Current Affairs

1. Science & Tech. -2Q
2. Defence -2Q
3. Index -2Q
4. Economics -2Q
5. National Current events -2Q
6. Environment. -2Q

LTTE - liberation tigers of tamil eelam.
IPKf - Indian peace keeping force (Jaffna)

Topics for current affairs.

1. National important events.
2. International important events
3. Science and Tech.
   - (a) Defence
   - (b) Space
   - (c) Environment
   - (d) I.T & Related.
4. Economics → Basics
   → important national economic development
   → Budget
5. Index & Indices
6. Awards & Honours
7. Books & Authors.
8. Art & culture.
9. National & international summits / Conferences.
10. Important personality.
11. Imp. days & dates
12. Miscellaneous.

Asia → eop
SCO
Europe
M/E

→ Pamban bridge (रामेश्वरम्)
(Palk strait)

National Important Events

(1) 2024 Loksabha Elections

2024 Lok Sabha election was conducted in 7 phases between 16th april to 1st june on 9th june Shree Narendra modi was given oath of prime minister of India.

On the same day council of ministers (72 including PM) also took the oath. It included 7 women minister also. [9.72%]. Total cabinet ministers including PM = 31. Minister independent charge - 5, Minister of state = 36. The ruling party is NDA [National democratic alliance] with 293 with the major party as Bhartiya janta party that has 240 seats. The opposition parties are called as India block [Indian national developmental inclusive alliance] that has got 234 seats. With having 99 seats, presently 98 seats. Samajwadi party became 3rd largest party with 37 seats. 37 seats only from Utter pradesh [UP total loksabha seats - 80]. 2nd largest maharashtra - 47 seats

The loksabha election was conducted to elect member of parliament for the loksabha that are elected for a term of 5 years.

Before 2020 → 543 (Election) ; Total no. of seats in loksabha = 543
→ 2 (Anglo Indian seats) (Selected by president)

however in 2020 - 2 anglo Indian seats were abolished. Before 2020 no. of seats in loksabha were 545.

In new parliament building, total no. of loksabha seats are 888.

Note:- Due to the Delimitation of seats in 1971, ~~so~~ statewise no. of seats were fixed according to population, due to which total no. of seats according to present populatn should be around 750. But, it is fixed at 543.

Note:- In new parliament building the capacity of largest seating area is 1200, it is designed for joint parliamentry building.

→ No. of women MP's → (74) [/543]. (13.6%)

In 2019 loksabha election no. of women M.P - 76 (14.4%)

- Richest M.P → Chandrashekhar Pemmasani from TDP (telugu deshap party) — 5705 crores (Net worth)
- M.P with highest margin of win — Rakibul Hasan - (won by 10 lakh+ votes margin) → belongs to INC [Indian National congress] Dubri constituency assam.
- Mukhesh Dalal from surat constituency from gujrat, he won without contesting in election. He belongs to B.J.P.
- Youngest M.P. — (i) Priya Saroj (age 25 = min^m age) from Macchlishehar, U.P.
  (ii) Sambhavi Choudhary from samastipur, Bihar.
  (iii) Pushpendra saroj from kausambi U.P.
- Indore from M.P. has highest no. of NOTA votes that has more than 2 lakh NOTA votes.
- Oldest M.P. — T.R. Baalu (From T.D.P.) [The member of parliament with highest no. of elected M.P in loksabha. in 18th

In 18th loksabha 2024, he was elected for ~~#~~ (7th) time.

→ Political party that has highest no of candidate forfeiting their election deposit - B.S.P. [Bahujan samajwadi Party].

→ Political party that has highest no of crorepati's = B.J.P.

18th loksabha election had participation of ~~700~~ 744 parties with total no of participing candidates 8360.

- Narendra Modi became only the 2nd person after Jawaharlal nehru who has won 3 consecutive loksabha election.
- Prime ministers with more than 15 yrs tenure are
  - (i) Pandit Jawaharlal nehru
  - (ii) Indira Gandhi
  - (iii) Narendra Modi

Highest percentage of voting was observed in Lakshadweep (84.16%), Lowest % of voting in Bihar (56.19%)

Among states highest % of voting was observed in assam (81.5%)

- Win with lowest margin — Ravindra Dattaram from shivsena, he won by 48 votes only → [Const: Mumbai northwest].
- Voting Gender ratio = (1000 M : 948 F)

→ Pro Tem speaker :- A pro tem speaker is elected on the 1st day of new parliament session for the purpose of election of new loksabha speaker.

Protem speaker for the 18th loksabha was → Bhratuhari Mehta. The gath of pro tem Speaker is also administered by president of India.

The purpose of Pro-Tem speaker is to elect loksabha speaker & deputy speaker.

Important Military Exercises.

Exercise	Conducted between	place
(1) Nomadic Elephant	India - Mangolia	Alternately in India mangolia. however, in 2024 it was conducted in India. It is a counter terrorism & disaster relief Bet^{n} armies of India & Mangolia.
(2) Excersice Khan quest	Bet^{n} armies of India & mangolia, conducted in mangolia.	
(3) Exercise pitch Black.	This excersice is conducted bet^{n} India & Australia to practice warfare tech & counter insurgencies technique in the dark nights	conducted in australia
(4) Ex. dharma Guardian	It is united nations mandate exercise conducted in India this exercise is conducted as per the guidelines given by UN bet^{n} armies of India & japan, at rajasthan.	India Raj.
(5) Ex. Jimex ↓ Japan India Maritime exercise.	Conducted bet^{n} navy of India & Japan. in the region of Indian ocean This excercise is conducted as a regular annual exercise	Indian ocean.

(6) Exercise Tiger Triumph — (India-USA) - Conducted betⁿ the armies of India & USA. This exercise is conducted for disaster relief exercise. The exercise is supported by navy & airforce also.

(7) Exercise Yudh Abhyas — (India-USA) - Conducted betⁿ India & USA for better co-operation betⁿ forces of two contries in case of war in counter terarism.

(8) Exercise Vajra Prahar - (India-USA) - Conducted for enhancing co-operation between the two countries for special operations. Conducted between the special forces.

(9) Exercise Suryakiran - Between India & Nepal this exercise is conducted for counter insurgency conditions

(10) Exercise Desert Cyclone - [India-UAE] This exercise is conducted for the purpose of joint military exercise between the armies of India & UAE. in rajasthan.

(11) Exercise Shakti [India-France] It focuces on jungle warfare & counter terrorism in Umroi (Meghalaya)

(12) Exercise Harimau Shakti [India-~~Thailand~~ Malesia] - Conducted at ~~thailand~~ Malesia. This exercise focuses on joint military exercise between the armies of India & malaysia.

(13) Exercise Cyclone → [India - Egypt] - Conducted at Egypt

(14) Exercise Bongoshakti - [India - Bangladesh] - Conducted in the bay of bengal region.

(15) Exercise Malabar - Conducted between India, USA, Japan & australia also called as quad exercise. It is conducted bet^{n} the navy's of these countries.

(16) Ex. Oustlik - (India - Uzbekistan) Conducted at Uzbekistan, it focuses on ~~con~~ counter terrorism & other joint military ex.

(17) Exercise Vinbax - (Vietnam - India) - A joint military exercise bet^{n} the ~~mil~~ engineers of India & Vietnam for recruitment of engineers in the peace keeping areas.

(18) Ex. Antriksh Abhyas - Bet^{n} various wings of Indian forces this exercise is conducted for future-space warfares.

(19) Exercise Agni Warrior - (Bet^{n} armies of India & singapore) conducted at singapore.

(20) Exercise Maitri - (conducted between India & thailand) in which Indian army & royal thai army participate for enhancing co-operation bet^{n} 2 armies for better border management.

ENGG DRAWING

CH – 1. Introduction.

2. Scales.

3. Conic section.

4. ENGG. curves.

5. THEORY OF PROJECTION.

6. Projection of points.

7. Projection of lines.

8. Projection of planes.

9. Projection of solids.

10. Section of solids.

11. Developement of surfaces.

Introduction.

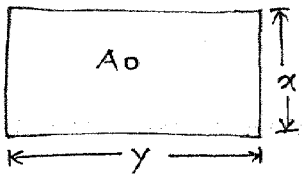
1.> Drawing sheet [IS 10711 : 2001]

- Iso A series sheet : $A_0 > A_1 > A_2 > A_3 > A_4$

* A_0 sheet :

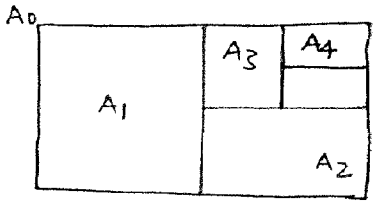
- cond^n :

$$\left.\begin{aligned} x : y &= 1 : \sqrt{2} \\ x \cdot y &= 1\ m^2 \end{aligned}\right\} \begin{aligned} x &= 841\ mm \\ y &= 1189\ mm \end{aligned}$$



→ sucessive sheet size is obtained from previous sheet, by taking half of the longest side and maintaining the ratio $1:\sqrt{2}$

sheet size	x	y	x : y	xy (m^2) → $\frac{1}{2^n}$; n=0,1,2,3
A_0	841	1189	$1:\sqrt{2}$	1
A_1	594	841	$1:\sqrt{2}$	$\frac{1}{2}$
A_2	420	594	$1:\sqrt{2}$	$\frac{1}{4}$
A_3	297	420	$1:\sqrt{2}$	$\frac{1}{8}$
A_4	210	297	$1:\sqrt{2}$	$\frac{1}{16}$



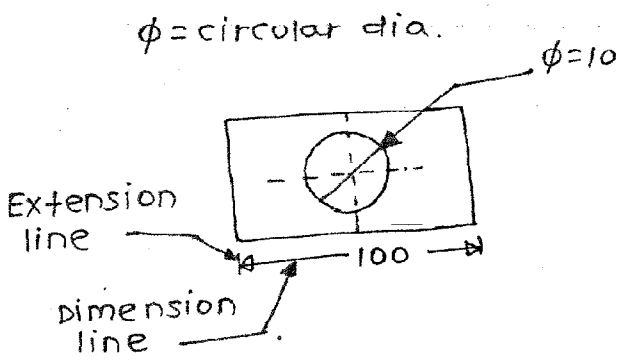
NOTE: All the scanner, printer, photocopy m/c is designed around the ratio $1:\sqrt{2}$. Hence to maintain uniformity, the same ratio is taken for the drawing sheet.

