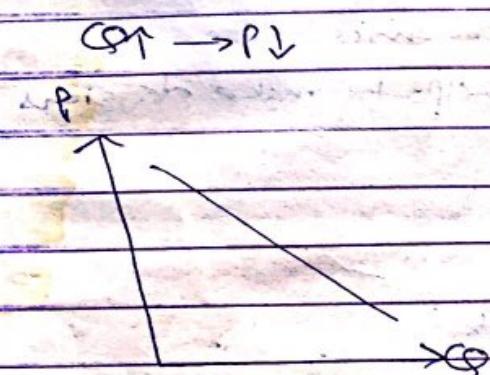
Demand:

→ It is the ability & desire of a consumer to consume the particular good / service.

$$\text{Demand} = \text{Desire} + \text{Ability}$$

Law of Demand:

"keeping other things being constant, demand varies inversely with price"



1. fig: Demand curve

- The curve obtained by plotting demand over price is called demand curve.
- The demand curve has negative slope because the price and demand has inverse relationship.

Factors influencing demand:

- Price of commodity (good)
- Income of consumer
- Price of related good
- Fashion
- Weather
- size of population
- future expectation

#1 Elasticity of Demand:

→ It is the measure of relative change in quantity demanded over relative change in any one determinant of demand.

Elasticity of demand (E_d) = Relative change in quantity demanded
Relative change in any one determinant of demand

#1 Types of elasticity of demand:

- a) Price elasticity of demand
- b) Income elasticity of demand
- c) Cross elasticity of demand

a) Price elasticity of demand:

→ It is the measure of relative change in quantity demanded over relative change in price.

Price Elasticity (E_p) = $\frac{\text{relative change in quantity demanded}}{\text{relative change in price}}$

Symbolically -

$$E_p = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P} = \frac{\Delta Q}{Q} \times \frac{P}{P}$$

