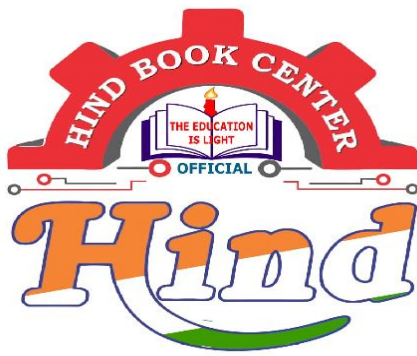




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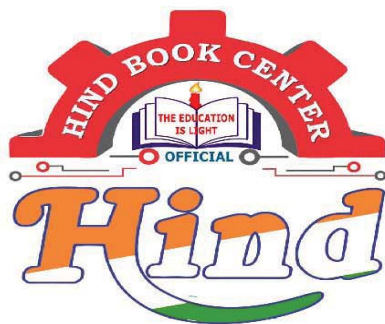
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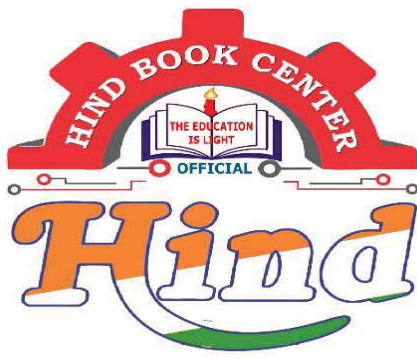
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Current Affairs

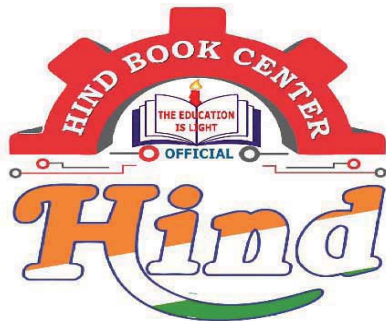
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Current Affairs

→ 14-15 ques

→ Economics - 4-5.

→ Books Author - 1

→ Sports - 2 or 1.

Dynamic Current affairs.

- Current affairs of National and International importance
- Political development.
- Science & tech | Environment
- Defence.
- International
- Sports • Awards and Honours.

Political developments (Domestic)

→ Presidential Election 2022.

Imp't Ases ↓

- (President/VP election)
- (Azadi Ka Amrit Mahotsav)
- (^{Corona} Russia - UK raine War).
- (Sports - FIFA) / Olympics, w.cup.
- (State elections).
- (Energy crisis in world).
- (Nuclear power plant).
- (Financial Condⁿ of India & the world)
- (India, china, Pak, Sri Lanka),

Static Current affairs

- Current affairs related to the constitutional articles, Scientific and environmental terms, laws, etc.
- Books and authors.
- World Heritage sites.
- Important places.
- Important personalities.
- Centenary / Anniversary of imp. events.

14-15 quesⁿ

Economics - 4-5.

Books/Author - 01

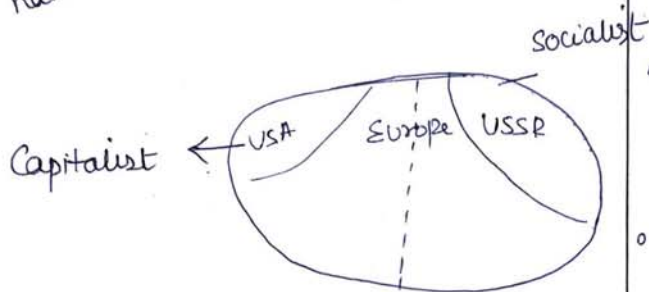
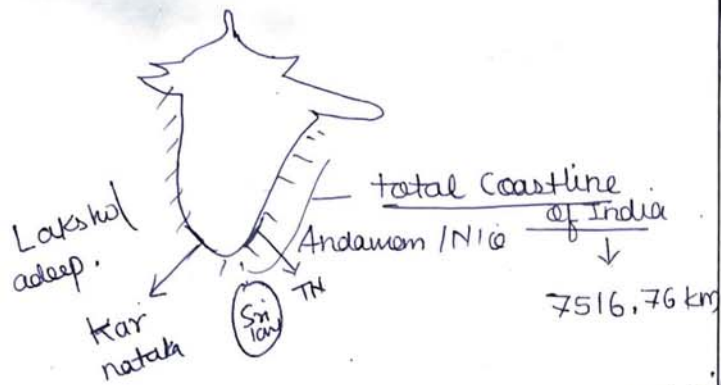
Sports - 01/02,

Sci tech / Env / Def - 4/5.

Awards / Honours - 1.

Rare events - 1/2.

Imp development in Nat / Intⁿ - 2/3.



(Non-alignment movement - NAM)

~~Theore~~

There are 3 types of economies in world:-

1. Capitalist Economy:

- Factors of production lie in the hands of private sector.
- Govt has min role in factors of production.
- USA, UK, etc
- Concept was given by : Adam Smith

↓
Book: Wealth of Nations.
Concept: Laissez faire
↓
(Min interference by govt)
↓
Capitalist economy.

2) Socialist Economy:

Means of production lies in the hands of state / govt.

- No private production.
- Concept of Socialist economy - Karl Marx (Germany).
- USSR → Revolution (1917)
↓
Bolshevik Revolution.
↓
lead to formⁿ of Socialist govt.

- USSR adopted socialism.
- China adopted Communism.

USSR

Glasnot (Openness).

Perestroika (Restructuring)

Mikhail Gorbachev (Russian President)

- In 1985, China adopted open door policy for improvement in Chinese economy.

(iii) Mixed Economy.

- Factors of production lies in the hands of state and private sector both.
- Concept given by John Maynard Keynes
↓
Keynesian economy.

eg: India.

Sectors of Economy

3 sectors of economy:-

(1) Primary sector:-

It uses Natural resources as the direct product.

Agriculture, Horticulture, Sawy,
Bee Keeping, Mining.

(2) Secondary sector:

It uses the product from primary sector as raw material,

eg: Manufacturing, processing of food, etc.

(3) Tertiary Sector:

It involves ~~service~~ service sector.

eg. Banking, Finance, Tutions, etc.

(4). Quaternary Sector:-

It is related to knowledge economy. It involves R&D, training, skill development, etc.

Important terms

1. Repo rate:-

• RBI is also called as Bankers Bank. RBI is responsible for controlling monetary policy, (money supply) in the market.

• RBI is responsible for controlling all the retail banks in India.

• The rate at which RBI gives loan to retail Banks is called as Repo rate.

2. Reverse Repo rate:-

Rate at which Banks gives loan to RBI.

Bank rate:— Rate at which Bank gives loan to public.

Inflation:— Rate of increase of Cost and prices.

- If market has more money, inflation increases.
- If market has limited money, inflation decreases.
- If Repo rate is decreased by RBI then inflation increases (Repo rate $\downarrow$; Inflation $\uparrow$).
- (Reverse repo rate ~~###~~ = Repo rate + 1%)
- VVP for this year
Presidential Election 2022

India is a republic country which means that Head of the state is elected ~~###~~. Since in India, Head of the state is president and therefore the president is elected while in Britain it is not a republic but monarchy state and therefore the head of state is not elected but it is hereditary.

India Conducted presidential election on 18th July '22 to elect its 15th president in 16th presidential election *

- The first president of India, Dr. Rajendra prasad was elected for two consecutive terms.
- According to Indian Constitution, Article no 52nd there will be a president of India. Election for the next president must be completed before the expiry of the term of current president. It means that post of President of India will never remain vacant.

• The president of India is only the nominal head but still the powers of president include

- President is the Head of the executive, legislature & Judiciary.
- President is the Supreme Commander of all the armed forces (Army, Airforce, Navy).

Therefore the presidential election in India follows a Nominal process only while the election of Prime minister follows an elaborate process.

Details of Presidential Election.

Presidential elecⁿ is diff^t than the election of PM since common public don't vote directly for the presidential election while the president of India is indirectly elected by the electoral college and electoral college consists of ¹⁾ elected members from ^{parliament} Lok Sabha and Rajya Sabha.

2) elected members from state legislative assembly.

3) elected members of union territory where legislative assembly is present (these two union territory of Delhi and Puducherry)

• who can't participate in the Presidential election?

(i) Nominated members of LS and RS.

(ii) Nominated members of state legislative assembly.

(iii) Members of Legislative Council (Vidhan Parishad).

How presidential election takes place?

The process of presidential elecⁿ is such that there is equal representation of state through legislative assembly and the Centre through the members of parliament. The value of votes assigned to the members of legislative assembly, and MP are different. The approximate value of each vote of MP is approx. 700 while the value of vote of legislative assembly member depends upon the state. The value of vote of MLA is calculated according to the formula given as:

$$\frac{\text{total popⁿ of state}}{\text{total members of legislative assembly} \times 1000}$$

Note: The total value of votes of MP and MLA is approximately 5 lakh each.

(Only 4 Candidates)

- The presidential election is conducted through Ballot paper and not through EVM.
- The presidential election takes place through Ballot paper only and EVM's are not used.
- There is no option for NOTA in the Ballot paper.
- In this counting of election takes place for the first preference of the candidate. Each member cast their vote in order of their preference and the member getting highest no. of first preference is declared as winner. But at the same time the winner must also cross the majority mark. The majority mark means the winning candidate must secure 50% of the total quota of votes + 1 vote.
- The presidential election takes place according to the system of proportional representation through Single transferable vote

where single transferable votes means the votes of candidate having lowest preference is transferred to the candidate having their second highest preference.

In 2022 election candidate from the ruling party was Draupadi Murmu, she was acting as the governor of Jharkhand and she came from a tribal community and she belongs to Orissa while opposition party candidate was Yashwanth Sinha who was a former finance minister in Atal Bihari Vajpayee government. There were incidents of cross voting also. In presidential and Vice presidential elections cross voting is also allowed.

Cross voting means the members can vote for their choice and without suffering from the cancellation of their membership.

Eligibility criteria to become the
— President of India —

- The person must be the citizen of India and must've attained a min. age of 35 years

- At least 50 proposers and 50 seconders should propose / second the name of the candidate.

- The proposal and Secunder must must come from the electoral college. An elector can't propose and second multiple candidates.

- The concept of proposal and Secunder was introduced in 1974. So that non-secular candidate can't participate in the presidential election. Also the limit of the no of candidate was restricted to 4 candidates only.

- The candidate must have the qualifications to become the member of parliament.

• Qualifications to become the member of parliament are:—

1. must be citizen of India

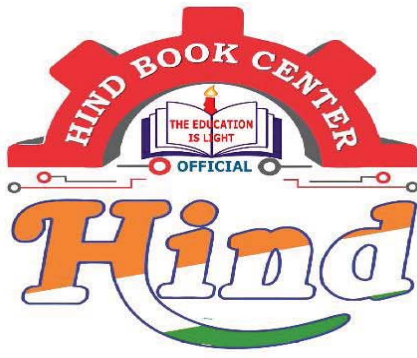
2. Must've attained the min. age of 25 years.

3. Must be a voter for any ^{parliamentary} constituency in India.

4. Member of parliament candidate also require proposer and seconders. if the candidate is coming from a political party then only one proposal and one seconder is req. and If the candidate is coming from Independent Background then atleast 10 proposers and 10 seconders are required.