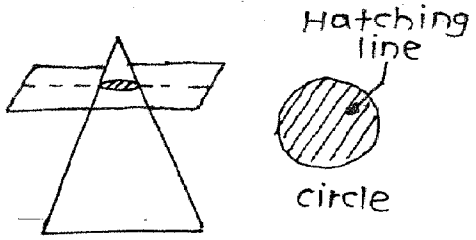
2> Lines [IS 10714 : 2001]

* Types of Lines

(i) continuous Narrow line

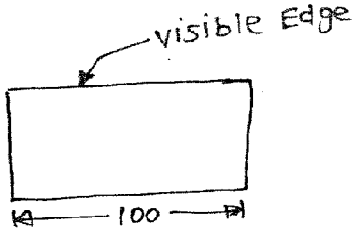
Ex- Dimension line
Extension line
leader line (↘)
Hatching (or) sectioning line.





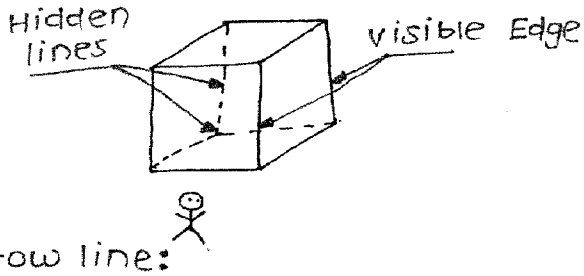
(ii) continuous wide line:

Ex: visible outline / visible Edge



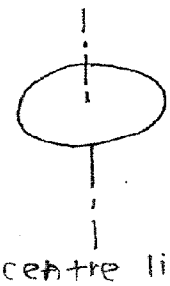
(iii) Dashed Narrow line:

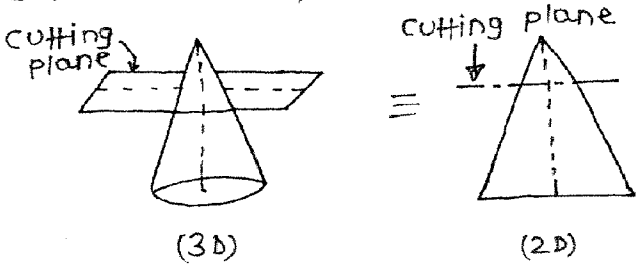
Ex: Hidden line.



(iv) LONG dash dotted Narrow line:

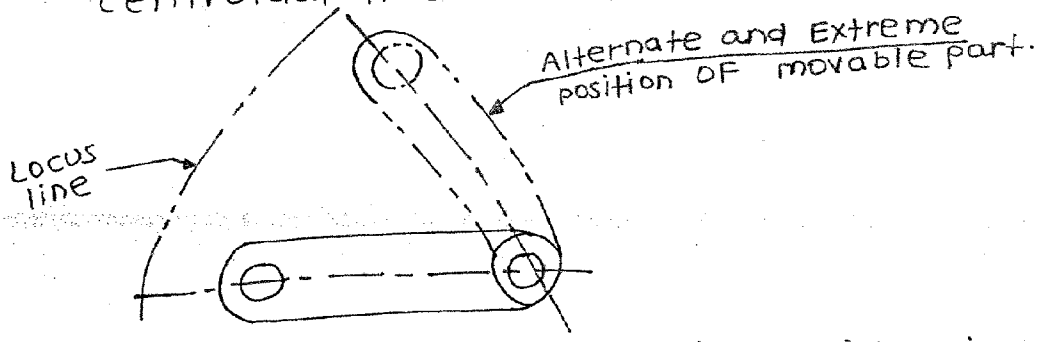
Ex: centre line, Line of symmetry, cutting plane.





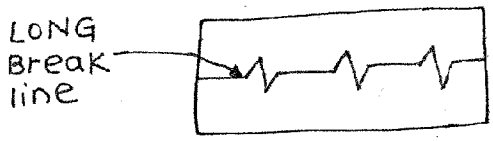
(v) LONG Dash double dotted Narrow line (phantom line

EX: Locus line.
Alternate and Extreme position of movable part centroidal line.



(vi) LONG continuous Narrow line with zig-zag

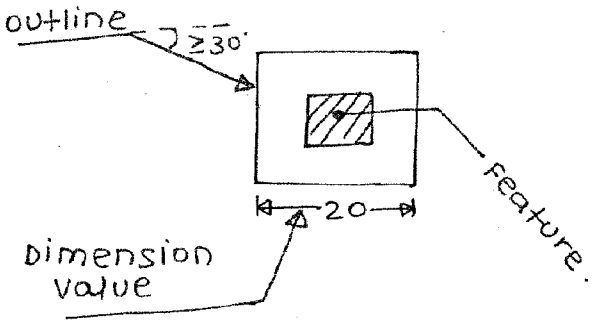
EX: LONG Break line.



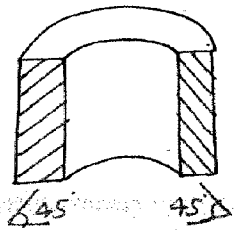
NOTE:

(i) Leader Line:

→ It is a continuous narrow line, made at an angle $\geq 30°$. which is used to refer dimension value, outline or Feature of an object.



(ii) sectioning of an adjecent part - ——— of an object is shown by hatching line drawn in opposite dirn at 45°.



(iii) priority of Line in case of overlapping

- visible Edge → Hidden Edge → centre line/ Line of symmetry →

→ centroidal line → projection line.

→ priority decreases.

(iv) To draw smooth curves likes ellipse, Hyperbola we use French curves.

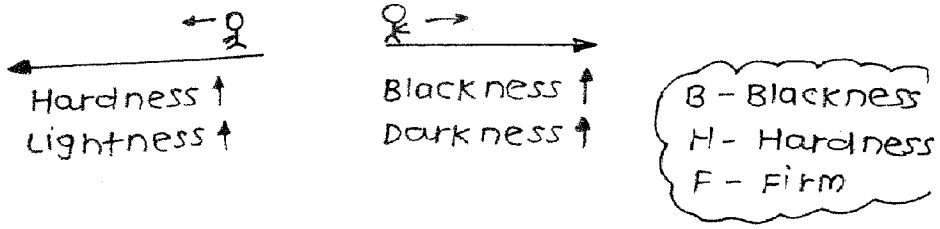
Ex:

(3.) Lattering [IS 9609 : 2001]

(i) It is a method to write notes, Dimension value, Letter etc using HB pencil.

(ii) Grades of ~~plane~~ pencil.

9H, 8H, 7H ---- 1H, F, HB, 1B, 2B ---- 9B



(iii) In Engg drawing, we use 3 types OF penc
HB, H, 2H

(iv) preparation OF pencil

• conical

used in writing letter, Notes.

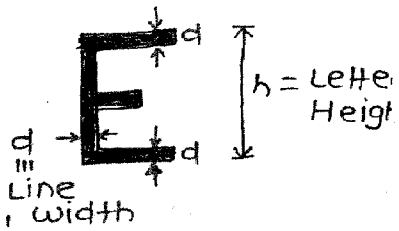
• chiesel

used to draw straight line

• Bevel type

used to dra Smooth cur

(V) IF h = Letter Height.
d = Line width.



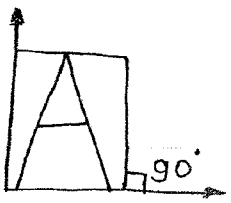
Then,

• IF $\frac{h}{d} = 14$; It is lettering type 'A'

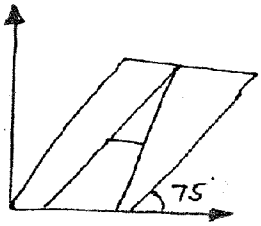
• IF $\frac{h}{d} = 10$; It is lettering type 'B'.

(vi) Both A/B type OF lettering can be represen -ted in either OF the two ways.

(a) vertical TYPE



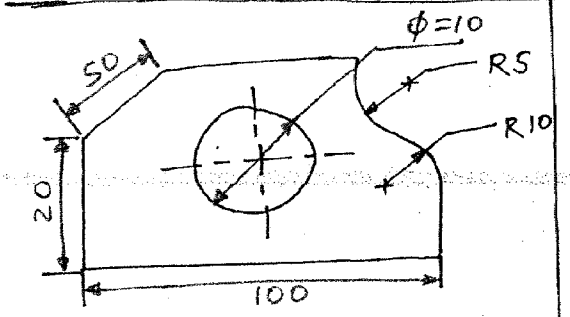
(b) Slopped type



<4.> Dimensioning [IS 11669 : 1986]

- Method of dimensioning

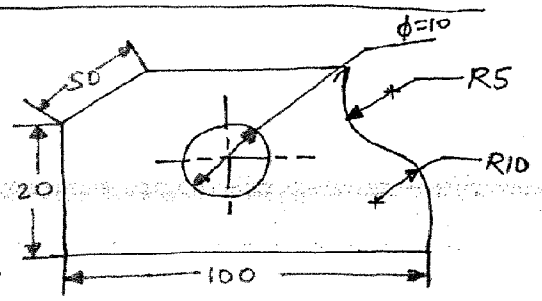
Aligned Method



(i) The dimension lines are continuous.

(ii) The dimension values are alinged as per the dimension Edge

Unidirectional Method.