where, E_p = Price elasticity

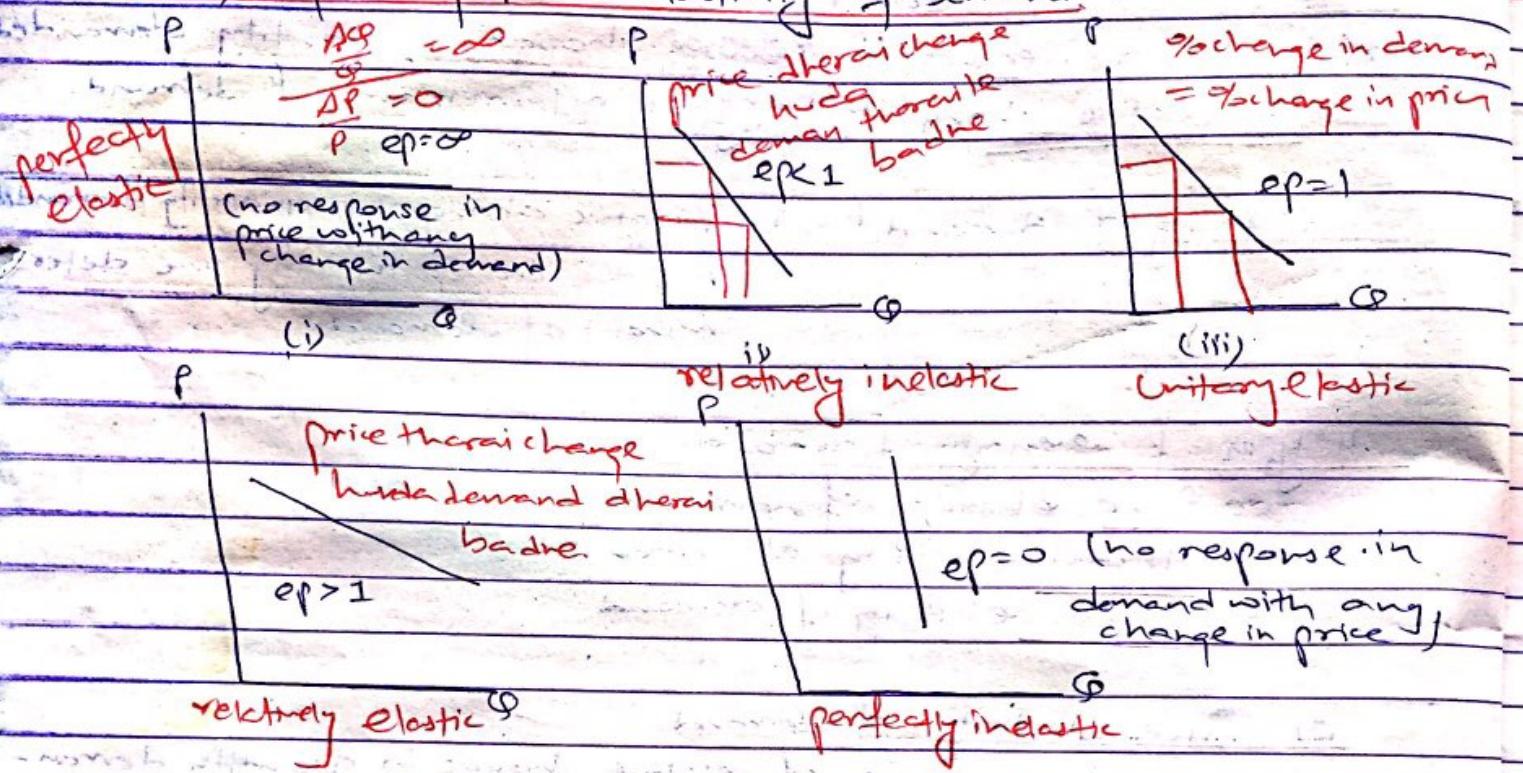
ΔQ = change in quantity demanded

Q = initial quantity demanded

ΔP = change in price

P = initial price.

Types / Degree of Price Elasticity of Demand



b) Income Elasticity of Demand (EI)

→ It is the measure of relative change in quantity demanded over relative change in income.

Income Elasticity of Demand (EI) = $\frac{\text{relative change in quantity demanded}}{\text{relative change in income}}$

Symbolically :

$$EI = \frac{\frac{\Delta Q}{Q}}{\frac{\Delta I}{I}} = \frac{\Delta Q}{\Delta I} \times \frac{I}{Q}$$

where, ϵ_I = Income elasticity of Demand

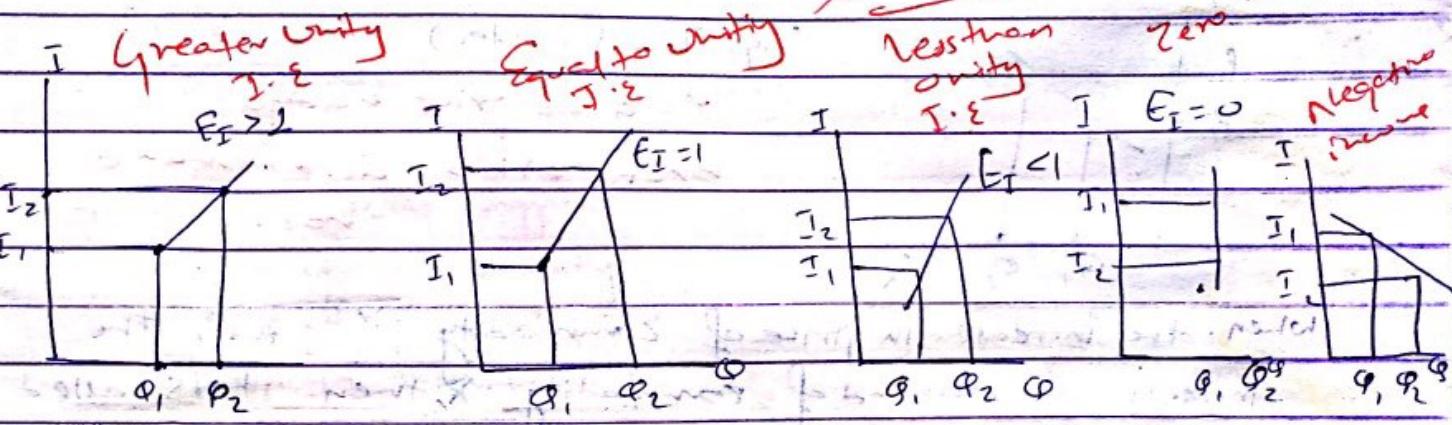
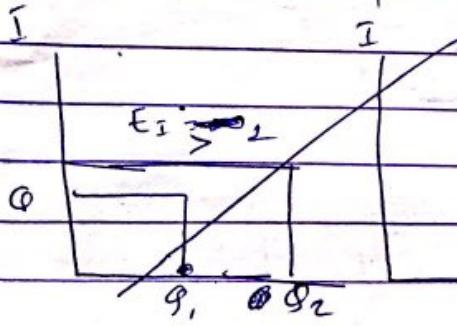
ΔQ = change in quantity demanded

Q = initial change in quantity demanded

ΔI = change in income

I = initial income

Types/ Degree of Income Elasticity



Small change in
income causes
large change in
demand.

change in income
cause same
change in demand

large change in
income cause
small change
in demand

Negative
income
electricity
in demand

Cross Elasticity of Demand

→ If the change in price of one commodity brings
the change in demand for other commodity then
it is called Cross-elasticity of demand.