5. The candidate must submit a security deposit of atleast ₹2500.

6. The candidate must not hold any office of profit in the central or state government.



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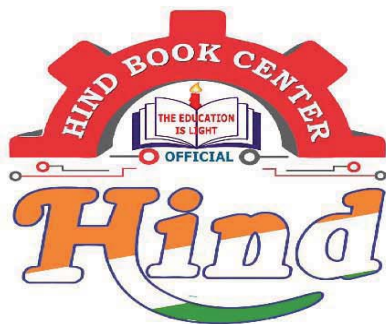
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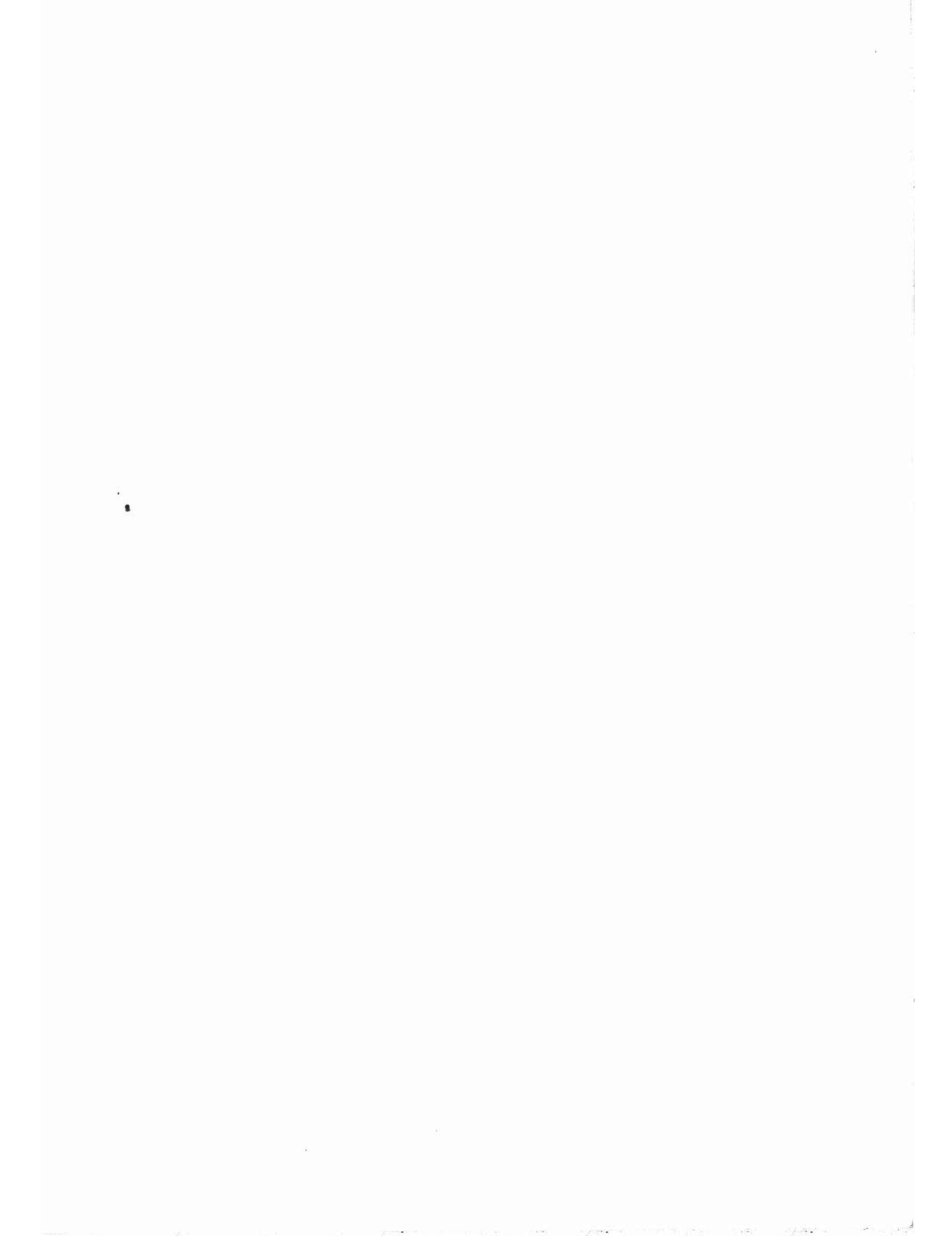
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ENVIRONMENT & ENERGY

Syllabus :

- (i) Basics of environment
- (ii) Biodiversity
- * (iii) Environmental Pollution (EP) and Environmental Degradation (ED)
- (iv) Climate change & Global warming
- (v) Environmental Protocol, convention & Treaties
- (vi) Ozone Hole & Related issues
- (vii) Energy
- (viii) E.I.A.

• MARKS = 20% Questions of paper-I

(12-15) QUESTIONS

→ 7-8 = conceptual
→ 6-7 = Concept + current

• Current Affairs → Made easy magazine Annual

• Study Materials

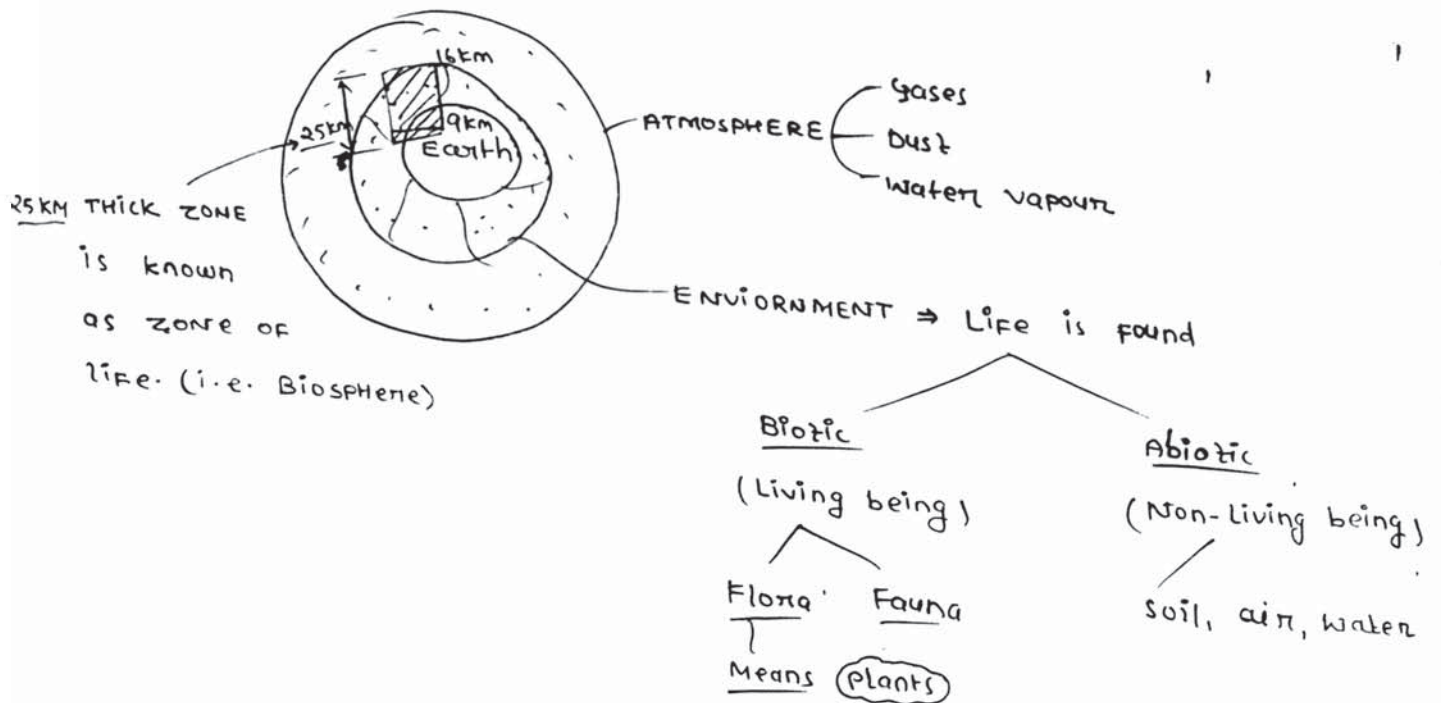
- class Notes
- PyQ
- Theorybook
- current magazine

(Made easy C.A.) → Annually.

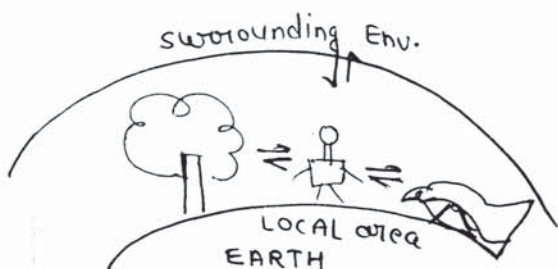
ENVIRONMENT?

DEFⁿ: Environment has been derived from French word "Environnement" / "Environ" which means to surround something.

Therefore Environment refers that surrounding of earth where life is found bcoz of favourable Biotic & Abiotic components / Fact.



ECOLOGY = ECO + LOGY
 | |
 Environment science



⇒ Interaction
|

Exchange of energy and matter

- THE word Ecology is Greek Term.
- Ecology is made from "Oikos" & "Logos" where Oikos means Habitat / Abode place and Logos means to study or describe.
- THE term "Ecology" was first time coined ^{and defined} by ERNST HAECKEL (German scholar) in 1869 A.D.

DEFN: Ecology is a science under which we use to study Interaction of Flora & Fauna among themselves & their combined Interaction with surrounding Environment.

APPROACHES TO STUDY ECOLOGY :

1. AUTECOLOGY

[Population Ecology]

- Under it Interaction is studied among individuals of same species.

2. SYNECOLOGY

[Community Ecology]

- Under it Interaction is studied among individuals of different species.

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

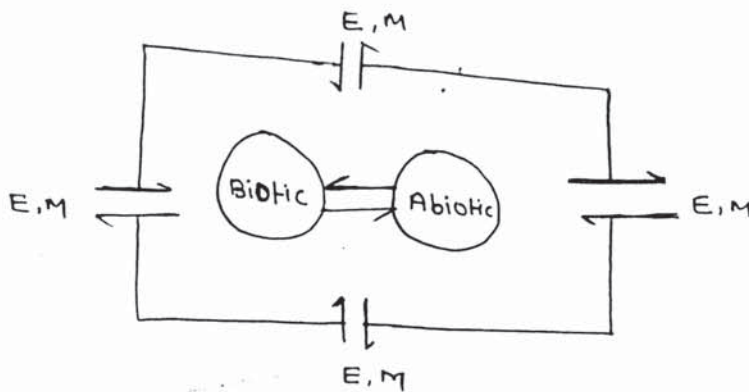
However it was elaborated in detail by "E.P. ODUM".

"E.P. ODUM" is known as Father of Ecosystem, Ecology

Ecosystem = Eco + System
 |
 Environment

is an Entity which is made from more than one elements where all elements are interconnected with each other in such a ~~system~~ way that if functioning of one element get affected then others are also affected

DEF^N: Ecosystem is a type of system which is mainly made from Biotic & Abiotic components where they are related in such a way that they behave as one entity and interact with their surrounding for exchange of E & M. Therefore ecosystem is an example of ~~Ecosystem~~ OPEN system.