(i) The dimension lines are broken preferrably in the middle.

(ii) The dim. values are written in upwrite position.

NOTE:

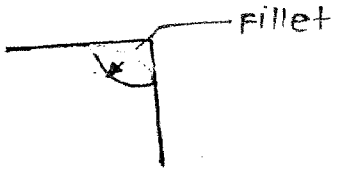
(1) In Engg. drawing circle is dimensioned by its diameter(ϕ). Ex - ϕ 10

(2) Arc is dimesionshed by its radius (R).
Ex - R 5

(3) sphere is dimensioned by its spherical radius (SR) or its spherical diameter (sϕ).
Ex: SR 10
sϕ 20

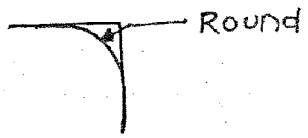
(4) Rounding OFF an interior corner is called as Fillet.

Ex:



5. Rounding off an exterior corner is called as Round.

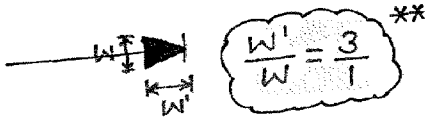
EX:



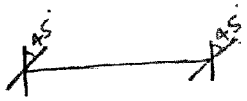
6. Dimension line Termination

(a) using Arrow head.

- open arrow head.
- closed arrow head
- closed & filled arrow head



(b) oblique strokes

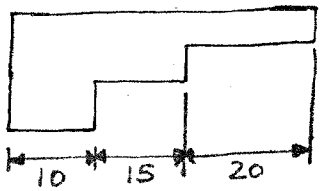


- Arrangement of dimension

(i) continuous or chain dimensioning

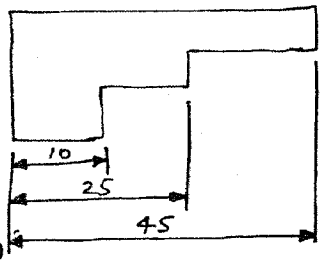
EX:

- All the dimension value lie along a line.



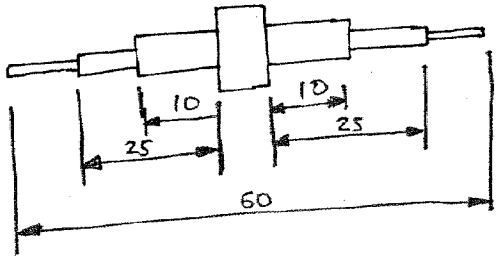
(ii) progressive (or) parallel dimensioning

- All the dimension values are parallel to each other measured from common refrence called datum line with least value nearer and progressively increasing outward.



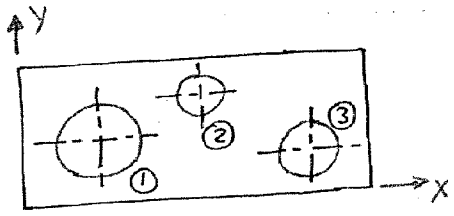
(iii) combined dimensioning

→ It is combination of above two.



(iv) co-ordinate dimensioning

	x	y	ϕ
1.	5	7	8
2.	7	9	3
3.	10	5	5



It's me Vid358

Date 2-5-2025

Standard and Quality

- Maintenance
- sampling
- Quality
- Quality control control
- process capability
- TQM
- Six sigma
- Quality in service sector.
- ISO
- LPP
- Inventory
- Line balancing

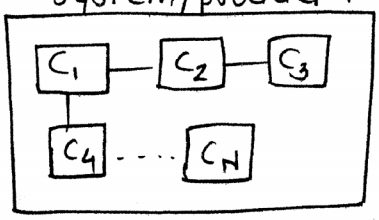
* Maintenance *

Reliability :- The Reliability of product or system can be defined as the probability that the product will perform it's require function under the specific condition for the certain period of time

R = function (time) $\quad R = f(t)$

$t = 0 \longrightarrow R = 100\%$ $\quad t\uparrow = R\downarrow$

system/product.

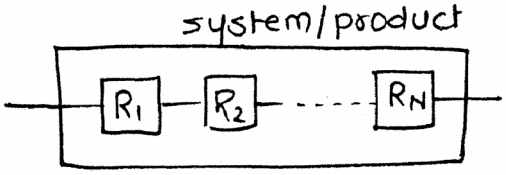


C = component

Reliability of system will depend on Reliability of individual component.

For series connection

system/product



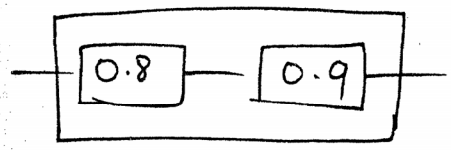
$R_S = R_1 \times R_2 \times \ldots\ldots R_N$

R_S = Reliability of system

R_1 = Reliability of component ①

R_2 = Reliabi ②

Assume that a product has two component both of which must work for the product to fun^{n}. comp. ① has reliability of 80% and comp ② has reliability of 90% - compute the reliability of the system.



$R_S = R_1 \times R_2$

$= 0.8 \times 0.9$

$= 0.72$

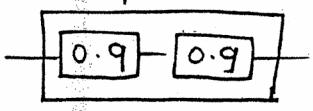
$= 72\%$

S-1 The reliability of the system is alwz less than or equal to the reliability of individual component when they are connected in series.

$$R_S \leq \{R_1, R_2 \ldots R_N\}$$

Ex. compute the Reliability of the system.

system-1

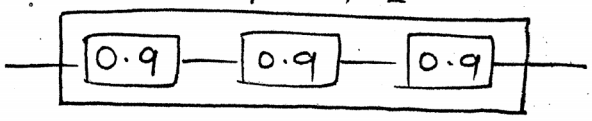


$R_S = R_1 \times R_2$

0.9×0.9

$= 0.81 \quad = 81\%$

system-2



$R_S = 0.9 \times 0.9 \times 0.9$

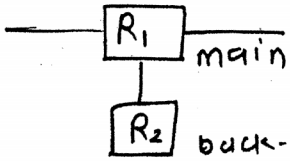
$= 0.729 \quad 72.9\%$

S-2 As the number of component in the series increases the reliability of system decreases.

How to increase the reliability of system.?

by providing backup to the critical component.

* parallel connection.



$R_S = R_1 + R_2(1 - R_1)$

$R_S = R_1 + R_2 - R_1R_2$

Two power generator provide electricity to a facility i,e main & backup generator the main Gen. has reliability of 0.95 and backup has reliability of 0.90 compute the Reliability of system.

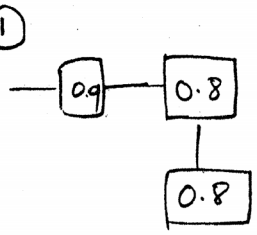
$$R_S = R_1 + R_2(1-R_1) = 0.95 + 0.90(1-0.95)$$

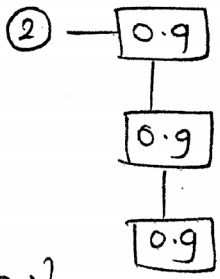
$$\boxed{R_S = 0.995} \qquad \boxed{99.5}$$

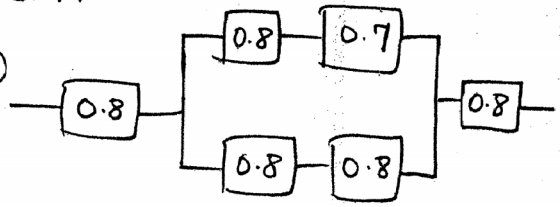
S-3 : The Reliability of the system is always greater than the Reliability of individual component when they are connected in parallel connection.

S-4 As the no. of component in backup (parallal) increases the reliability of the system is Increase.

Compute the Reliability of system.

① 

② 

③ 

① $R_S = R_1 \times \{R_2 + R_3(1-R_2)\}$

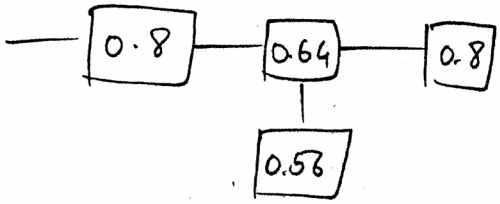
$0.9 \times \{0.8 + 0.8(1-0.8)\}$

$R_S = 0.864$

② $R_S = R_1 + R_2(1-R_1) + R_3(1-R_1)(1-R_2)$

$= 0.9 + 0.9(1-0.9) + 0.9(1-0.9)(1-0.9)$

$R_S = 99.9$

③ 

$R_S = 0.8 \times \{0.64 + 0.56(1-0.64)\} 0.8$

$= 53.86\ \%$

* Reliability prediction using exponential distribution.

It is one of the most commonly used distribution in the reliability prediction and it used to predict the probability of survival to a particular time.

$$R(t) = e^{-\lambda t}$$

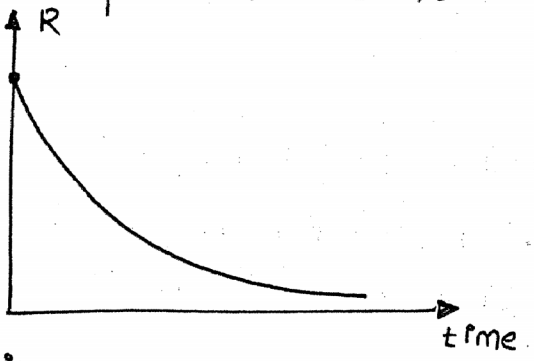
at $t = 0$ $R = 100$

$t \uparrow$ $R \downarrow$

$$R(t) = e^{-\lambda t}$$

R = Reliability

t = time



λ = failure rate.

Exponential Distribution. failure rate remain constant wrt time.

Weibull Distribution. failure rate increases/decreases wrt time.

For λ.