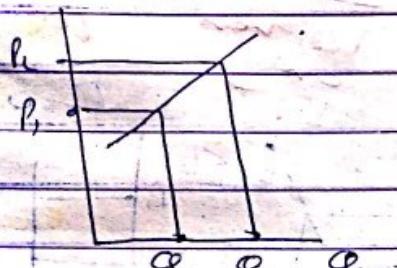
$E_c = \frac{\text{relative change in quantity demanded of } X}{\text{relative change in price of } Y}$

$$E_c = \frac{\frac{\Delta Q_x}{Q_x}}{\frac{\Delta P_y}{P_y}} = \frac{\Delta Q_x}{\Delta P_y} \times \frac{P_y}{Q_y}$$

Types of cross elasticity:

- ? ① Positive cross elasticity.
- ② Negative cross elasticity
- ③ Zero cross elasticity

① Positive cross elasticity



(e.g: Tea & coffee)

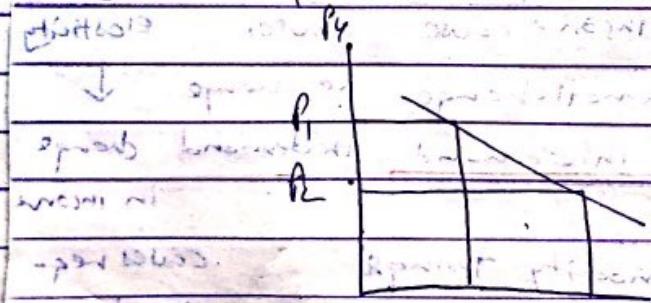
auto ko price badha

bhene arko aksa demand
badha.

Q_1, Q_2, Q_X

When, the increase in price of commodity X causes the increase in demand of commodity Y , then it is called positive cross elasticity.

② Negative cross elasticity



(e.g: Petrol & Bike)

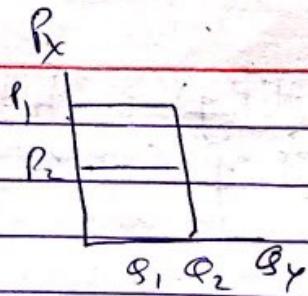
auto ko price badha
bhane arko ko

demand ghatna

When the increase in price of commodity X causes the decrease in demand for commodity Y . Then it is called negative cross elasticity.

③ zero cross elasticity

When the change in price of commodity X doesn't affect the demand of commodity Y . Then it is called zero cross elasticity.



Non related goods same
cuisine gone.

Law of Supply:

Supply is the total amount of specific good or services that is available to consumer.

"keeping other things constant, supply varies positively with price"

factors influencing Supply:

- Price of commodity
- Price of related good
- Production technology
- New invention
- Taxes
- Price of raw materials

Defn Marginal Utility:

"Utility is the satisfaction obtained from the consumption of a commodity."

classical view of Utility

"Utility can be measured in cardinal numbers"

Modern view of Utility

"Utility can't be measured in cardinal number but it can be expressed in order."

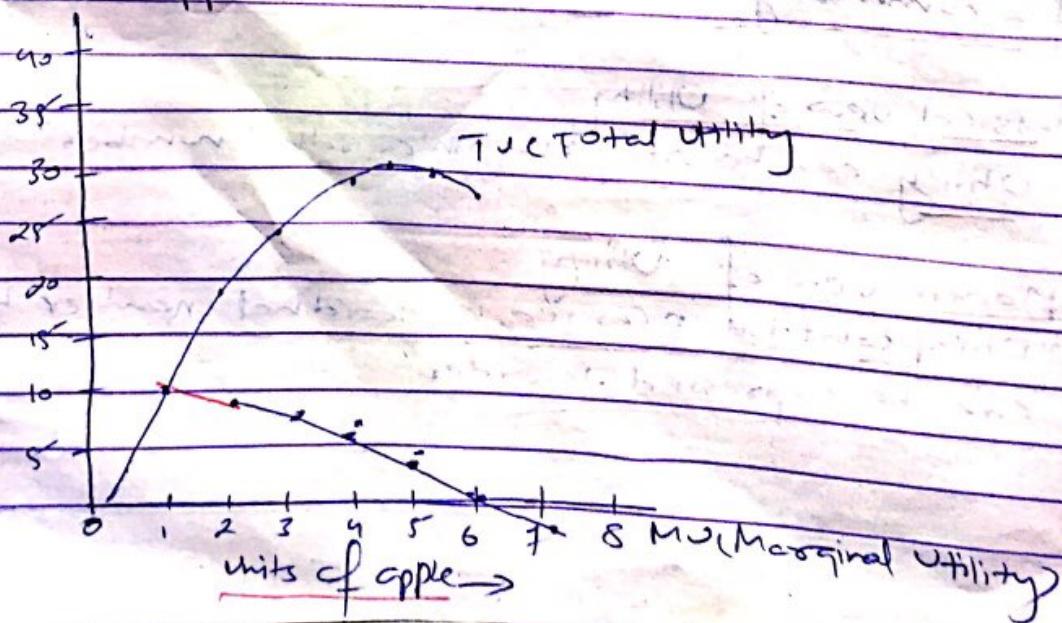
Law of Diminishing Marginal Utility (goods)
 "Utility decreases when number of commodity consumption increases"