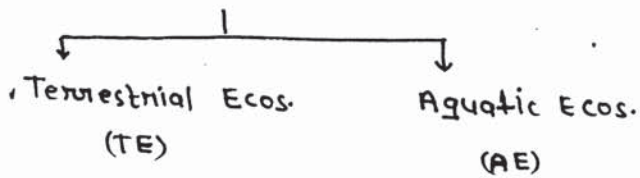
E, M → Energy, Matter

NOTE: TYPES OF SYSTEM

	CIRCULATION OF	EXIST GN
eg. — OPEN SYSTEM (Ecosystem)	E, M	Nature
CLOSE SYSTEM	E, M (STOP)	Lab
Isolated system	E, M Both stop	Mental Map or Imagination

TYPES OF ECOSYSTEM

1. Natural Ecosystem



ex: Forest, Grassland, Desert etc.

ex: Ocean (Marine Ecos.), Seas, River, Lakes, Ponds etc.

2. Artificial Ecosystem



ex: Zoo, Garden etc.

ex: Aquarium

STRUCTURE OF ECOSYSTEM

1. Biotic Component (Living being)



- They make their food themselves

e.g. - Flora (Trees, plants)

- They can not make their food by themselves i.e. they are dependent on the others for food intake.

TROPHS - MEANS FOOD

2. Abiotic Component (Non-living being)

DETAILS OF PRODUCER / AUTOTROPHS →

PHOTOTROPH

Are the living being who make their food in presence of sunlight
i.e. Their source of energy is sunlight
e.g. - plant.

CHEMOTROPH

Are those producers who make their food, their chemosynthesis & chemical rxn is main source of energy.

e.g. cyanobacteria / Blue green Algae
Blue green Algae
↓
single celled Algae

DETAILS OF HETROTROPHS / CONSUMERS →

Macro consumer

(bcoz of large body size)

• Primary Consumers / Herbivores

e.g. Rabbit, cow, deer, grasshopper, Goat, etc.

Micro consumer

(small size)

- Locomotion Capacity

- Food Intake Habit

Generalist → can eat all

Specialist → choosy

• Secondary consumer / Carnivores :

Since more variety of organism found in this category that's why they are further subdivided into →

1st order ——— 2nd order ——— 3rd order

Grasshopper (Herbivore) → FROG → SNAKE → Eagle

• Tertiary Consumer / Omnivores :

They can eat all types food.

e.g. Human being, Ant, Rat, Duck, pigs, cranes, etc.
crow,

Micro-Consumers (Saprotroph):

Saprot means Decayed / Rotten

DETRI-VORES

THEY eat Dead Residue or Remnants of Flora & Fauna and they also convert DETRITUS into Nutrient.

ex: Earthworm, termite, Maggot etc.

DECOMPOSER

THOSE micro-organism which decompose Dead food into Nutrients.

ex: Bacteria, Fungus

DETRITUS = Dead Remnant

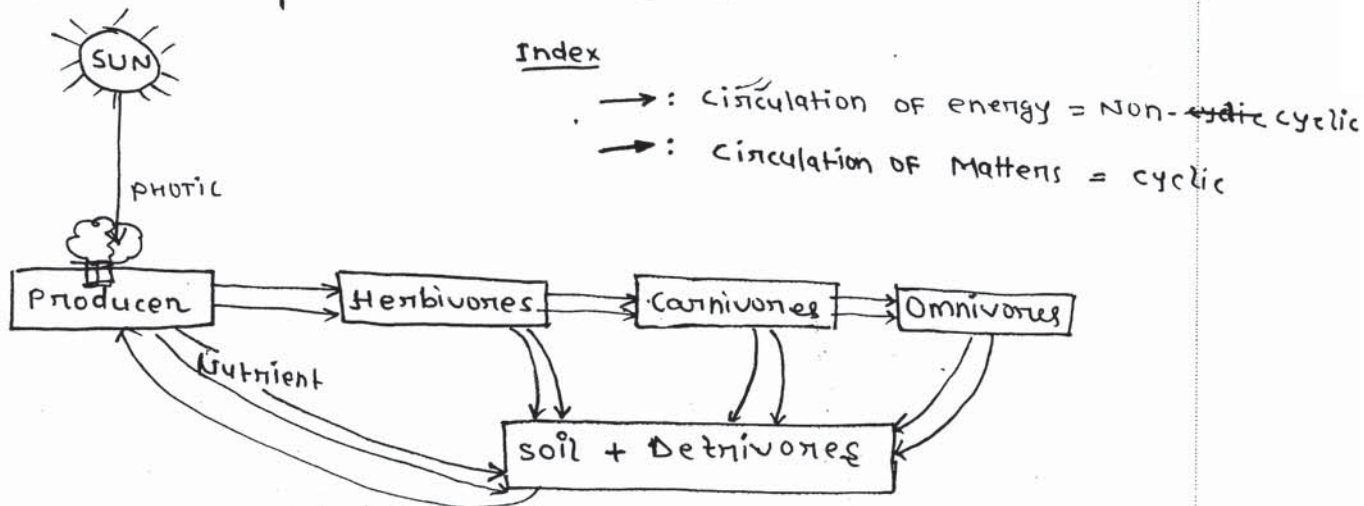
2. Abiotic Components (Non-living)

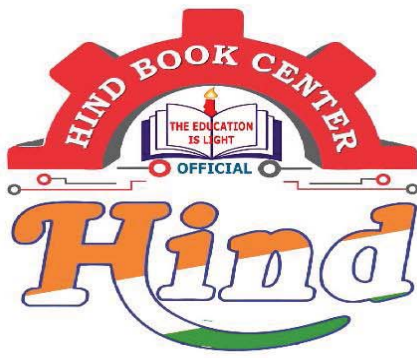
(a) Physical Elements: Soil, air, water, sunlight, temp etc.

(b) ENERGY

- (i) Inorganic Energy ex: Nutrients like Manganese, N_2 , Potash, phosphorus, sulphur etc.
- (ii) Organic Energy
 - Fat, Carbohydrate, protein
 - 1 gm - 9 calorie; 4.5 calorie, 4.5 calorie

FUNCTIONING PROCESS OF ECOSYSTEM





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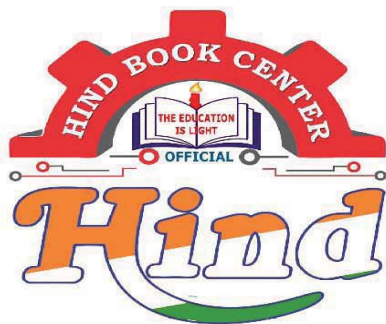
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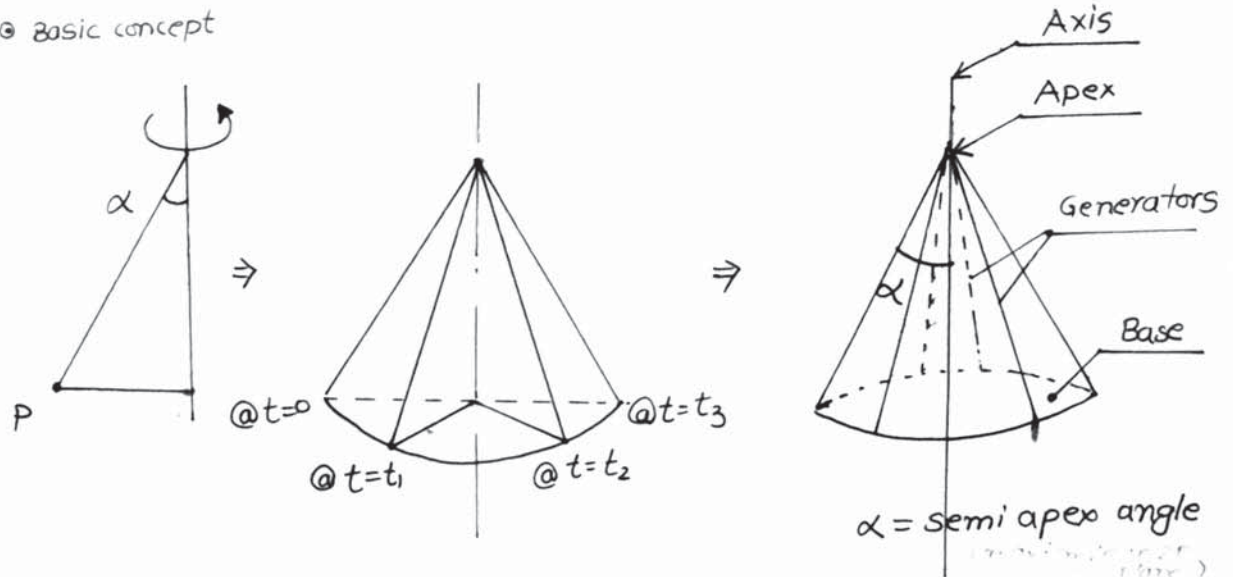
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CONIC SECTIONS

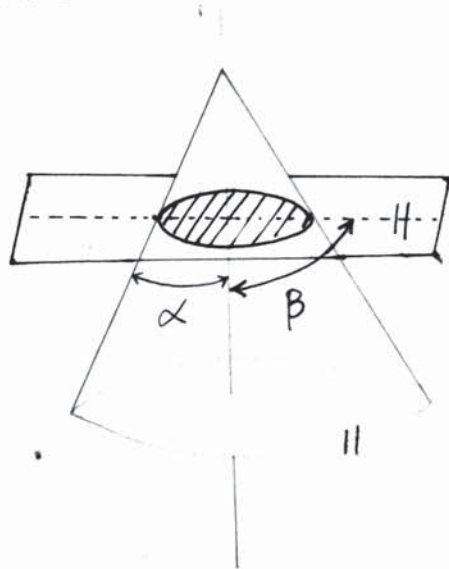
I] Conic section defined as section of cone.

• Basic concept



- when a right circular cone is cut by a section plane, the section thereof formed is called as conic section.

(a) CIRCLE



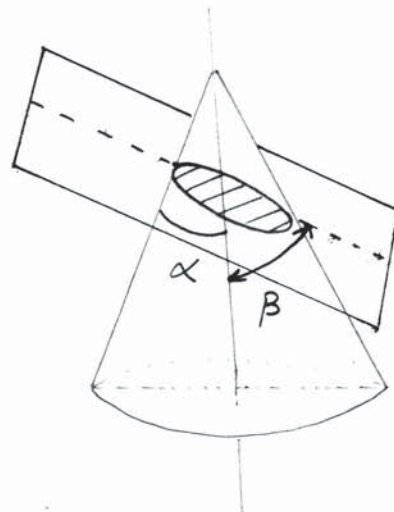
condition:

If $\beta = 90^\circ$, i.e. the section plane is parallel to the base of cone then a circle is formed.