① MTTF → Mean Time to failure

② MTBF → Mean Time ~~to~~ Between failure

③ MTTR → Mean Time To Repair.

① MTTF

→ it is refered as average time an item may be expected to function before the failure.

→ it used for non-repairable item

Eg. Bulb — 4 → 3000, 4000, 4000, 5000

$$MTTF = \frac{3000+4000+4000+5000}{4}$$

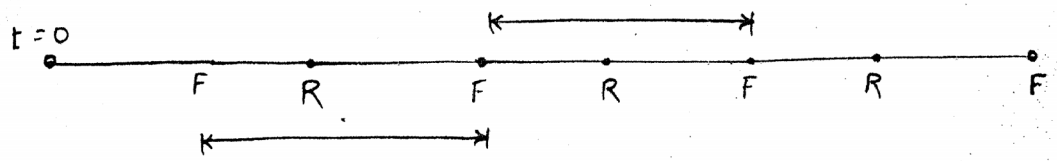
$$MTTF = 4000 \text{ hr}$$

② MTBF

→ It refers to time between two failures.

→ It used for repairable items

$$MTBF = \frac{\text{Total Device hour}}{\text{no. of repair}}$$



Total device hour = 20000 hr

no. of repair = 4

$$MTBF = \frac{20,000}{4} = 5000 \text{ Hr}.$$

MTTR.

$$MTTR = \frac{t_1 + t_2 + \cdots + t_i + \cdots + t_n}{n}$$

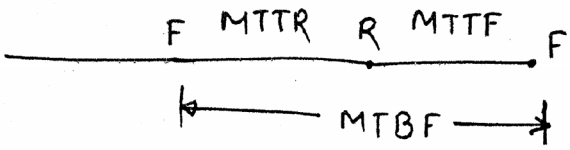
Q.

a) MTBF = MTTF - MTTR

b) MTBF = MTTF + MTTR

c) MTBF = MTTF × MTTR

d) MTTF = MTBF × MTTR



MTBF = MTTF + MTTR MTTR = 0

MTBF = MTTF.

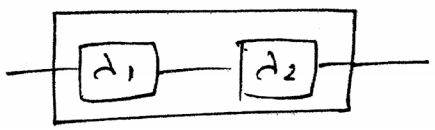
NOTE: MTBF can be used for both repairable as well as non-repairable item.

For λ.

$$\lambda = \frac{1}{MTTF}$$ For non-repairable item $$R(t) = e^{-\frac{1}{MTTF}t}.$$

$$\lambda = \frac{1}{MTBF}$$ for repairable item $$R(t) = e^{-\frac{1}{MTBF}t}$$

Ex.



$R_1 = e^{-\lambda_1 t}$ $R_2 = e^{-\lambda_2 t}$

$R_S = R_1 R_2$

$= e^{-\lambda_1 t} \times e^{-\lambda_2 t}$

$R_S = e^{-(\lambda_1 + \lambda_2)t}$.

Q. The Reliability of a repairable product by exp. disti. is given in hour as $R(t) = e^{-0.004t}$ and mean time to repair is 20 hour. The MTTF of the product in hour is ?

a) 250 b) 150 c) 270 d) 230

$$R(t) = e^{-0.004t} \qquad R(t) = e^{-\frac{1}{MTBF}t}$$

$$\frac{1}{MTBF} = 0.004 \quad MTBF = 250$$

$$MTBF = MTTF + MTTR \quad 250 = MTTF + 20$$

$$\boxed{MTTF = 230}$$

* Maintainbility :-

It is the probability that failed component or system will be restored to a spacific condition within a period of time when maintainance is performed according to prescribed procedure.

* Availability

It is the probability that a component or system is performing it's required function at a given point of time when it is used under the stated operating condition.

$$Availability = \frac{uptime}{uptime + Runtime}$$

$$A = \frac{MTBF}{MTBF + MTTR}$$

ENVIRONMENT & ENERGY.

18 march 2025

Syllabus

★ → Most important.

1) Basics of environment
2) Biodiversity
★ 3) Environmental pollution & Environmental Degradation
★ 4) climate chang and Global warming
★ 5) Ozone and ozone Hole.
6) International Environmental conferences
7) International Env. Treaties, conventions & protocols
8) Environmental Impact Assessment (EIA)
★ 9) Energy / Green Energy

Source

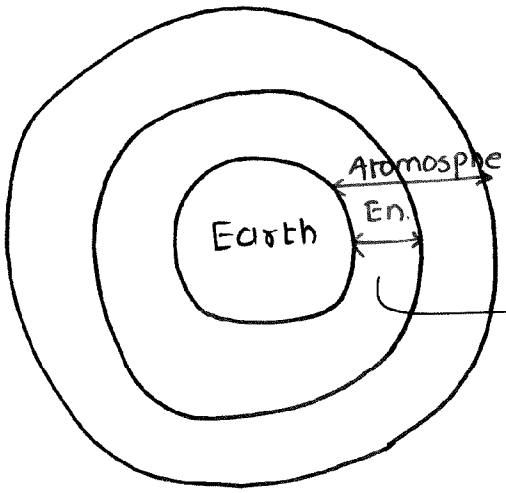
1) class Notes
2) printed Notes → Green Energy
                 → national parks

It's me Vidhyacharan.

NOTES: Vid 3.58

Basics of Environment.

What is environment ?



→ surrounding of earth where life exist bcoz of existance of favourable Biotic & Abiotic elements.

- Biotic → Living flora & fauna
- Abiotic → Non-Living beings.

Types of Environment.

- Natural Environment
- Artificial Environment.

Natural Environment

when flora and fauna are allow to grow in their natural form without any human interferance then Env. is known as Natural Env.

Ex. Forest Grassland Desert. ocean

Artificial Environment.

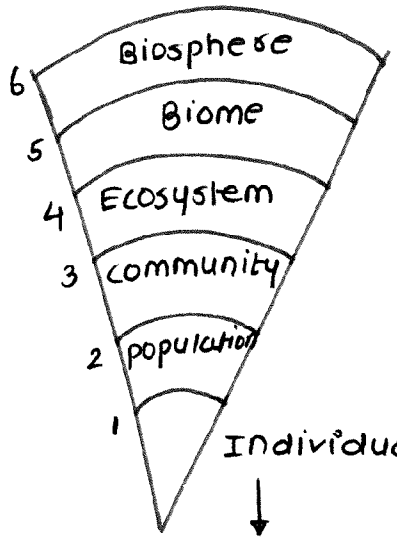
when flora & fauna are allow to grow in designed form to serve the interest of Human being (TO improve Aesthetic feeling) the it is known as Artificial Env.

Ex. ZOO, Garden, Aquarium.

components of Environment

- Biotic (Living being ~~and~~ i,e Flora & fauna)
- Abiotic. Non-living beings i,e soil, sunlight, temp water, air etc.
  - Heat Energy
  - Quantification of Heat Energy → °C/k/F

Hierarchy of Environment [i,e Life can be studied at following levels in Env.].



Individual / Individual species.

↓

Living beings who look alike / similar & have similar characteristics known as Living beings from same species.

Ex. All Human beings belongs to Homosapiens species.

Till this date 1.75 million species of flora & fauna are discovered and as per an estimate there no. could be 13 million.

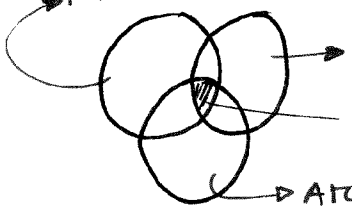
Population :- sum of all individuals who are from same species & Living in same Geographical Area is known as population.

community :- sum of all individuals who are from diffrent species & Living in same geographical area is known as community.

Ecosystem :- sum of Biotic and abiotic components.

Biome :- sum of Homogeneous Ecosystem is known as Biome.

Biosphere :- Bio → means Life
sphere → means zone
→ it is zone of Life.



upto height of 16 km
Living Bacteria → identified in Atomosphere

Land.

ocean
upto depth of 9 km living
Microorganism — identified in ocean.

Mariana Trench [- 11034M]

S-1 Biosphere is sub types of environment

S-2 Generally biosphere becomes equal to env.

Both statements are correct.

Man. Environment Relationship.

⇓ perspective

Determinism

Env. is Dominant over man.

Ex. During 6 month winter Night in polar Area human being Lives igloo

possibilism

man is Dominant over Env.

Ex. Artificial Rainfall.

probabilism : man and Env both are necessary for each other Existence.

ECOLOGY

→ It is Greek word

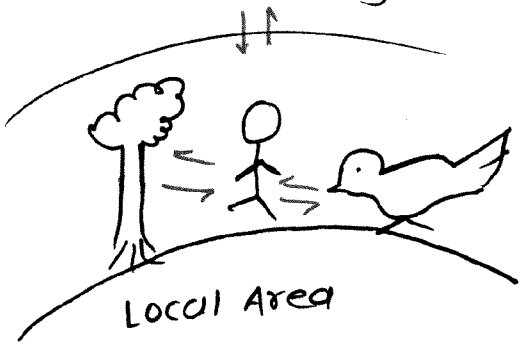
→ concept was given by Ernst Haeckel in 1869 A.D. (German scholor).

→ it is made by oikas (means habitat) and Logos) (to study or describe)

∴ combined meaning of oikas & Logos is study of habitat of flora and fauna.

What is ecology ?

Ecology is a science under which we used to study Interaction of flora & fauna of a given local area among themselves and their combined Interaction with surrounding Environment.



Approaches in Ecology

There are two type of approach or two methods to study Interaction in Ecology detwis given below.

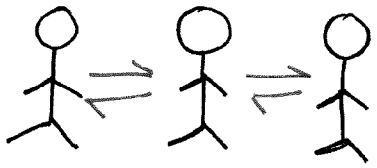
Autecology (population Ecology)

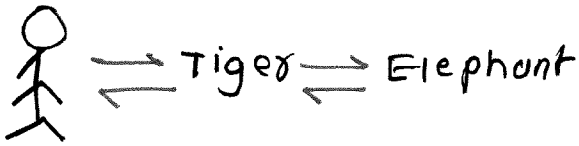
when interaction is studied among Individuals who are from same spacies.

synecology (community ecology)

when Interaction is studied among individuals who are from different spacies.