e.g:

| Units of apple | Total Utility | Marginal Utility |
|----------------|---------------|------------------|
| 1 | 10 | 10 |
| 2 | 18 | 8 |
| 3 | 24 | 6 |
| 4 | 28 | 4 |
| 5 | 30 | 2 |
| 6 | 30 | 0 |
| 7 | 28 | -2 |

Marginal Utility means the increase or decrease satisfaction obtained from consuming one more unit of good or service.

Suppose, a consumer is consuming units of apple. He/she starts eating apple one after another. The first apple gives him/her a great pleasure/satisfaction utility. Then 2nd one gives him less satisfaction than 1st apple and so on.



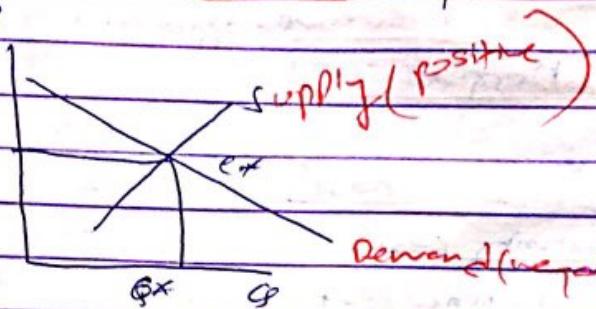
Law of Supply & Demand (Equilibrium of P & Q)

- The equilibrium of P (Price) and Q (Quantity of Demand) is determined by the intersection of Demand and Supply curves.

D = Demand curve

S = Supply curve

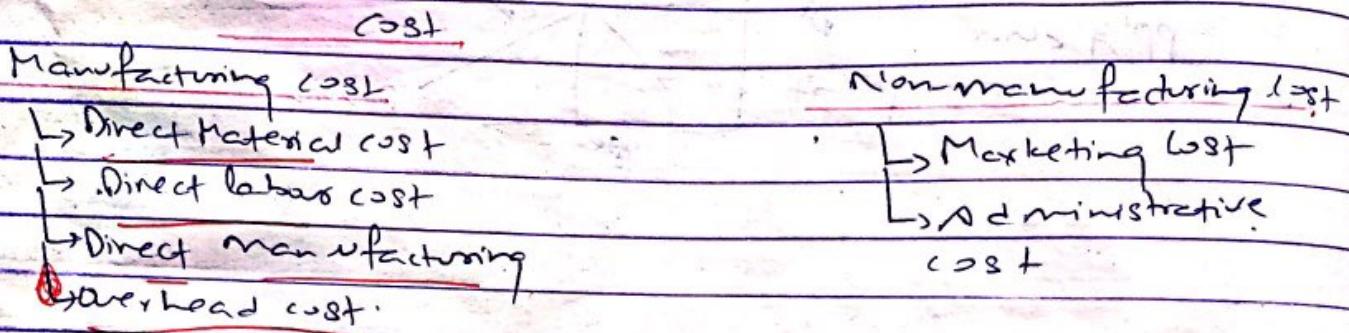
ex^* = equilibrium point



Chapter 2

Cost Terminology

- (b) Manufacturing cost & Non-manufacturing cost:
- 1) Cost for Business Decision: Differential cost &
 Revenue, Opportunity cost,
 Marginal cost.



Manufacturing cost

It is the cost that is directly involved in manufacturing of product and services

e.g.: - raw material cost

Salary of labour etc.

Types:

1) Direct material cost

2) Direct labour cost

3) Manufacturing overhead cost.

1) Direct Material cost:

→ It is the cost of raw material

for e.g.: the cost of wood to manufacture table.

2) Direct labour cost:

→ It is the cost caused by providing wages or salaries to the employees that are directly responsible for

manufacturing goods and services

Eg: Salary to labour and line staff

3) Direct Manufacturing overhead cost:

→ They are not part of material and labour cost. It includes the lightning cost, heating cost, insurance cost, tax cost and so on. Overtime pay in direct labour

Non-manufacturing cost:

→ It is the cost that is not directly involved in manufacturing of products or services.

Types of it:

1) Marketing cost

2) Administrative cost

1) Marketing cost:

→ It includes advertising cost, order taking cost,

Salaries of sales person etc.