(b) ELLIPSE

Condition :-

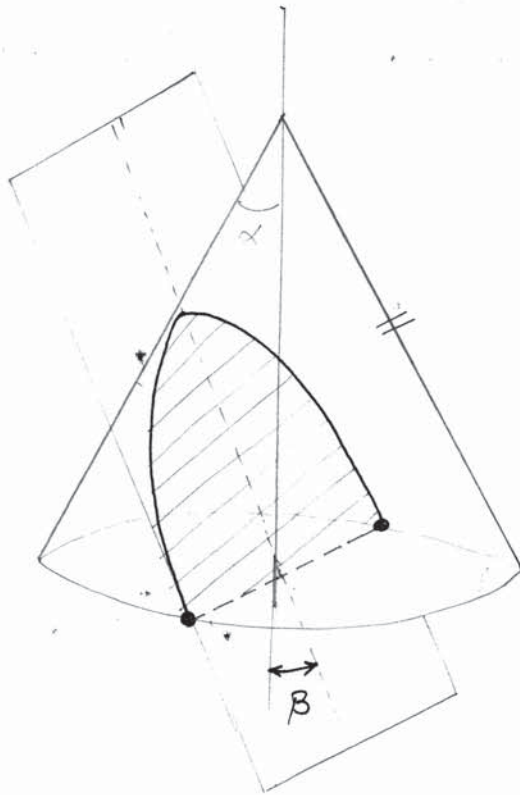
$$\alpha < \beta < 90^\circ$$



(C) PARABOLA

Condition:

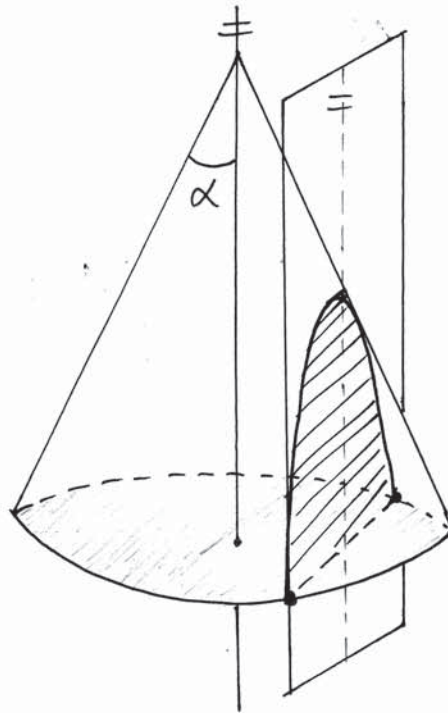
If $\beta = \alpha$ the section plane is parallel to one of the end generator then a parabola is traced



(d) HYPERBOLA

condition:

$$0 \leq \beta < \alpha$$

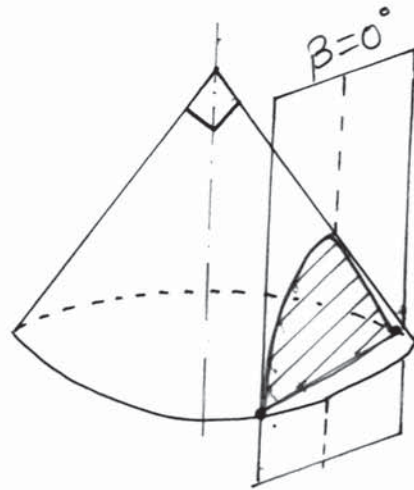


Note 1: only circle and ellipse cut all the generator of cones

Note 2: a Hyperbola becomes a rectangular hyperbola when:-

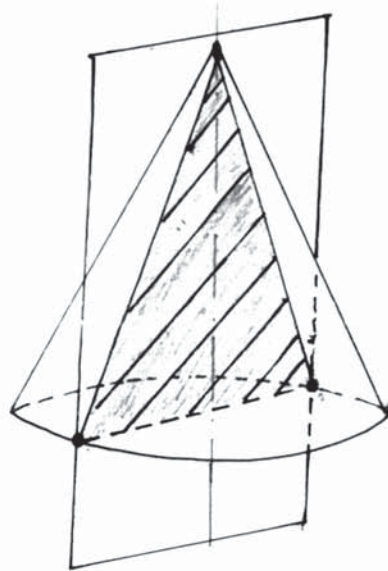
- i) $\beta = 0$ ie section plane is parallel to the axis of the cone.
- ii) Apex angle, $2\alpha = 90^\circ$
- iii) section plane must not pass through the axis of cone

Example:-



Rectangular Hyperbola
 $\beta = 0^\circ$

Note 3: if section plane passes through the apex of cone, then either isosceles or equilateral or in general a triangle is formed.



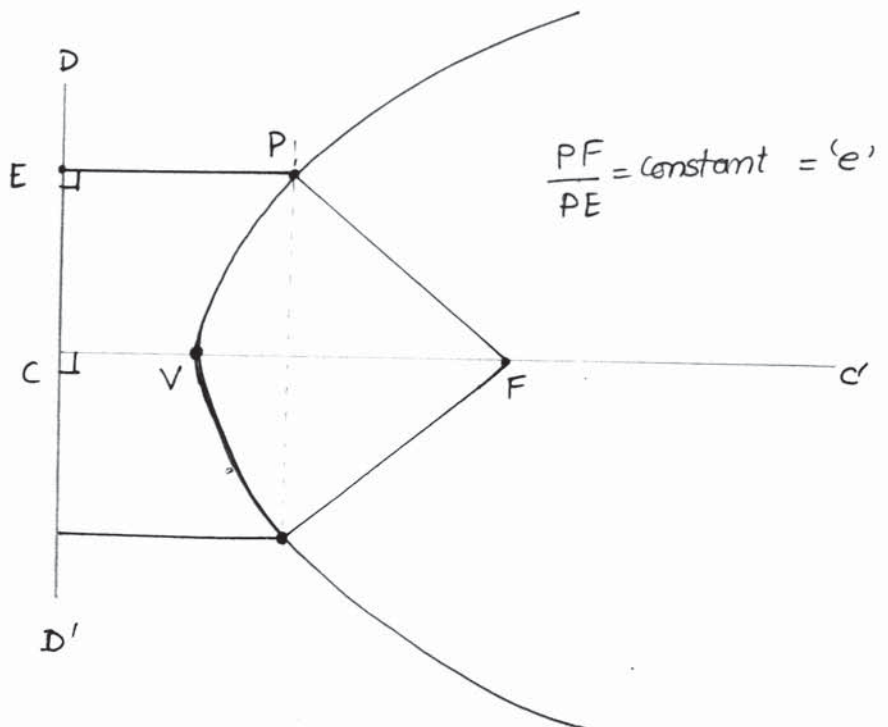
II] Conic section defined as locus of point

$DD' =$ directrix

$CC' =$ Axis

$F =$ Focus

$V =$ Vertex



- A conic section is defined as the locus of point which moves in a plane such that the ratio of the distance of the point from focus and that from directrix is always constant is known as eccentricity (e)

Mathematically; Eccentricity

$$e = \frac{PF}{PE} = \frac{\text{distance of point from focus}}{\text{distance of point from directrix}}$$

CASE (i) $PF > PE$

@ $PF > PE$; $e = \frac{PF}{PE} > 1$

→ Curve $\equiv$ Hyperbola

→ Application

- cooling
- Flower vases

→ Math eqn

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

$$b^2 = (e^2 - 1)a^2$$

CASE (ii) $PF = PE$

@ $PF = PE$, $e = \frac{PF}{PE} = 1$

→ Curve $\equiv$ Parabola

→ Application

- Parabolic mirrors
- Head lamps
- Dish antenna
- Trajectory of Particles

→ Math eqn

$$y^2 = 4ax$$

CASE (iii) $PF < PE$

@ $PF < PE$; $e = \frac{PF}{PE} < 1$

→ Curve $\equiv$ Ellipse

→ Application

- Bridges Arches
- Elliptical gears
 - ↳ profile of teeth = Involute

→ Math eqn

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

$$b^2 = (1 - e^2)a^2$$

NOTE @ $e = 0$ { $e < 1$ }

$$b^2 = a^2$$

$$\therefore x^2 + y^2 = a^2 ; \text{ circle}$$

→ Application

- wheels
- Discs
- Speakers

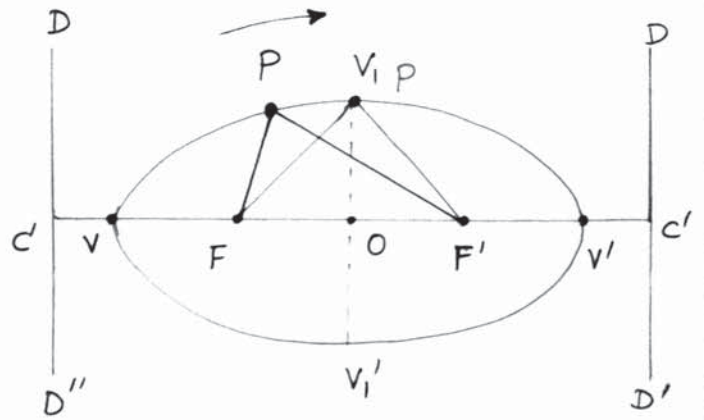
Some Noteworthy Points

① ELLIPSE

$VV' = \text{major axis}$

$V_1V_1' = \text{Minor axis}$

$O = \text{centre of ellipse}$



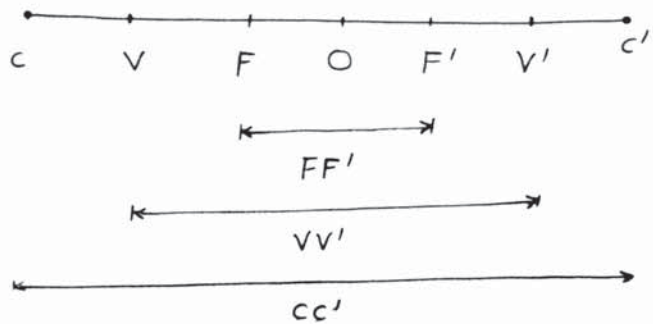
→ a) The sum of the distance of a point on the ellipse from two foci is always equal to its major axis. ie $PF + PF' = VV'$

→ b) The distance of any end of the minor axis from focus is half of major axis ie. $PF = \frac{1}{2} VV' (= PF')$