Ex.





NOTE : 1. When Interaction is studied among individuals of all spacies of flora and fauna (1.75 million) then synecology become equivalent to Ecology.

2. In Ecology Interaction is studied at 3 levels
1st among fauna 2nd among flora
3rd combined Interaction of flora and fauna with surrounding Environment.

Significance : Ecology has emerged as applied science & it has following Application.

a) D.P.R (Detail project Report) of any development project.

b) E.I.A (Environmental Impact Assessment) of any development project.

c) E.P.R (Environmental performance Report)

Ecosystem

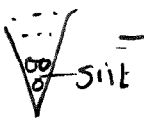
→ concept was given by A.G. Tansley in 1935

→ However concept of Ecosystem was elaborated by E.P.odum. that's why he is known as father of Ecosystem & Ecology.

Ex. E_1 (Human) E_{10th} = Tiger.

if Tiger is extincted → then no. of Herbivores

overgrazing → soil errosion → siltation of River



→ At time of → flood → damage of standing crops
Rainy season

→ Food insecurity in Human being.

Ex 2. E_1 = Human being E_{Worm} = Earthworm.

In few pockets of punjab and Haryana Earthworms are extinct bcoz of excessive use of pesticides and synthetic Fertilizer.

↓

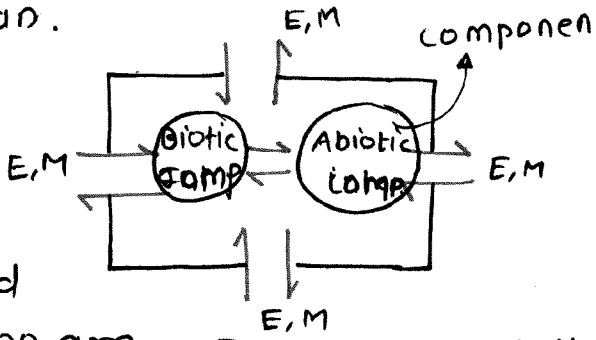
So soils of this area became infertile

↓

that's why food grain production & productivity declined.

↓

Food Insecurity in Human.



E: Energy M: matte

What is Ecosystem?

Ecosystem is a type of system which is found in Environment It is mainly made by Biotic and abiotic component where they two are Interconnected with each other in such away that they ~~two~~ two function one entity. and interact with their surrounding Env. for exchange of energy and matter.

Ecosystem is an ex. of open system bcoz across the boundary of ecosystem there is exchange of energy and matters.

Types of Ecosystem

- Natural Ecosystem
  - Terrestrial ecosystem (TE)
    - Hard Rock surface on continent
    - Ex Forest, Grassland Dessert etc
  - marine ecosystem (ME)
    - Ex ocean, sea
- Artificial Ecosystem.
  - TE
    - Ex zoo, Garden
  - ME
    - Ex Aquarium

Aquatic Ecosystem

- Fresh water ecosystem
  - Ex River, lake, pond/reservoir
  - They all are found on continent.
- Salt water ecosystem (marine ecosystem)
  - Ex ocean, sea

19-march-2025

Aquatic Ecosystem

- Fresh water Ecosystem
  - Ex River, lake
- Repeate हो गया
- Salt water Ecosystem. (marine Ecosystem)
  - Ex Ocean, sea

Structure of Ecosystem.

- Biotic component
- Abiotic component.
  - organic Energy
  - Inorganic Energy
  - physical Energy

producer/Autotroph

- Phototroph
  - All Flora
- chemotroph
  - → cynobacteria (Blue Green Algae)
  - → Iron oxidising Bacteria
  - → mangenous oxid -ising bacteria.

consumer/Heterotroph

- microorganism
- macroorganism
  - → Herbivore (Goat, Rabit
  - → carnivore
    - Frog-Sanke-Eagle
  - → omnivore
    - Human, monkey ant

Locomotion capacity Food intake habit

- Generalist.
- specialist

Detrivore/saptotroph

Bacteria, Maggot Earthworm.

PROJECT MANAGEMENT

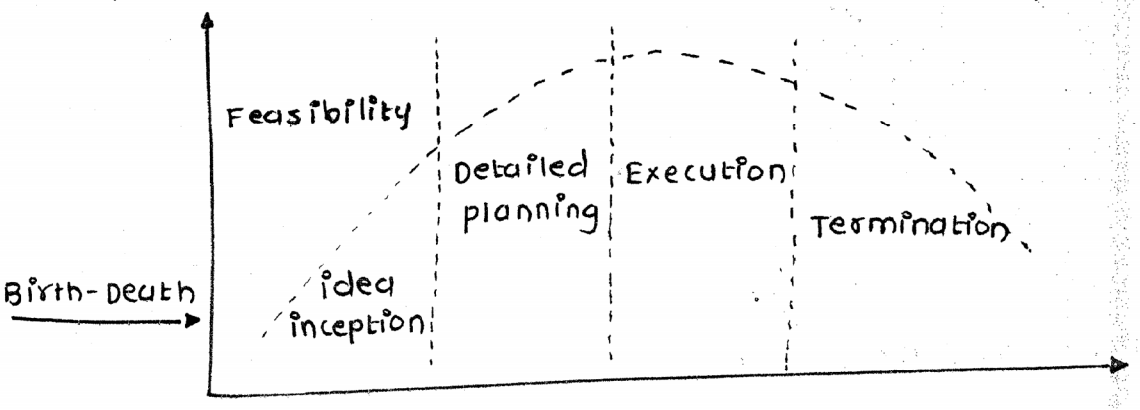
Gunjan chaudhary
8882873075

Introduction :-

project → unique and temporary endeavour to get a product service or any other result.

operation → • continuous
• cycle
• permanent.

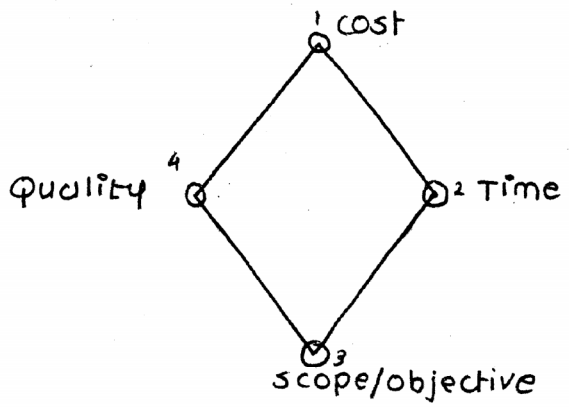
project cycle.



phases of a project :-

1) Feasibility → identification
2) planning → formulation
3) Execution → max effort → Appraisal
4) Termination → min effort → Implementation

* Diamond constraint :-

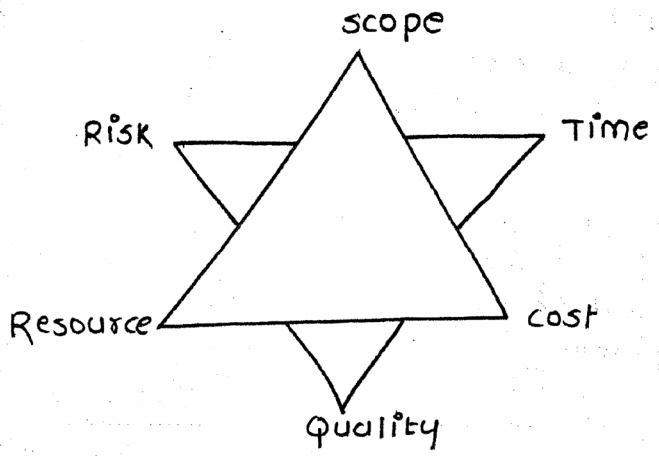


3.1 - Healthy - zero maida, No sugar
3.2 - Green salads, sprouts
3.3 - coaching Institutes

* condition :- only 2 constraints can be controlled

Time	Quality	cost
Quick	TOP	High
Time ↑	TOP	cheap
Quick	Low	cheap

* star constraint.