2) Administrative cost:

→ It includes salaries of executives, office personnel

Salaries etc.

Decision making costs:

Types:

① Differential cost of differential revenue.

② opportunity cost

③ Bunk cost

④ Marginal cost

if revenue is greater than
cost only accept
otherwise reject

① Differential cost and differential revenue:

- Decision involve choosing between alternatives.
- In business, each alternative will have certain costs and benefits that must be compared to the costs and benefits of the other available alternatives.
- A difference in cost between any two alternatives is known as differential cost.
- A difference in revenue between any two alternatives is known as differential revenue.

② Opportunity cost:

- It is the potential benefit that is given up when one alternative is selected over another.

e.g.: Ram has a part-time job that pays Rs 4000 a week. Now he went on holiday for a week and his boss denied it without pay. So, the lost Rs 4000 is the opportunity cost of taking holiday.

③ Sunk cost:

- It is the cost that is already incurred and cannot be changed by any decision made now or in future.

For e.g.: A new computer is purchased 10 years ago at Rs 60,000. But now, it is obsolete and of no-use. So, we can't change the cost with any decision. So, hence it is sunk cost.

④ Marginal cost:

- The increase or decrease in the total cost of production for making one additional unit of an item.

Chapter-7 Ecological limit and economic development

Economic Theory & ecological limit

Economic Theory:

- Economic theory is a way of explaining economic activities and its impact on various grounds.
- Ecological economics tells us that except sunlight all other resources (air, water, food, minerals) etc are the foundation of the economy and come from the earth.

→ There are two types of economic theory:

- ① Micro economic Theory
- ② Macro economic Theory

① Micro economic theory:

→ This theory focused on efficient use of scarce resources by satisfying unlimited wants.

② Macro economic theory:

Economic Theory:

- Economic theory is a way of explaining the economic activities and its impact on various grounds.
- Most of the traditional concept of economics is based on microeconomic theory. The microeconomic theory focuses on efficient use of scarce resources for satisfying unlimited wants.
- After 1930s, due to the event of great depression in the world, the economic theory have shifted to macroeconomic theory. The macro economic theory have shifted to

- macroeconomic theory. The macroeconomic theory aims to achieve high level of employment and income.

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- After 1970s, economic thoughts have growing concern on ecological constraints. So, modern economic theory was developed.
- The modern economic theory, lost the importance of ecosystem, use of land & environment for balancing ecological constraints. (limiting use for resources for development)
- The ecological economists point out except sunlight all other resources like air, water, food, minerals etc. are foundation of economy and come from earth.

Ecological limit:

- To perform economic development in sustainable manner, there must be limiting availability of natural resources which technically refers to ecological limit.
- The growing economic activities causes increasing uses of natural resources like atmosphere, minerals, land, water & so on. So, there must be limit on the earth's capacity to act as resource provider to sustain it and that limit is ecological limit.

Concept of Sustainable Development:

- Sustainable development is meeting the needs of present generation without compromising the needs of future generation.
- The concept of sustainable development focus on the
 - principle of resource management &
 - carrying capacity of eco-system.
- The concept of sustainable development is associated with
 - Consumption pattern of

- recreation of renewable resources by human beings according to natural life cycle.

✓ Ecological footprint:

- ecological footprint refers the total direct and indirect requirement of land use for the given units of crop production with global average.

Overcoming Ecological limits:

- for overcoming ecological limits, technology and human values can play a significant role.
- Ecological limits can be overcome by:
 - development of renewable energy sources.
 - decarbonization
 - recycling of wastes
 - resources management
- The each and every development institutions should follow the implementation policy of sustainable development.

Chapter 8

Depreciation and Corporate Income Taxes

8.1 Depreciation and its causes, Asset Depreciation and Accounting Depreciation:

Depreciation:

~~Depreciation is the gradual and permanent decrease in the value of an capital asset from any causes.~~

Causes of Depreciation:

1. Wear And Tear: (Physical depreciation)

The continuous use of asset makes it old and decrease in working capacity. and hence the value of asset depreciates

2. Functional depreciation:

Demand made on an asset may increase beyond its capacity will cause functional depreciation

Also if there is no more demand of function provided by the asset, it results functional depreciation.

3. Technological depreciation:

The improvement in technology, new invention, change in style, etc may cause loss of usefulness in existing asset.

4. Monetary depreciation:

The fall in market price of the assets causes depreciation of asset.

Depletion: It is a general reduction of the stock or value of natural deposits like mineral, gas and oil, timber etc.

5. Accident:

The accident cause due to natural disaster or man-made disaster causes depreciation of asset.

6. Depletion / Exhaustion:

An asset may get exhausted through working which causes depreciation assets.