→ c) Eccentricity

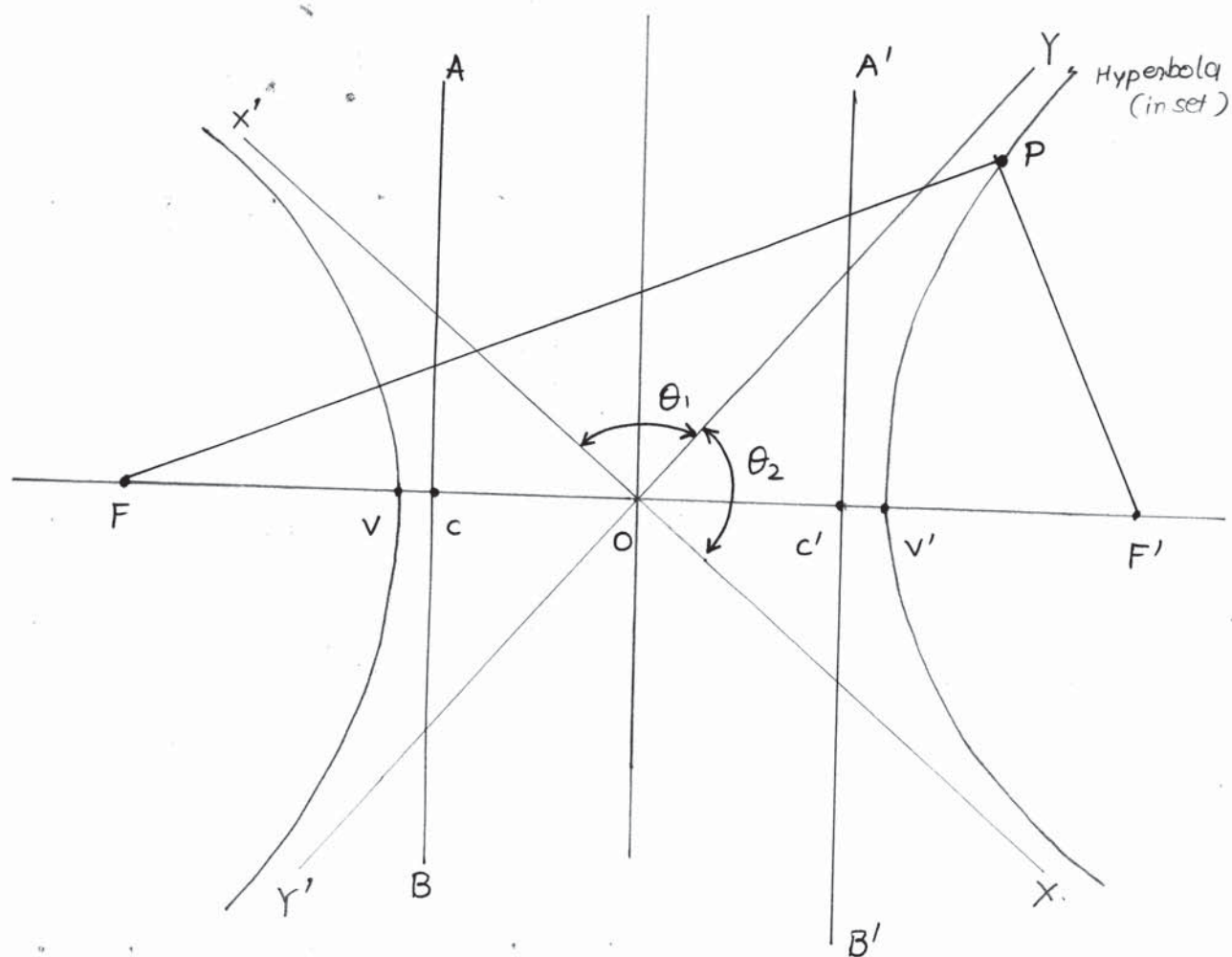
$$e = \frac{PF}{PE} (< 1)$$

$$e = \frac{VV'}{CC'} = \frac{FF'}{VV'}$$



© Q24, Q28 (H/w)

② HYPERBOLA



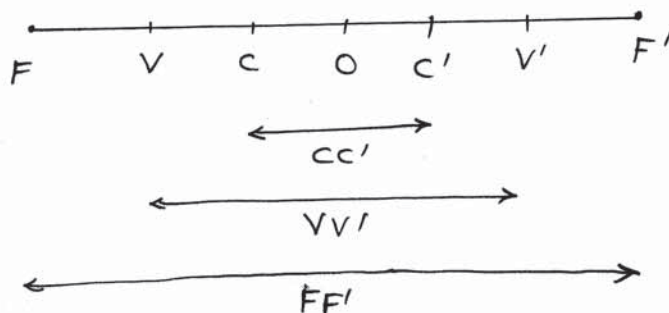
- $AB, A'B' \equiv$ Directrix
- $XX', YY' \equiv$ Asymptotes
- $VV' \equiv$ Transverse axis
- $O \equiv$ Centre of hyperbola.

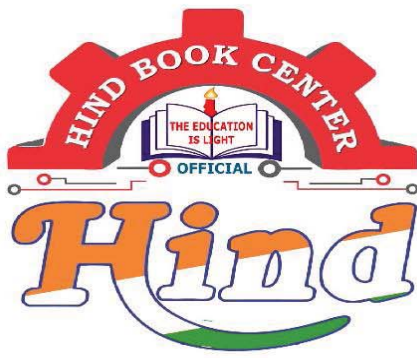
1) — The difference of the distance of the point from two foci is always equal to transverse axis. i.e. $PF - PF' = VV'$

2) — Eccentricity

$$e = \frac{PF}{PE} (>1)$$

$$e = \frac{FF'}{VV'} = \frac{CC'}{VV'}$$





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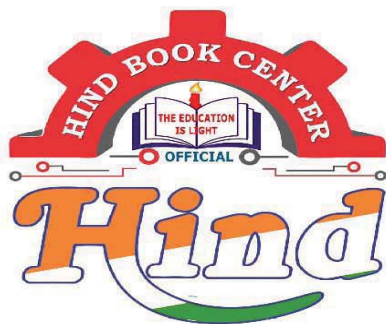
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Material Science

1. Introduction
2. Atomic structure + Chemical Bonding
3. Crystallography
4. Electrical Properties of Materials
5. Magnetic Properties of Materials
6. Mechanical Properties of Materials
7. *Ceramics
8. *Polymers
9. *Composites
10. *Phase Diagram and alloys. → Theory Book.

Telegram ⇒ t.me/anunaad22

Anunaad... let's be in resonance.

Suneel kumar 3004 → Telegram channel

Ch-01

Introduction

Material Science

- It involves investigating the relationship that exist b/w the structures and properties of material.
- Material science does not deal with the behaviour of engineering components such as machines, buildings and vehicle facilities etc., instead it deals with the study of properties of materials with which these components are made.

Material

- Material can be defined as something that consists of matter.
- It is the stuff with the help of which something can be made.
- Engineering materials are mainly classified as:-
 - (1) Metals and Alloys
 - (2) Ceramics and glasses
 - (3) Organic Polymers
 - (4) Composites.

Structure of Materials

- It relates to the arrangement of it's internal components.
- Structure can be classified as :-

(1) Nuclear Structure

- It tells us about the no of neutrons and protons into the nucleus of an atom.

- Nuclear structure is studied with the help of nuclear spectroscopic techniques such as Nuclear Magnetic Resonance (NMR) OR Mossbauer studies.

(2) Electronic Structure

- It deals with the arrangement of electrons in the various orbits of atom.

(3) Crystal Structure

- It tells us about the arrangement of atoms in the crystal.
- In a crystal atoms are arranged in regular and periodic manner.
- The smallest group of atoms by repeating which in all the crystallographic directions, the crystal structure can be developed, this smallest group of atoms is k/a unit cell.

(4) Microstructure

- It is observed under the optical microscope which can magnify a structure upto 1500 times without loss of resolution.
- Structures obtained by using a microscope with a much higher resolution such as electron microscope, which can magnify a structure upto 10^6 times are k/a Substructure.

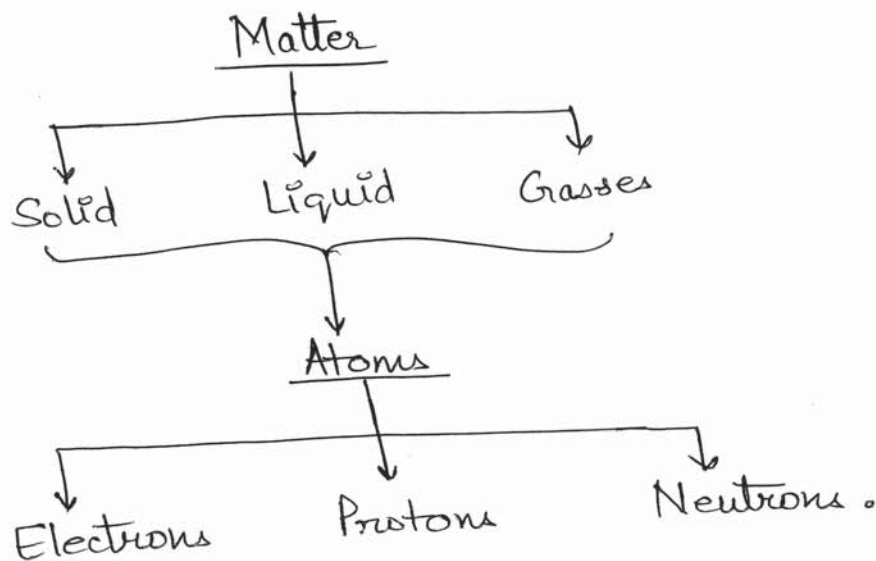
(5) Macrostructure

- It can be observed with naked eye.
- The internal symmetry of crystalline material may reflect in a external form of a crystal.

→ Property of a Material

- A property is a material character / attribute in terms of kind and magnitude of response to a specific imposed excitation.
- Properties of solid materials can be classified as:-
 - (1) Mechanical Property
 - (2) Electrical Property
 - (3) Magnetic Property
 - (4) Optical Property
 - (5) Thermal Property
 - (6) Deteriorating Property of Material.

Ch-02 Atomic Structure & Chemical Bonding



- Matter is made up of very tiny and indivisible structures k/a Atoms.
- Atoms can neither be created nor be destroyed.

Electrons

- -vely charged particles
- charge = -1.6×10^{-19} Coulomb = $-e$
- Mass = 9.1×10^{-31} kg
- $-e$

Protons

- +vely charged particles.
- charge = $+1.6 \times 10^{-19}$ C = $+e$
- Mass = 1.67×10^{-27} kg
- $+e$

Neutrons

- Electrically neutral particles
- charge = 0
- Mass = 1.67×10^{-27} kg

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

→ Atomic Number (Z)

- It is no. of protons or no. of electrons in an atom.

→ Atomic Mass Number (A)

- The no. of protons and neutrons in the nucleus of an atom is k/a Atomic Mass Number.

→ Atomic Mass Unit (amu)

- It is defined as $1/12$ of mass of a carbon atom.

$$C = 6p + 6n + 6e^- = 12 \text{ amu}$$

$$1p = x$$

$$1p = x$$

$$6x + 6x + \overset{\text{Neglect}}{\frac{6x}{1850}} = 12 \text{ amu}$$

$$x \simeq 1 \text{ amu} \simeq \text{mass of a proton}$$

$$1 \text{ amu} \simeq 1.67 \times 10^{-27} \text{ kg}$$

→ Mole

- It is an SI unit.
- 1 mole is the amount of substance that contains as many particles or entities as there are atoms in 12g of carbon.-12.

$$1 \text{ mole} = 6.023 \times 10^{23} \text{ atoms}$$

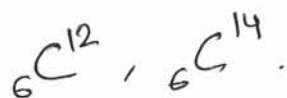
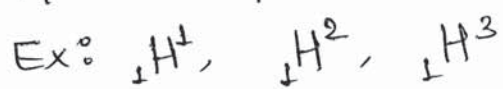
→ Avagadro Number (N_A)

- Avagadro proposed that equal volumes of gasses at the same temperature and pressure should contain equal no. of molecules.
- The no. of atoms / molecules in a mole is termed as Avagadro Number.

$$N_A = 6.023 \times 10^{23} \text{ atoms/mol}$$

→ Isotopes

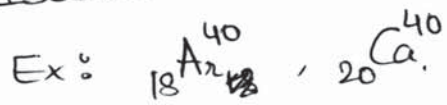
- Atoms having same atomic number but different atomic mass number (A) are k/a Isotopes.



$$\text{Stability} \propto \frac{1}{\text{Energy}}$$

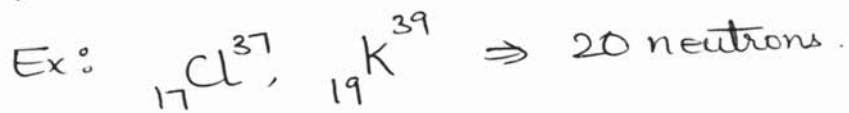
→ Isobars

- Atoms having same Atomic Mass No. (A) but different Atomic No. (Z) are k/a Isobars.