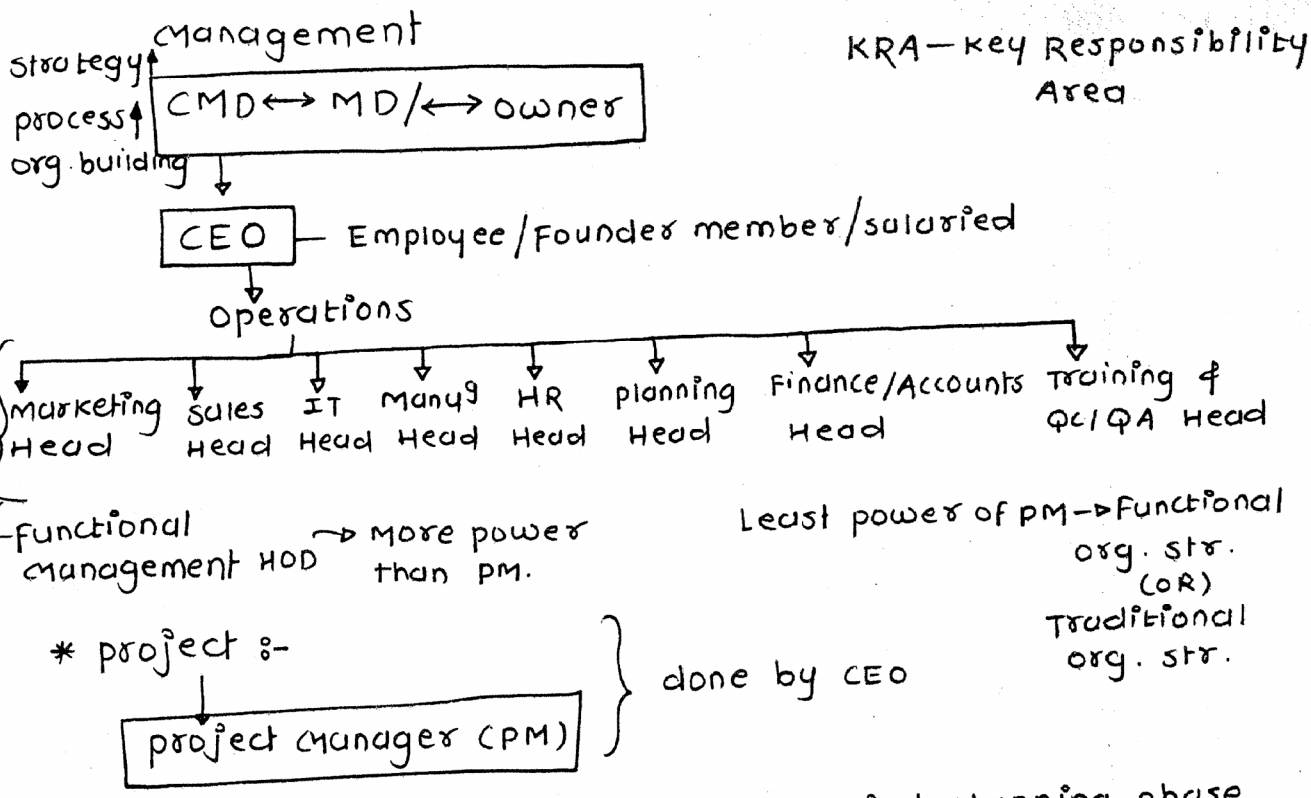


Risk :- outdated with Time

- competitor → Boot strap business → investor - founder himself or herself.
  - Boot strap → can't run for Long time.
- Loss (Fund pool)
  - → Buffer → Angel Investor (venture capitalist)
    - Angel Investor → investment in growing
    - venture capitalist → investment in profit (Mega) → Group of investors.
- company's evaluation decided by first investor

* Resources
  - Manpower
  - Material
  - Machine
  - Money
  - Tech
  - Data

project organization.



PM is hired before entering into project planning phase.

project charter :- official document that authorizes PM to use all the resources of the company to execute the project.

* if there is not project charter - No PM is hired.
* in a project HODs are more powerful than PM.
* Duplication is allowed, resource sharing not allowed.

→ This structure is functional organization structure (FOS) and is generally for small companies that work for small Territory.

→ The owner of the company involves day in and day out activities.

→ functional managers do not take responsibilities of project completion.

→ Moreover project managers do not have complete authority of driving the manpower of as per the project.

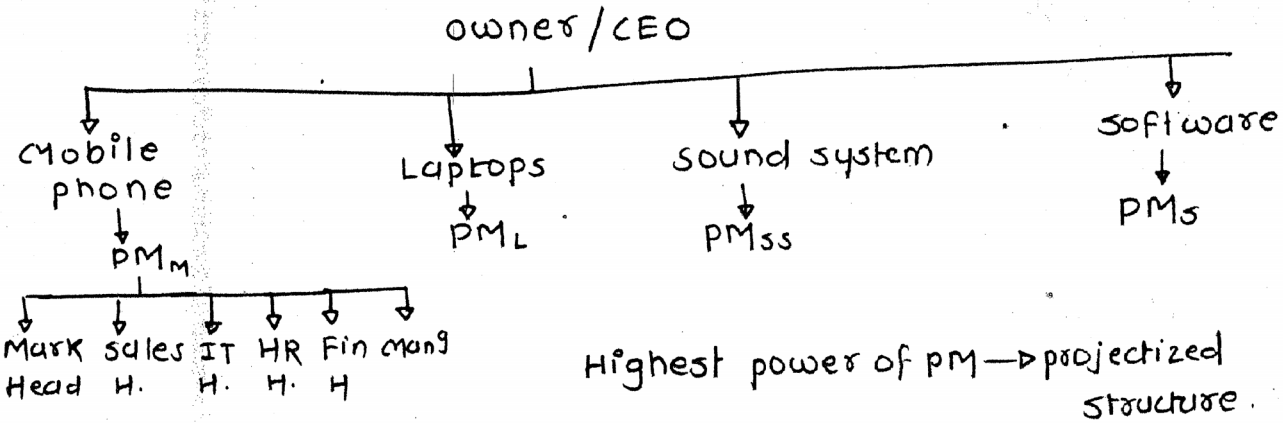
→ since the owner holds maximum power and authorities, the responsibility of project failure will be only on the owners shoulders.

→ NPA (non performing asset) are difficult to identity.

→ project manager has limited power

→ customer addressal is poor.

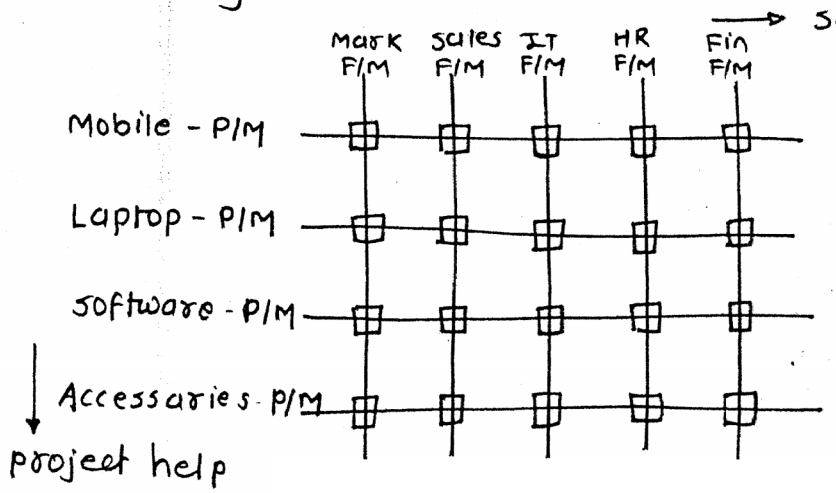
* projectized org. str.



Highest power of PM → projectized structure.

* Matrix org. structure.

- weak matrix
- Balanced matrix
- strong matrix → P/M most power among these three.



SOP :-

HR- Hiring SOP

Recruitment SOP

1) Data screening (CV)
2) Interview - dept Head
3) BGV - Background verification - pass
4) salary negotiation
5) offer letter
6) Reporting → employee ID → department Handover.

TAT - Turn Around Time.

Task Raise - TAT = 2 days

aging = 3 days

Order of P/M power :-

Functional str < weak str < Balance str. < strong str < projectized str.

Q1 who appoints the project manager.

owner - higher project manager.

→ the one who invest in project → project sponsor.

Q2. which is not a role of PM.

a) managing project scope

b) project charter → authority & KRA in project charter

c) Building project team

d) monitoring progress.

Q3. which is not an attribute of a good project manager.

→ Indecisiveness

Q4. which quality reflects a manager ability to try new approaches

→ Risk taking ability → otherwise you will not go for something new

Q5. stakeholders with low power and low interest should be

a) managed closely

b) monitored only → for downlines
manag./Dept Head do not need monitoring.

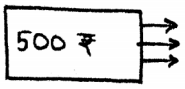
c) managed closely

d) consulted frequently.

Q6 A weakness of projectized organization is.
Duplication of resources possible.

Time value of money.

value of money grows with time only if it is invested.



inflation rate = 7 %

make sure investment return > 7 %

→ Future value
→ present value
→ Rate of invest
→ Time of investment.

$F.V = P.V(1+i)^n$ $\quad i = 10\% = 0.1$

n = no. of years

PI - profitability Index

Discounted rate method (DCF)
↳ function of time

* Net present value (NPV)
* Internal Rate of Return (IRR).

Non-Discounted rate method :-

* payback period

If 500 $ invested

after 1 year = 200 $

2nd year = 250 $

3rd year = 220 $

Total = 670 $

220 $ = 12 month

$50\$ = \frac{12}{220} \times 50 = 2.72$

$0.72 \times 30 = 22.6 = 22$ days

payback period = 2 year 2 month 22 days.

payback period :- Time period in which the investor gets back his invested sum of money.

Q. In which of the following condition investor is likely to invest

a) payback period (pp) > Target period (TP)

b) pp = TP

c) pp < TP

d) pp = 2 TP

Net present value (NPV) :-

In a project total investment to be done today is 5 Lakh.

given discount ROI offered by another investor = 8 %

Ex. Return after 1 year = 2 L

after 2 year = 2.7 L

after 3 year = 2.3 L

NPV = PV of all cash inflow - PV of all cash outflow

Total pv of all cash inflow $= \frac{2L}{(1.08)^1} + \frac{2.7}{(1.08)^2} + \frac{2.3}{(1.08)^3}$

$= 5.9921\ L$

$NPV = 5.9921 - 5 = 0.9920 = 99200$ ₹

Q. If there are 3 founders then for which one to invest with

conditions	options
1) NPV_A is Negative	(a) 1 (b) 2 (c) 3 (d) 1 & 2
2) NPV_B is positive	
3) NPV_C is also positive	
4) $NPV_B > NPV_C$	

* Internal Rate of Return (IPR)

IPR is the ROI (i) for which $NPV = 0$

Let us take $i = 18.4\ \%$

$NPV = \frac{2}{(1.184)^1} + \frac{2.7}{(1.184)^2} + \frac{2.3}{(1.184)^3} = 5L \sim 0$

Q. IPR is the rate of interest for which

a) NPV is +ve

b) NPV is -ve

c) NPV is 0

d) NPV is ∞

profitability index $= \frac{\text{pv of all cash inflow}}{\text{pv of all cash outflow}}$.

#Basic of Material science#.