Removal of oil, timber, rock or minerals from a site decreases the value of the holding.

7. Sudden failure:

This refers to sudden or catastrophic loss in value due to technological characteristics. However, this does include loss due to accident or misuse.

(1) ~~Not inf~~

Fixed Asset Depreciation (Economic Depreciation)

It is the gradual decrease in the economic value of the fixed assets like equipments, real estate vehicles etc. Types:

① Physical Depreciation:

It can occur in any fixed asset due to

i) wear & tear

ii) Depreciation Deterioration

② Functional Depreciation:

It can occur in any fixed asset due to

i) change in technology

ii) Unable to meet the demand of market

example: Typewriter and computer
Desktop and Laptop.

Economic/Asset Depreciation = Initial cost - Salvage value.

(2)

ii) Accounting depreciation:

- It provides information to make financial statement (P/L account) of any organization.
- We put depreciation in Dr. side of profit/Loss Account.
- It is mostly used in engineering economic analysis because it provides the basis for determining the income taxes associated with any project.

8.2. Basic methods of Depreciation:

① Straight line Method (Fixed instalment Method)

- In this method same amount of depreciation is charged every year throughout the life of the asset.
- Book value can be decreased to zero.

✓ d_k = Annual depreciation deduction in year k.

B = Original cost/ Initial cost

S = Salvage value

N = Life of the asset

✓ D_k = Cumulative depreciation through year k.

✓ BV_k = Book value at the end of year k.

In st. line method:

$$d_k = \frac{B-S}{N}$$

$$BV_k = B - D_k$$

$$D_k = K(B-S)$$

- useful on those assets whose working life can be easily estimated.

(constant percentage Method)

ii) Declining Balance Method (Marreson Method)

- In this method, the annual cost of depreciation is fixed percentage of the book value off at the beginning of the year.
- As the depreciation is charged at this rate of fixed percentage, the depreciation amount continues to reduce in successive years.
- Suitable for the assets having long life such as free building, plants, machinery, etc.
- Book value cannot be decreased to zero.

$$(\text{Rate}) \quad R = 1 - \sqrt[N]{\frac{S}{B}}$$

$$d_k = B(1-R)^{k-1}R$$

$$D_k = B[1 - (1-R)^k]$$

$$BV_k = B(1-R)^k$$

② Double Rate Declining Balance method:

- In this method, depreciation rate is calculated as,

$$\text{Depreciation Rate}(R) = \frac{1}{N} \times 100 \times 2 = 200$$

- Then the amount of depreciation is calculated by using Declining Balance Method.

Banking fund Method:

→ In this method, it is assumed that the full capital investment in a project is recovered at the end of project life.

$$\text{fixed Annual equivalent Amount } (A) = (B-S) \left(A/F, i\%, N \right)$$

$$d_k = (B-S) \left(A/F, i\%, N \right) \times \left(F/P, i\%, k-1 \right)$$

$$BV_k = B - (B-S) \times \left(A/F, i\%, N \right) \left(F/A, i\%, k \right)$$

Sum of the Year Digit (SOYD) Method:

In this Method,

SOYD depreciation = $\frac{B-S}{\text{SOYD}}$ × Remaining useful life at the begining of that particular year

$$\text{SOYD} = N(N+1)$$

Unit of Production Method (Service-output Method)

- In this method, the depreciation of asset is based on total working hour or production unit rather than time elapsed.
- Here, equal depreciation charge is applied for each unit of output or working hour.
- Depreciation rate per unit of output/working hour

$$R = \frac{B-S}{\text{Total working hours or production unit}}$$

$$\text{Total working hours or production unit}$$

1. Modified Accelerated Cost Recovery System (MACRS)

- half year time convention is used in MACRS depreciation calculation.
- Hence, a half year depreciation is taken in first year, a full year depreciation is allowed in each of the remaining years and a both years depreciation.

2015 Spring

5(b)) Consider the following accounting information for a computer system.

Cost basis of the asset, $I = \text{Rs } 10,000$

Useful life $N = 5 \text{ years}$

Estimated salvage value $S = 0$

Use double declining balance depreciation method

To compute annual depreciation allowances and resulting book values.

We know,

Rate of double declining balance method depreciation method is given by,

$$(200\% / N) = \frac{200\%}{5} = 40\% = 0.4$$

Annual depreciation (in the year k) (d_k) = $B (1-R)^{k-1} \cdot R$

Cumulative depreciation through the year (k) (D_k) = $B [1 - (1-R)^k]$

Book value at the end of year (B_{vk}) = $B (1-R)^k$

| Year | d_k | D_k | BV_k |
|------|-------|--------|--------|
| 1 | 4000 | 4000 | 6000 |
| 2 | 2400 | 6400 | 3600 |
| 3 | 1440 | 1840 | 2160 |
| 4 | 864 | 8704 | 1296 |
| 5 | 518.4 | 9282.4 | 777.6 |

2015 Spring

Q: A machine costing Rs 100000 is estimated to have life of 10 years. The Salvage value of the machine at the end of life is Rs 20,000. Find depreciation charge and book value of each year and tabulate it. Use straight line and sum of years digits (SOYD) method.