→ Isotones

- Atoms having same no. of neutrons but different Atomic No. and different Atomic Mass no.



→ Comparison of α , β and γ rays

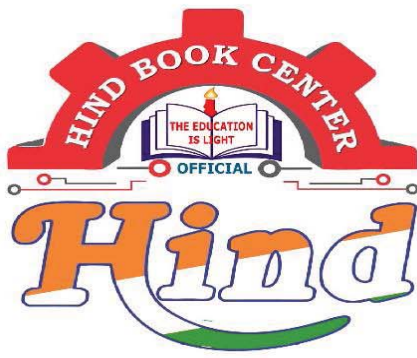
(1) Alpha (α) rays:

- α -particle consist of 2 protons + 2 neutrons.
(It is an active He nucleus).

- Emitters of α -particle are heavy element.
- α -particle has mass equal to 4 amu.
- It is +vely charged particle.

(Charge = +2e)

- α -particles have highest ionization power.
- α -particles / rays travel with very slow speed.
- They have least penetration power, they cannot penetrate even the outer layer of human skin.



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Project Management

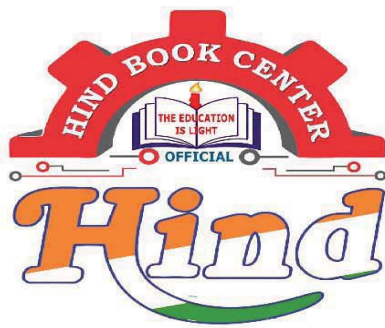
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PROJECT MANAGEMENT

- (1) Project Planning + Schedule
- (2) Project Crashing
- (3) Project Life Cycle
- (4) Capital Budgeting Technique OR Project Financing technique
- (5) Tender and contract
- (6) Project Organizational Structure
- (7) Deviations in Orders.

8882873075

Gunjan Chowdhary

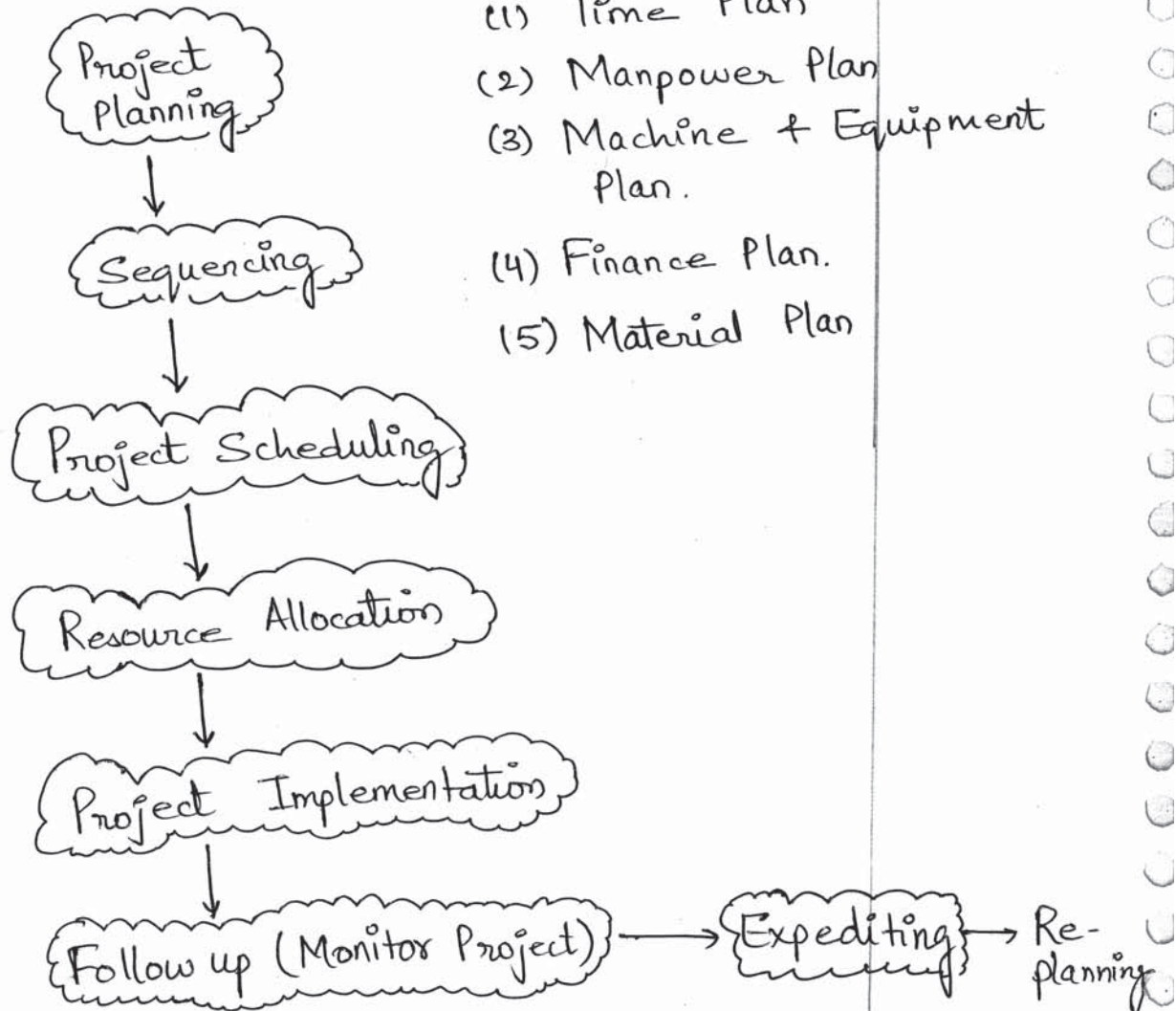
• Define a Project

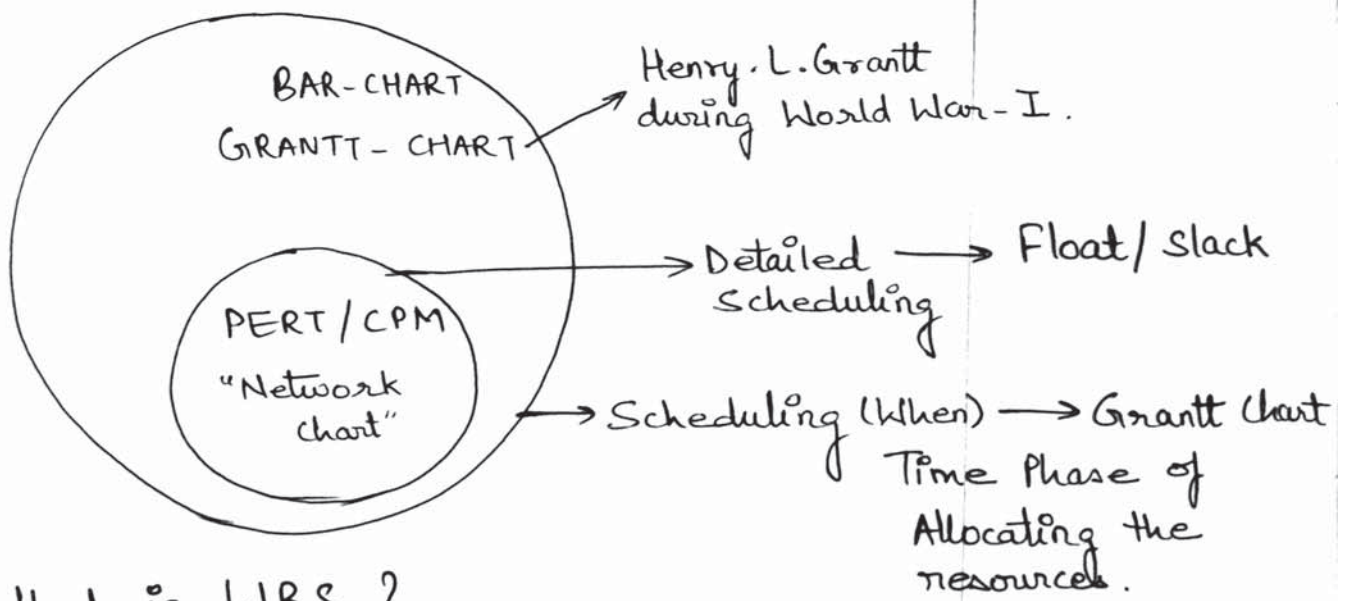
- Project Management Body of Knowledge (PMBok) defines project to be a unique and temporary endeavor.

↓
Every project has a beginning and it ends.

- Project Planning
- Project scheduling
- Tenders + Contracts
- Financial Analysis
- Company Hierarchy
- Project Implementation
- Project cycle.

• What are different Project Plans ?



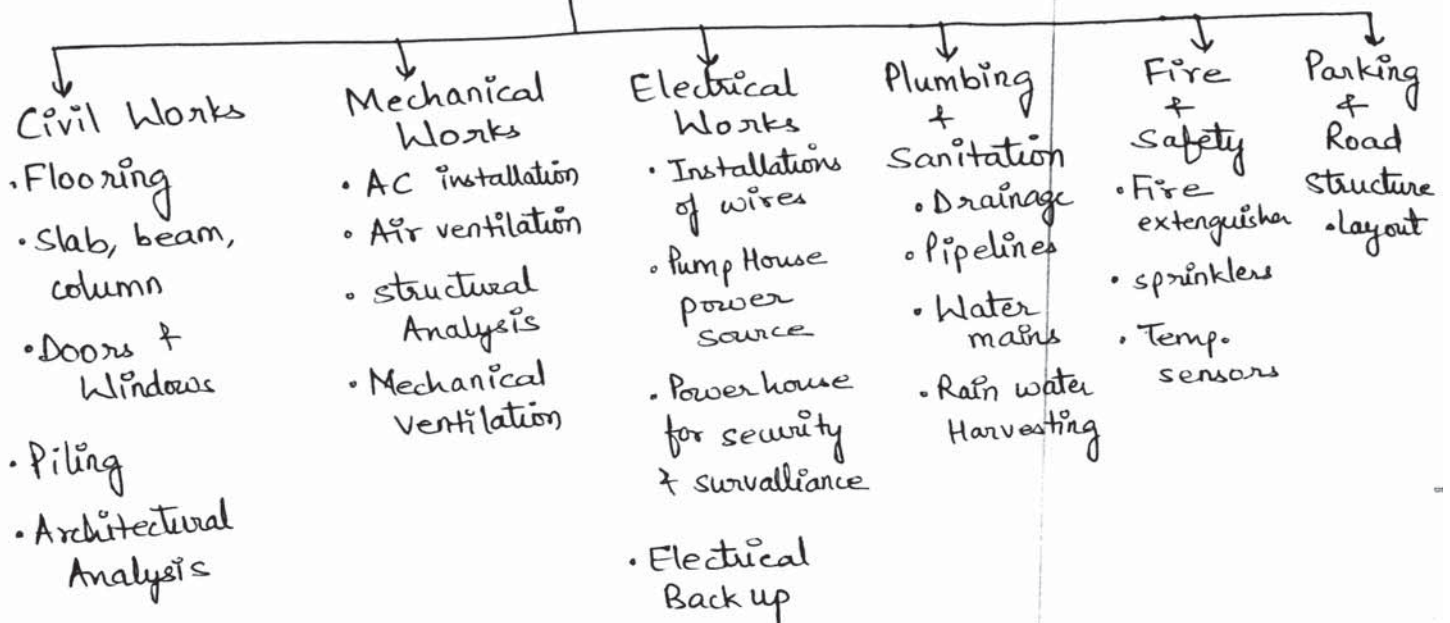


• What is WBS ?