→ Introduction and atomic bonding (EC+EE)

→ crystallography (EC+EE)

→ Electric properties of materials
  - → conductor
  - → Insulator
  - → semiconductor

  } EC+E

→ magnetic properties of materials (EC+EE)

→ mechanical properties of materials (video)

→ ceramics (EC+EE).

→ polymers

→ composites (video)

→ phase diagram and alloys.

source.

① class notes

② Theory book.

Telegram

anunaad22

8 march 2025

Material science

→ material science involves investigating the relationship bet^n the structure and properties of material.

→ material sc. does not deal with study of strength and stiffness (or other properties) behaviour of Engg component such as buildings machines, automobil etc, rather it deals with the study of strength & stiffness behaviour (or other properties) of the materials with which these engg component has been design.

Material :- material can be defined as something that consist of matter (occupy some space and has some mass). It is the stuff by which something can be made.

→ Engg materials can be broadly classified as

1. Metals and alloys.
2. ceramics
3. polymers
4. Composite
5. Advanced materials
   - semiconductors
   - Biomaterials
   - smart materials
   - Nanomaterials.

structure

structure of a material usually refereds to the arrangement of it's internal components

1. subatomic structure
2. Atomic structure
3. Nanostructure
4. Microstructure → The structure which can be observed with the help of optical microscope.
5. Macrostructure → The structure which can be observed with naked eyes.

Nuclear structure { NMR

properties of materials.

a property is a material trait in terms of the kind and magnitude of response to a specific imposed stimulus (excitation)

Generally, defⁿ of prop. of are made independent of material shape and size.

Mechanical property, Electrical property, magnetic property optical property, Thermal property, Deteriorative property

SiO_2 → Slowly cool → Quartz (single crystal material).

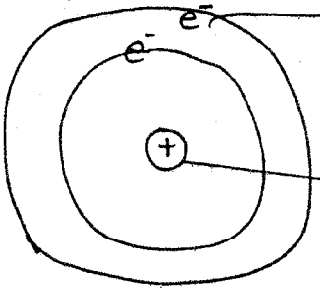
SiO_2 → Rapidly cool → Glass (Amorphous material).

processing → structure → property → performance

Atomic Bonding :-

→ matter is made of some tiny indivisible structures known as as "atom".

→ atoms can neither be created nor destroyed



e⁻ → Negatively charged particle.

charge = -1.6×10^{-19} C

mass = 9.1×10^{-31} kg.

Nucleous

it contains protons + neutrons.

+vely charged particle

charge = 1.6×10^{-19} C

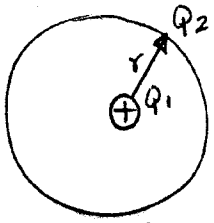
mass = 1.67×10^{-27} kg

↳ Electrically neutral particle.

charge = 0

mass = 1.67×10^{-27} kg.

Magnitude of e⁻ charge $q = 1.6 \times 10^{-19}$ C.



$$F = \frac{1}{4\pi\varepsilon_0} \frac{Q_1 Q_2}{r^2}$$

↳ Electrostatic Force (coulombic force).

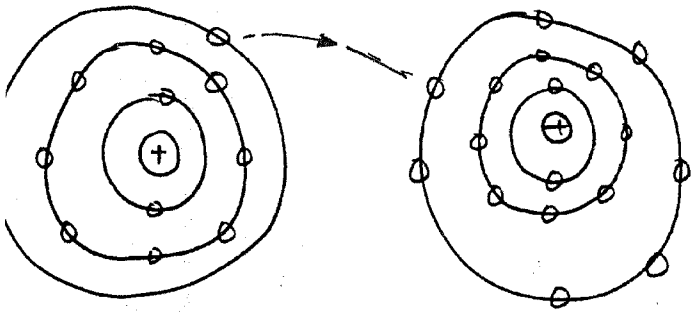
chemical bond :- The binding force b/n atoms or molecule is known as chemical bond.

chemical Bond.

- primary bond.
  - → Interatomic bond
  - → Electrostatic force
  - → strong and stable
  - Ionic bond
  - covalent bond
  - metallic bond
- Secondary bond
  - → Intermolecular bond.
  - → wander waal's force.
  - → weak and unstable

Ionic Bond :-

$Na \rightarrow 11$ ° 2,8,1 $\quad Cl \rightarrow 17$ 2,8,7



$r_c < r_A$

cation

$Na \longrightarrow Na^+ + e^-$

$Cl + e^- \longrightarrow Cl^-$ → anion

$Na^+ + Cl^- \longrightarrow NaCl$

Ionic bond is the electrostatic force ber^n cation and anion

→ Ionic bonds are non-directional bonds i,e the magnitude of bond is equal in all dir^n around an ion. it follows that

→ for ionic materials to be stable all +ve ions must have as nearest neighbour -vely charged ion in a 3-D scheme and vice versa.

→ Ionic bonds are generally formed ber^n metallic and non metallic elements. metallic elements have tendancy to easily give up their outer orbit e$^-$ so these form cations.

→ Non metallic elements have tendancy to take e$^-$ so these forms anions. so ionic bond is basically the coulombic force ber^n the cation and anion hence the it is the strongest bond among all primary bonds

→ cations are smaller than anions.

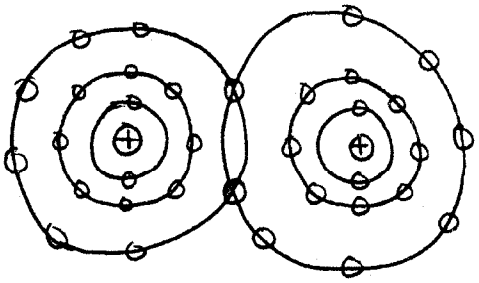
→ ionics material are inorganic
→ crystalline in nature
→ High strength and Hardness
→ low ductivity and malleability
→ High brittleness
→ Electrically and thermally insulator.
→ Bonding energies which generally range betⁿ 600 to 1500 KJ/l are relatively large hence high melting temperature.

covalent bond :- Formed by sharing of electrons among the atoms.

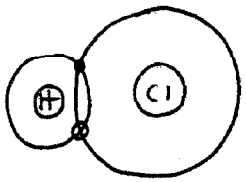
covalent bonds are directional bonds.

- It is between specific atoms and may exist only in the direction between atom and another that participates in electron sharing.

Cl → 17 2,8,7



→ Non polar covalent bond.



(Ionic + covalent)

polar covalent bond.

% Ionic character in polar covalent bond

$$= 100\left[1 - e^{-0.25(X_A - X_B)^2}\right]$$

where $X_A - X_B$ → is electronegativity difference between atoms A and B.

NOTE. if $X_A - X_B \geq 2$ → Ionic bond is formed.

GaAs
ZnS → polar covalent bond.

9 march 2025

covalent bond

polar covalent bond
- Bond is formed bet^n dissimilar atoms.
  Ex HCl, H_2O etc
- Bond has partial ionic character also (Ionic + covalent bond)

Non-polar covalent bond.
- Bond is formed between similar atoms.
  Ex. H_2 Cl_2 etc
- Bond is purely covalent.

· covalent compounds can be solid, Liquid gases.

covalent solids have
- High strength and Hardness
- High melting point
- Low ductility malleability → ability to converted into sheets under compressive stress.
- High brittleness

usually covalent compounds
usually covalent compounds are insoluble in water
Due to directional nature of bond covalent solids do not form closed pack structure.
The greater dist of e$^-$ from the nucleous higher is it's total energy
an e$^-$ orbiting very closed to the nucleous is tightly to the nucleous and pusseses small amount of energy so it is difficult to knock out this e$^-$ from it's orbit.
on the other hand an e$^-$ orbiting far from the nucleous in the outermost shell (valence orbit) is loosing bound to the nucleous and posseses greater amount of energy so this e$^-$ can be easy knock out it's orbit this is the reason why valence e$^-$ participate in bonding and chemical reaction etc.

Molecular orbital Theory.

consider hydrogen molecule.

ICT.

syllabus :-

Applications of ICT Tools In the field of e-governance e-education and networking.

ICT :- Information and communication Technology.

↓

Mobile communication.

ICT syllabus	Q. No	Solvable %
1) ICT Tools	→ 1-2	100 %
2) Networking	→ 4-5	50 %
3) e-Governance	→ 2-3	100 %
4) e-Education	→ 1-2	70 %
5) communication	→ 1	100 %

* e-Governance :-

1) What is e-Governance
2) objectives/advantages - Disadvantages
3) National e-Governance programme (NeGP)
4) Digital India programme
5) e-Governance related programme/policy.

1) What is e-Governance ?

Governance: processes taken by the govt that brings maximum welfare for the maximum number of people.

→ e-Governance means electronic form of Governance.

→ In e-Governance the Governance is based on electronic platform such as :-

- Internet
- Mobile communication
- Telephone

- e-Governance was started In India In the year 200 with the Launch of IT act (Info. Tech act).

with this act a ministry of MoICT was established.

(Ministry of Information & communication Tech).

Later on MoICT was changed into MeITY (ministry of Electronics and Information Technology).

- IT ACT 2000 :-

Any agreement of electronic/digital media is recognised in the court of Law in India.

Conclusion It was weak Law. It did not talk about e-commerce, social media etc

In 2008 section 66(A) was added in IT act 2000.

▸ In year 2017 supreme court abolished (A) of section 66 on the basis of violation of Fundamental rights.

i,e Right to Freedom of speech and expression.

)ata privacy and data protection.

) Dr. Sri Krishna committee Recommendation

)Data Localisation :- Data has to maintained in local data centres within the boundary of India. So that IT act can be applied on them.

i) An Institution will be formed by the Govt to monitor any unwanted / threat data and such type of data can be removed from the data centre only.

supreme court did not allow it on the basis that it is in violation of Fundamental Rights of "Right to privacy".

ii) Data ownership :- Data ownership lies with the creator of the data.