Given,

$$\text{Initial cost } (B) = \text{Rs } 100000$$

$$\text{Useful life } (N) = 10 \text{ yrs}$$

$$\text{Salvage value } (S) = \text{Rs } 20,000$$

Using Straight line method

$$\text{Annual depreciation or deduction amount } (d) = \frac{B-S}{N}$$

$$(\text{Cumulative depreciation through year } k) (D_k) = k \left(\frac{B-S}{N} \right)$$

$$\text{Book value at the end of year } k (BV_k) = B - D_k$$

| <u>Year</u> | <u>d</u> | <u>DK</u> | <u>BVK</u> |
|-------------|----------|-----------|------------|
| 1 | 8000 | 8000 | 92000 |
| 2 | 8000 | 16000 | 84000 |
| 3 | 8000 | 24000 | 76000 |
| 4 | 8000 | 32000 | 68000 |
| 5 | 8000 | 40000 | 60000 |
| 6 | 8000 | 48000 | 52000 |
| 7 | 8000 | 56000 | 44000 |
| 8 | 8000 | 64000 | 36000 |
| 9 | 8000 | 72000 | 28000 |
| 10 | 8000 | 80000 | 20000 |

Using sum of years digit method,

$$\text{SYD} = \frac{N(N+1)}{2} = \frac{10 \times 11}{2} = 55$$

SYD depreciation = $B-S \times \frac{\text{Remaining useful life at SYD}}{\text{the beginning of that particular year}}$

B-DK

| <u>Year</u> | <u>SYD depreciation</u> | <u>DK</u> | <u>BVK</u> |
|-------------|--|-----------|------------|
| 1 | $\frac{80000}{55} \times 10 = 14545.4$ | 14545.4 | 88454.6 |
| 2 | $\frac{80000}{55} \times 9 = 13090.9$ | 13090.9 | 72363.7 |
| 3 | $\frac{80000}{55} \times 8 = 11636.3$ | 11636.3 | 60727.4 |
| 4 | $\frac{80000}{55} \times 7 = 10181.8$ | 10181.8 | 50545.6 |
| 5 | $\frac{80000}{55} \times 6 = 8727.2$ | 8727.2 | 41818.4 |
| 6 | $\frac{80000}{55} \times 5 = 7272.7$ | 7272.7 | 34545.7 |
| 7 | $\frac{80000}{55} \times 4 = 5818.1$ | 5818.1 | 28727.6 |
| 8 | $\frac{80000}{55} \times 3 = 4363.6$ | 4363.6 | 24364 |
| 9 | $\frac{80000}{55} \times 2 = 2909.$ | 2909. | 21455 |
| 10 | $\frac{80000}{55} \times 1 = 14545.4$ | 14545.4 | 20000 |

2014

fall

What are the causes for depreciation? If a machine costing of Rs 4,00,000 is estimated 10 years useful life and its 50,000 Salvage value. find depreciation amount for each year by using declining balance and sinking fund method.

$$\text{Initial cost (B)} = 4,00,000$$

$$\text{Useful life (N)} = 10 \text{ yrs}$$

$$\text{Salvage value (S)} = 50,000$$

Using Declining balance method.

$$\text{Rate } R = \frac{1 - N}{B} S = 1 - \frac{10}{4,00,000} 80,000 = 0.1847$$

$$d_k = B (1-R)^{k-1} \cdot R$$

$$d_k = B [1 - (1-R)^k]$$

$$BV_k = B (1-R)^k$$

Using sinking fund method: $i = 12\%$

$$\text{fixed depreciation} A = (B-S) \left(\frac{A}{F}, i\%, N \right)$$

$$= 350000 \times \frac{1}{1}$$

$$175487$$

$$= 19944.497$$

~~$$d_k = (B-S) / \left(\frac{A}{F}, i\%, N \right) \times \left(\frac{F}{P}, i\%, k-1 \right)$$~~