Work Breakdown Structure (WBS)

- It is a technique in project management in which a project is broken into manageable chunks.
- It is task oriented family tree which is organized, defined and represented graphically from top to bottom.

• Ex: Construction of a tower in IT Park.



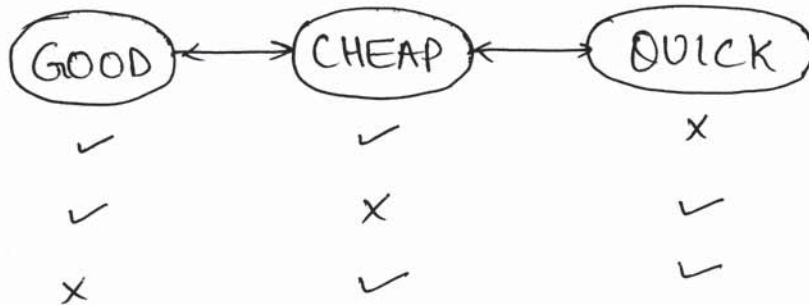
Limitations of WBS

No information about :-

- (1) Task or Activity time.
- (2) Dependencies of an activity over another.
- (3) Project cost
- (4) Resource allocation
- (5) Cannot identify priorities.

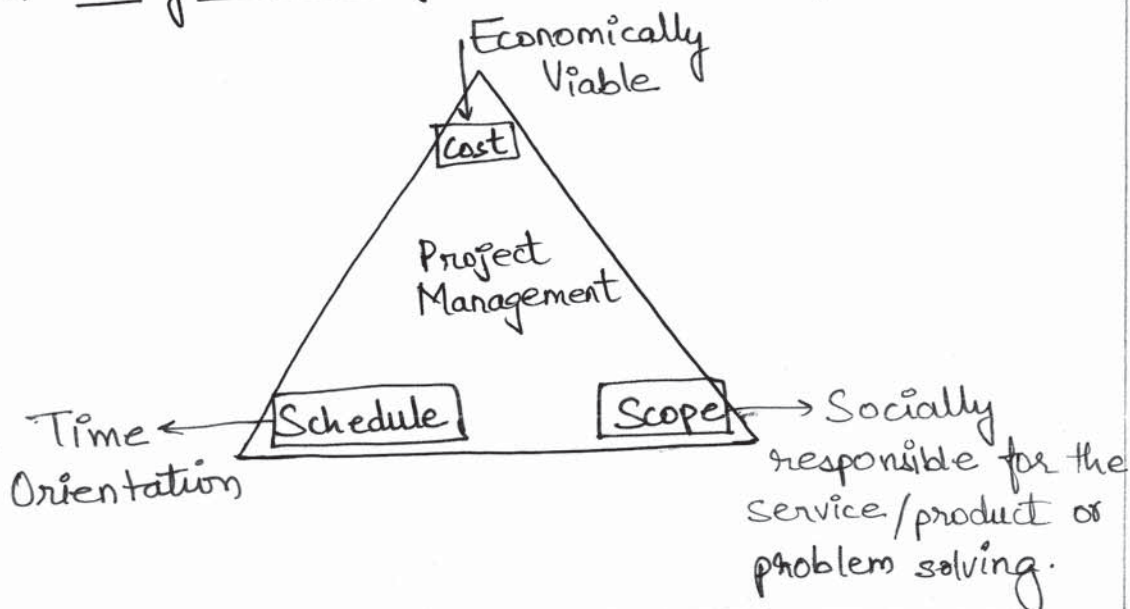
Philosophy for a Good Manager

Philosophy for a Project Manager



- Good and Cheap work cannot be Quick.
- Cheap and Quick work cannot be good.
- Good and Quick work cannot be cheap.

Key Matrix of Project Management



- 1 → Feasibility ☒
- 2 → Profitability ☒
- 3 → Scalability ☒

FPS - Rule

BAR-CHART

S.No.	Activities	Time in Months.											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Excavation	■	■	■									
2	RCC-Floor			■	■	■							
3	RCC-Walls					■	■						
4	Plastering							■	■	■			
5	Painting									■	■	■	■
6	Fencing								■	■	■		

Excavation → upto 3 months (Jan to Mar)

RCC-Floor → 3 months (March to May)

RCC-Walls → 2 months (May to June)

Plastering → 3 months (July - Aug - Sept)

Painting → 4 months (Sept - Oct - Nov - Dec)

Fencing → 3 months (Aug - Sept - Oct).

Project duration = 12 months.

No info about the task dependencies.

- Horizontal bars represented on horizontal time scale.
- Simple visualization of tasks, their duration and hence project duration can be calculated
- Henry Gantt during World War-I.

PERT - Chart

- Free flow network diagram.
- For large projects.
- Time dependencies among various interrelated activities can be determined.
- Min. time required for the project completion can be determined.
- It is used for Research + Development.

GRANTT - Chart

- Horizontal bar chart.
- For small projects.
- Time dependencies are not represented among the involved activities.
- Task completion time can be easily known.
- Used for simple construction of project.

Note : Resource Levelling and Resource Allocation is Common in Both Charts.

~~Q1~~ Which of the above techniques are used for scheduling?

(1) Bar chart

(3) Milestone Chart

(2) Network method → PERT

a) 1 only

c) 1 and 3

b) 1 and 2

d) 1, 2 and 3.

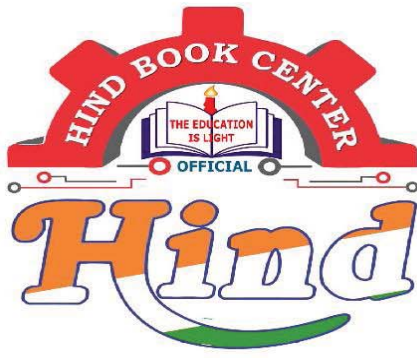
Q2) Bar charts were introduced by?

a) William Ford

b) Ramanujan

c) Russel Jennifer

d) Henry Grantt



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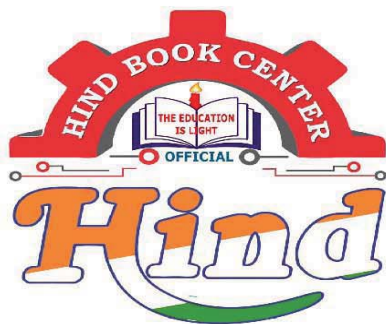
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Syllabus:

Application of ICT tools in the field of networking,
e-Governance & e-education

- ① ICT tools
- ② Networking & its application
- ③ ICT application in e-Governance
- ④ ICT application in e-Education
- ⑤ current development in ICT

Marking: 9-10 questions

Saurabh Pandey sir: 9646269236

Topic-1 Applications of ICT in e-Governance

- Governance is the procedure followed by the Govt.
- e-Governance means using ICT based technology to run the governance processes.
- In 2000, IT Act was passed. under this Act a new ministry MoICT was formed
MoICT → min. of Information & communication Tech.
3 department were under this ministry.
 - (i) Department of post
 - (ii) Deptt. of Information Tech.
 - (iii) Deptt. of communication

2015: MoICT → meITY: min. of electronics and Information tech.
→ MOCB: min. of communication & Broadcasting

IT Act, 2000

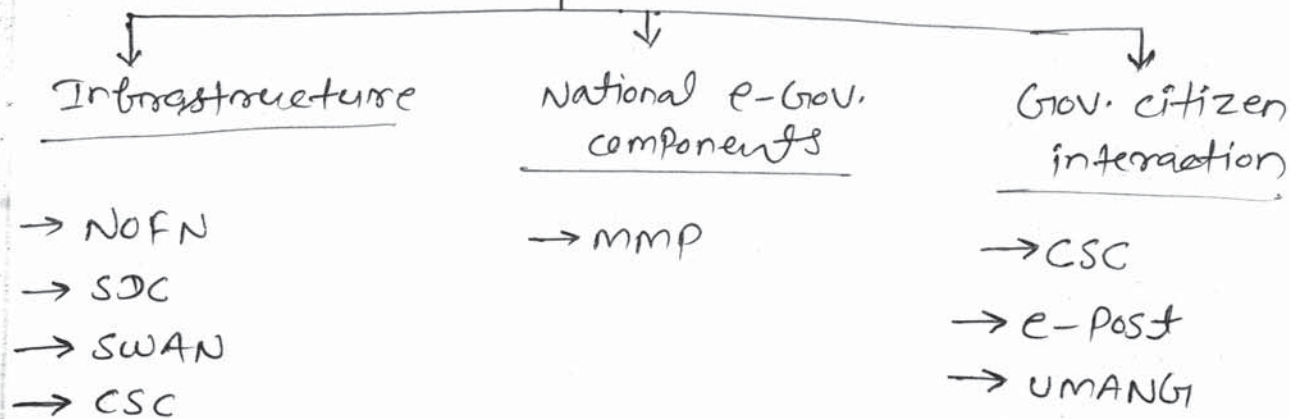
↓
Information Technology Act, 2000:

IT Act that was introduced in parliament in year 2000 was a basic Act only and it did not have any punishment provision for those who violated IT Act. It also did not talk about the things like cyber crime, cyber fraud, e-commerce etc. since then not much changes have taken place in the IT Act but it requires update rapidly in the changing world.

IT ACT Amendment, 2008:

- 66(A) was added in IT Act 2000.
- In year 2008, an amendment was introduced in IT act 2000. According to this amendment there will be consideration of criminal offence for any person who sends by means of digital media or communication device that is abusive or has menacing character, danger, insult, injury, hatred, trying to disturb the communal harmony or posting of images or videos related to child pornography and causing harm to the dignity of human is considered as a criminal offence.
- In 2017, The supreme court amended IT act and abolished clause A from section 66, saying that it is violation of our right to freedom of speech and expression which is our fundamental right.
- In 2005, RTI was introduced as fundamental right.
- In 2006: NeGP (National e-Governance Program) was introduced.
- NeGP was introduced in year 2006 that consisted of 27 mission mode projects (27 mmPs) 4 mmPs were added later on, making a total of 31 mmPs.
- NeGP also included large infrastructure dev^t. national e-Governance components and changes in the framework for Government and citizen interaction.

NeGP 2006



Infrastructure:

① NOFN: National optical fibre Network

- Under NOFN, target was to connect more than 20,000 Gram Panchayats were connected with optical fibre network to convert it into e-panchayat.
- Kerala became the 1st state where all Gram Panchayat were converted into e-panchayat

② SDC: State Data centre

- The SDC is a part of core infrastructure to support NeGP.
- The SDC is utilised for collecting & storing all the data & electronic delivery of services.

③ SWAN: State wide Area Network

- SWAN is a broadband network through which the data centers are connected upto district and block level with speed upto 100 mbps.
- The network is established using optical fibre network.

④ CSC: Common service center

- CSC are the Govt. citizen interaction point in the form of a kiosk (shop).