NOTE: From these recommendation i) and iii) has been adopted by the Govt. and it is extended to OTT platform also.

→ Later on it was extended to the content not suitable fo children that may be related to pornographic content or violence then it must be made restricted for children below 18 years of age. also the website will make sure that if any such content is available then the viewer is above 18 year's of age.

→ under IT act Doxing has also been addressed.

Doxing means hacking another pearson identity and posting content through this Identity.

- Doxing also means tracking other pearson's activity on Internet and social media.

→ The process of Removing Identifying and correcting any Doxing activity or any other defect in computer is called as De-bugging.

- The digital content is also made valid in a court of law as a proof in India.

* objectives of e-Governance.

1) e-Governance objectives is to bring empowerment of for the people through information.

2) people should participate in Governance (people participation

3) e-Governance brings responsibility and accountability. making the Govt responsible and accountable.

→ e-Governance makes people and Govt and more frequent. Therefore it brings responsibility and accountability in Governance.

) To reduce cost and time delay of a project.

↳ It can be reduced by using ICT Tools for comm.

) It brings Transparency.

Ex. i) RTI Act (Right to information act 2005).

) Mygov.in → website or App to communicate with the govt directly.

- It is possible to connect with the govt directly by prime minister Mann ki baat programme.

ii) Opendata.gov.in all data collected by the govt mode available on this platform and it is possible to access this data free of cost at any time.

NOTE. A Transparent Governance is a part of good Governance because Transparency brings Trust's between the Government and the citizen.

6) e-Governance is a tool to achieve the good governance.

1) e-Governance can reduce corruption by bringing faceless governance.

Ex. i) MCA-21 (Ministry of corporate affairs - 21)

It is a faceless corporate registration in India so as to remove corrupt practices in co-operate registrations.

* Advantages and Disadvantages of e-Governance.

1) Advantages :-

i) e-Gov. is a paperless Governance therefore it is environment friendly.

- Nagaland has become the 1st vidhansabha in India which is completly paperless.
- UAE has become the 1st Gov. in the World to go paperless Governance.

ii) Information Technology brings the information at a faster speed therefore it increases the rate of development and Empowerment.

iii) The projects can be completed in given time. therefore Monitoring and surveying of projects becomes easier using ICT.

Disadvantages:-

i) Digital Literacy: India has Large digitally illiterate population. to improve digital Literacy two programe were started by the Gov.

a) NDLM (National digital Literacy Mission). under this programme the target is to provide digital Literacy to 6-crore households.

b) PMGDISHA (pradhan mantri Gramin digital saksharta Abhiyan) Mission): under this mission the target is to provide digital Literacy to 6-crore households. particularly in Rural areas.

ii) content availability in English only

India has start developing the content in their regional Language also.

Rajasthan has become the 1st state in India to develop it's content in it's Regional Language also (Hindi).

iii) The initial setup cost for Infrastructure is very high.

iv) privacy problem:-

Data privacy and data security is always compromised in digital Governance.

Ex To remove the privacy problem steps taken by the Gov. are.

i) e-Adhar/Digital Adhar : For online transactions 16 digit adhar no. is created in place of 12-digit adhar no. from which only four information can be obtained.

i) Name ii) Address iii) phone no. iv) Date of birth.

ii) Launch of digital data protection bill.

The bill is about the protection of digital data, stop/Reduce data Leakage and also to avoid digital transactions of unwanted and socilly Immoral data.

* According to united nations characteristics of e-Governance.

1) participatory Government :- In participatory Goverment jitizen and Govt. both participate in the decision making process. therefore it is a 2-way interactions betn the Govt and citizen.

2) Accountability :- It means the Institutions and Govt. are responsible for the decision and Action taken by them.

3) Transparency :- It means making information available without hiding any important information and making it and available in such a way that it is easy to understand for the reader also the Information is direct.

4) Equity and Inclusiveness :- Equity means to bring all at equal platform and inclusiveness means to include all those who are otherwise left behind in the process of development.

Ex. pradhan mantry Jan dhan yojna → 0 bank balance account

Reservation policy, subsidiery : subsidiery to farmers in fertilizers.

ETHICS

Ethics101 Telegram.

24 March 2025

9810123649
K.M. PATHI

Literal meaning of ethics.

The word ethics come from Greek word, ethika meaning character or custom.

The word moral comes from Latin mores meaning custom.

Ethics	Morals
→ Refers to professional conduct values and principles.	→ Refers to personal behaviour
→ conveys sense of stability permanence	→ may change as acceptable social behavior
→ An ideal standard of behaviour	→ customs practiced in any given community or culture.

What is ethics ?

* a body of prescriptions & prohibitions, do's & don't's. (Jonsen & Hellegers)
* Ethics may be styled as the art of self government (regulation)" (Bentham)
* the standard of conduct derived from the philosophical and religious traditions of society" (means)
* ethics is concerned about what is right, fair, just or good about what we ~~do~~ ought to do. (preston)

contextual
situational

Ethics refers to..

- Branch of philosophy which seeks to address concept of right and wrong.
- Branch of philosophy that is concerned with human conduct,
  - → Behavioral personal social citizen
- Examination of the our moral judgements.
- an attempt to help human is leading good life by applying moral principles.

Sources of Ethics.

- God and Religion
- Human conscience.
- The example of good human beings (role models)
- political power (Laws made by state/Govt)
- professionals Associations (NSPE etc)

Ethics	Law
→ Ethics developed gradually from people's awareness.	→ Laws are written and enforced by govt/ state.
→ Ethics are guidelines for good life	→ Laws are guidelines for public conduct.

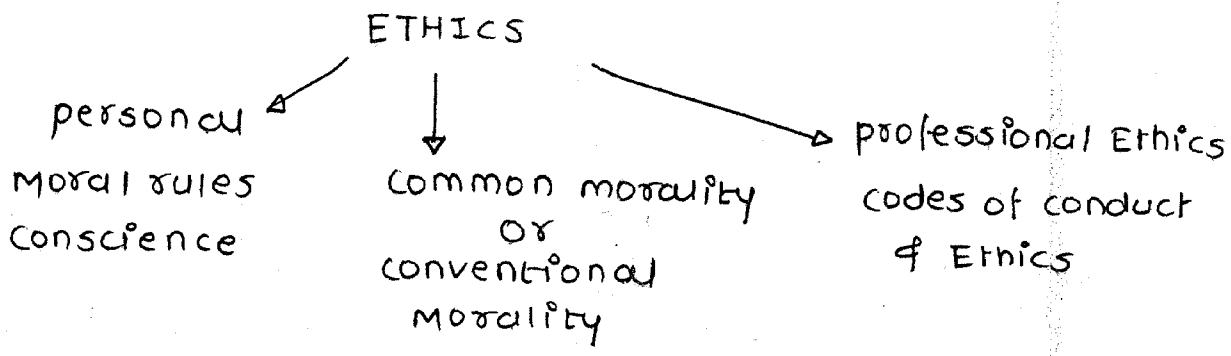
Religion VS Ethics.

Religion is a source of morality of followers

Religion = followers

Ethics = secular

Ethics	Religion
→ central aspect of ethics is the rules of living	→ following God's commands or religious rules is the central aspect.
→ Ethics is grounded in reason (critical thinking) and human experience	→ Religion is grounded in revelation or divine authority
→ critical thinking	→ faith



personal Morals.

- help your family
- help your group
- return favours
- be upright
- defer to superiors
- divide resources fairly
- respect others' property

customary / conventional morality

- Norms/customs that are passed on from one generation to another (ostracism)
- widowhood norms purity pollution norms.

professional Ethics.

- professional ethics is the set of standards adopted by professionals
- focuses on issues that are important for & in that profession
- Regulates professional relationship

- Moral obligations of a professional.

What is a profession ?

Features.

- Advanced expertise :- (skills) knowledge, continuous Learning.
- self Regulation :- standards of conduct (codes of conduct)
- public good :- serving public good.
- way of making a living
- Enter voluntarily & leave voluntarily.

Being Ethical involves

⇓

Being Ethically literate.

⇓

Being Ethically competant.

Ethical Literacy.

- comprehending complex ethical issues
- Ability to comprehend the consequences of one's action.

Ethical skills/competencies

- Be knowledgeable of ethical principles
- Recognize and promote constitutional principles of equality fairness etc
- Respect the law, serve the public law
- Respect and protect privileged information (confidentiality).
  - → Insider Trading.

- Embrace and promote ethical behaviour.
- Refuse to do something unethical.
- Maintain truthfulness and honesty
- Be responsible for one's behavior.

Common ethical principles guiding human Actions.

1. Honesty

Honesty is a duty to be nondeceptive.

practicing Honesty → No cheating.

practicing Honesty implies being NONDECEPTIVE

i,e not including in :-

- Lying : intentionally misleading others.
- Half Truth : deliberately omitting critical information → CRISIS.
- Silence : failure to speak at all when you ~~dont~~ a/l know the truth.

2. Doing No Harm.

Avoiding doing things that harm other people.

- Accidentally. (intention to hurt is missing)
- Recklessly (endangering others lives)

Requires us to avoiding harming others in direct or Indirect ways.

- Physical
- Verbal
- Financial (Bribe)
- Emotional

3. Fidelity (Loyalty, Dedication)

- You should fulfill your commitments (agreements, contracts, promises, oaths etc).
- you should act faithfully in relationships.

What is Engineering Ethics?

According to martin & schinzinger, Engineering ethics relates to the study of the -

- Moral issues & decisions confronting individuals and organisation involved in Engineering.
- The study of related questions about moral conduct character policies & relationships of people & corporations involved in technological Activity.

25 march 2025.

Why Engineers need Ethics?

- studying ethics makes an engineer expert in recognising moral problems & issues in engineering.
- Makes an engineer capable of comprehending the value conflicts involved in the issues.
- Ethical awareness promote ethical behaviour among engineers.

Ethical Decision.