~~$$= 19944.497 \times$$~~

$$P(1+i)^n$$

B - DK

BVK

| Year | fixed Depreciation | Net depreciation | Cumulative (DK) | BVK |
|------|--------------------|------------------|--------------------|-----|
| 1 | 19944.49 | 19944.49 | 19944.49 | |
| 2 | 19944.49 | 22337.82 | 42282.31 | |
| 3 | 19944.49 | 29018.36 | 67300.67 | |
| 4 | 19944.49 | 28020.57 | 98321.24 | |
| 5 | 19944.49 | 31383.04 | 12670428 | |
| 6 | 19944.49 | 38149.0 | 161853.28 | |
| 7 | 19944.49 | 353666.88 | 22220.16 | |
| 8 | 19944.49 | 44090.91 | 245311.07 | |
| 9 | 19944.49 | 45381.82 | 294692.89 | |
| 10 | 19944.49 | 55307.64 | 358000.53 | |

2011

fall 3(a) $\beta = 1 / 10,000$

$S = 2,000$

$N = 5 \text{ yrs}$

$i = 10\%$

Taxation law of Nepal:

- * Nepal has a long history in the taxation.
- * Land tax has been found to be practised from Lichhavi period.
- * Excise tax was imposed on Rana period.
- * Upto Rana regime, tax system was not institutionalized and collection of tax was also not systematic.
eg: custom duties were collected through contractors
Land revenues were collected by Mukhiya or Zamindar.
- * Modern taxation system was introduced only after the introduction of multiparty system after 2007 B.S
- * The tax system was rationalized by introducing Excise Act 2014
- * Tax on corporate profit and income was first introduced by the first Parliamentary Government in 2015 B.S
- * In 2018 B.S, 'Nepal Income Tax Act' was introduced
- * In 2030 B.S, 'Nepal Income Tax' was replaced by 'Income Tax Act 2030'.
- * This act was amended for eight times and existed for 28 years.
- * In 2058 B.S, the 'Income Tax Act' was replaced by 'Income Tax Act, 2058 B.S'
- * This act governs all income tax matters and is applicable throughout the geography of Nepal.

At present, following tax acts are enacting in Nepal.

Income Tax Act - 2058

Excise Tax Act - 2058

Custom Tax Act - 2064

VAT Act - 2052

Tax:

- Taxes are compulsory payment to government expectation of direct benefit in return to the tax payer.
- features of Tax:
 - i) Tax is a compulsory payment
 - ii) People don't receive direct benefit from tax.
 - iii) The fund raised from tax is spent on public welfare.

Structure of Tax:

- On the basis of nature & impact, taxes are divided into two types.
 - i) Direct tax
 - ii) Indirect tax
- i) Direct tax:
 - The tax which cannot be shifted to others is called direct tax.
 - If the tax is paid by the same person to whom it is levied, then it is known as direct tax.
 - For example: Income tax, land tax
 - Property tax
 - House rent tax
 - Interest tax
 - The tax rates are determined by parliament through government budget in Nepal.

Merits of direct Tax:

- i) Equality: Based on ability to pay principle.
- ii) Certainty: Easy to know tax amount, time and method of tax payment.

- # Taxable: Easy to increase or decrease as government needs.
- * Non-invasive: less cost required for tax collection.
- v) Progressive: Help to reduce inequality of income and property between the rich and poor people.
- vii) Civic-consciousness: make aware to each in public expenditure
- viii) Anti-inflationary: Help to reduce inflation by reducing purchasing power of the people

Demerits of Direct Tax:

- i) Inconvenient: Due to maintenance of income and property record, taxpayer should visit tax office frequently and has to pay huge amount once a year.
- ii) Unpopular: Tax payer feels high burden directly.
- iii) Possibility of evasion: People do not like to show their income record to the tax offices.
- iv) Arbitrary: Government fixes tax rate in arbitrary manner.
- v) Limited scope: It does not cover all classes of the society.
- vi) Lack of inspiration: It kills the spirit of people to work more and earn more.

Indirect Tax: (Impersonal tax)

- The indirect tax is imposed upon one person but paid partially or wholly by another.
- It is generally levied on goods & services, and tax burden ultimately goes to the final consumer.
for eg:

VAT, custom duties, excise duties etc.

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Merits of Indirect tax

1) Convenient:

- Since it is paid with price, it is convenient to pay.

2) Difficulty of evasion:

- As the tax is included in the price of good and services, it is difficult to evade.

3) Promote social welfare:

By imposing higher rates on harmful products
(drugs, cigarette, wine etc)

4) Progressive:

- By imposing heavy taxes on luxury items consumed by rich persons and low taxes on basic goods consumed by the most poor.

Demerits of Indirect Tax:

1) Inequality:

- Rich and poor should pay equal tax & rate for same goods.

2) Uncertainty:

- Due to high tax, price will rise and demand falls and government may not be able to collect expected revenue from it.

3) Uneducative:

- Consumer does not feel the burden of tax which makes him less conscious and does not create people awareness.

Taxation:

* It will force directly to increase market price.

5) Promote smuggling and corruption.

6) Unproductive:

Due to rise in market price, people have to spend more on consumption that will reduce savings, investment and production.