- These CSC can make available services to citizen through online medium
- There is min. charge for services. Each Gram Panchayat must have at least one CSC. while larger Gram Panchayat can have more than one CSC also.
- The CSC are operated in public private partnership mode.

National e-Governance components:

mmp: mission mode project:

- mmps are those projects under NEGP that focuses on one aspect of electronic Governance.
- In this case mission mode means that the project will be launched in a fixed timeline and it will be on a priority basis.
- Initially 27 mmps were launched and in 2011 4 more were added making a total of 31 mmps.

mmps are divided into three parts:

- | | | |
|----------------|--------------------|-------------------|
| ① central mmp | ② state mmp | ③ Integrated mmp |
| eg. Income Tax | eg. commercial Tax | eg. Education csc |

Govt.-citizen Interaction:

① e-Post:

- post offices have large no. of centers across India. These post offices were connected with internet connectivity to convert it into e-post.
- The benefit of e-post office is to act as a nodal agency to provide govt services to the

citizen in an online mode.

→ e-post offices are brought under pillar No. 3 of Digital India programme to act as a Nodal agency and to provide services under "public internet Access ~~process~~ programme".

→ under e-banking IPPB (India Post Payment Bank) was initiated at post offices.

→ IPPB was developed by RBI & AIB (Association of Indian banks)

→ In IPPB, the postman collects the payment by door to door visit and transfer the payment through e-post and from there also a postman visits door to door to deliver the money.

→ IPPB provides an alternate banking system to post offices.

Payment Banks:

— Payment banks are specialized banks that are used for retail transactions and the payment banks can have a deposit upto max 1 Lakh rupees. (Now 2 Lakh/-)

— Payment banks can be directly used for retail transactions without using any UPI

— Payment banks are not allowed to give loans, they can only take deposits.

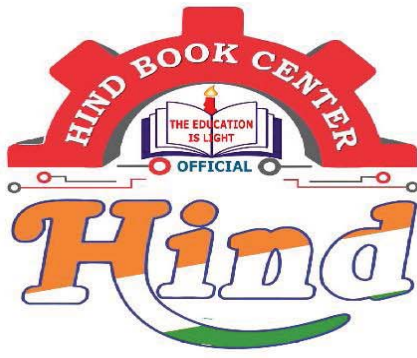
— The Idea of Payment Banks were started with the aim of reaching deeper into backward areas.

eg Paytm Payment Bank

Airtel —" —"

India post —" —"

finio —" —" etc



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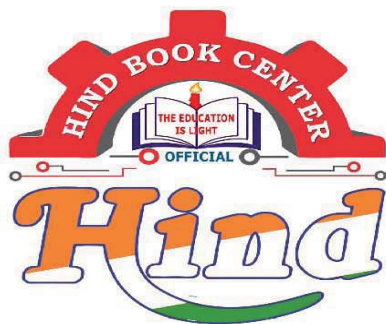
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∴ Standards And Quality Practices :-

ESE → 9-10 questions
pre

GIS DELHI 2023 → Telegram

@sagarsonkar → telegram

Topics :

- Maintenance
- sampling
- Quality
- Quality control tool
- process capability
- quality in service sector
- TQM
- ISO
- six sigma
- quality in construction
- Inventory
- Line balancing
- L.P.P. (Linear Programming Problem)

Reliability: The Reliability of a product or system can be defined as the probability that the product will perform its required function under specific condition for a certain period of time.

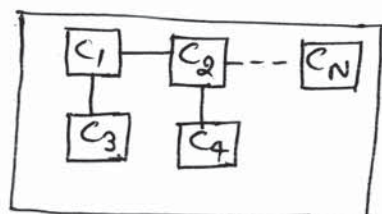
$$R = f(\text{time})$$

$t=0$, Reliability = 100% time $\uparrow$ = Reliability $\downarrow$

Note: $\Rightarrow$ Reliability is the measure of quality of the product over long run.

$\Rightarrow$ It is a concept of quality of performance.

$\Rightarrow$ No product is guaranteed 100% to function properly. However company know that high reliability is an imp. part of customer oriented quality & tries to build it into the product design.



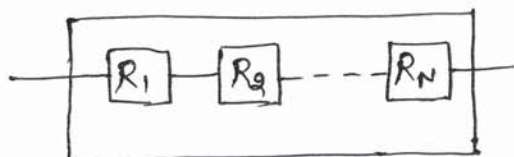
$c = \text{component}$

system/product

$\Rightarrow$ Reliability of the product/system depends upon reliability of individual component.

For series connection:

system/product



$$R_s = R_1 \times R_2 \times \dots \times R_n$$

R_s = Reliability of system

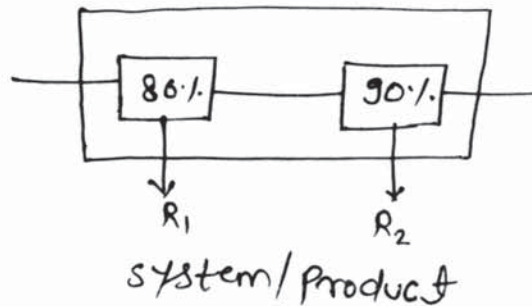
R_1 = Reliability of component ①

R_2 = " " " " ②

R_n = " " " " ③

→ Efficiency / performance / Reliability calculated in the same way.

- Q.) Assume that a product has 2-components both of which must work for the product to function properly. component ① has Reliability of 80% and component ② has Reliability of 90%. compute the Reliability of the system.



$$\begin{aligned} R_s &= R_1 \times R_2 \\ &= 0.8 \times 0.9 \\ &= 0.72 \\ &= 72\% \end{aligned}$$

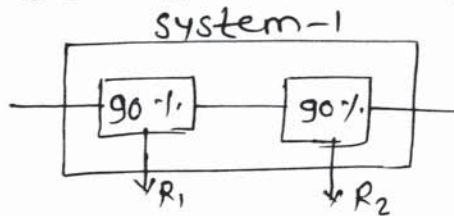
statement-1: The Reliability of the system is always less than or equal to the Reliability of individual component when they are connected in series.

$$R_s \leq \{R_1, R_2, \dots, R_n\}$$

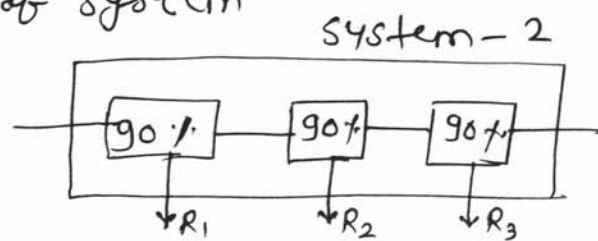
for equal Reliability:

- i) when all components are 100% reliable.
- ii) when there is a single component.

Q.) calculate Reliability of system



$$\begin{aligned} R_s &= R_1 \times R_2 \\ &= 0.9 \times 0.9 \\ &= 0.81 \\ &= 81\% \end{aligned}$$



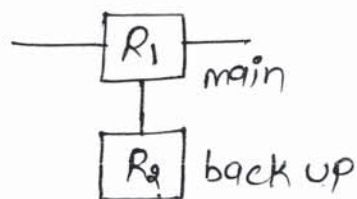
$$\begin{aligned} R_s &= R_1 \times R_2 \times R_3 \\ &= 0.9 \times 0.9 \times 0.9 \\ &= 0.729 \\ &= 72.9\% \end{aligned}$$

Statement-2: As the no. of component in series increases, the reliability of system decreases.

☞ How to increase the reliability of the system??

- one way to increase the product reliability is to build redundancy into the product design in the form of back up plan.
- Redundancy is build into the system by placing components in parallel so that one components fails, other component takes over.

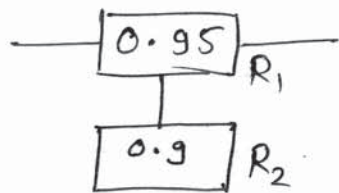
For Parallel connection:



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

$$R_s = R_1 + R_2 - R_1 R_2$$

Q.] Two power Generator provide electricity to a facility i.e. main & back up Generator. The main generator has reliability of 0.95 and the back up has reliability of 0.9. compute the reliability of the system.



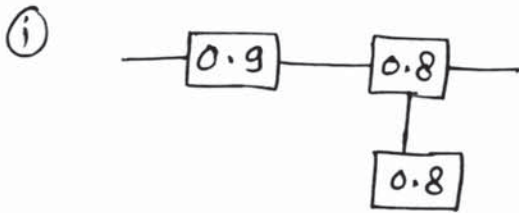
$$\begin{aligned} R_s &= R_1 + R_2(1 - R_1) \\ &= 0.95 + 0.9(1 - 0.95) \\ &= 0.995 \\ &= 99.5\% \end{aligned}$$

Statement-3: The reliability of the system is always greater than or equal to the reliability of individual component if they are connected in parallel.

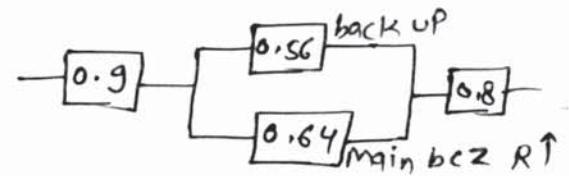
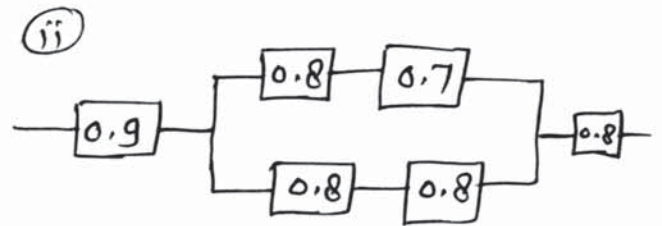
$$R_s \geq \{R_1, R_2, \dots, R_n\}$$

Statement-4: As the no. of component in parallel or (backup) increases, the overall reliability of the system increases.

Q.) compute the Reliability of the system

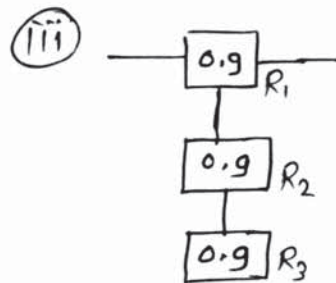


$$\begin{aligned} R_s &= 0.9 \times [0.8 + 0.8(1-0.8)] \\ &= 0.9 \times [0.8 + 0.16] \\ &= 0.9 \times 0.96 \end{aligned}$$



$$\begin{aligned} &0.56 + 0.54(1-0.56) \\ &= 0.8416 \quad \times \end{aligned}$$

$$\begin{aligned} &0.64 + 0.56(1-0.64) \\ &= 0.8416 \end{aligned}$$



$$\begin{aligned} R_s &= R_1 + R_2(1-R_1) + R_3(1-R_1)(1-R_2) \\ &= 0.9 + 0.9(1-0.9) + 0.9(1-0.9)(1-0.9) \\ &= 0.999 = 99.9\% \end{aligned}$$

$$\begin{aligned} R_s &= 0.9 \times 0.8416 \times 0.8 \\ &= 0.6059 = 60.59\% \end{aligned}$$

Reliability prediction using exponential distribution:

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

- Normal distribution
- lognormal
- Gamma
- weibull

- exponential ———— } most commonly used

Exponential Distribution:

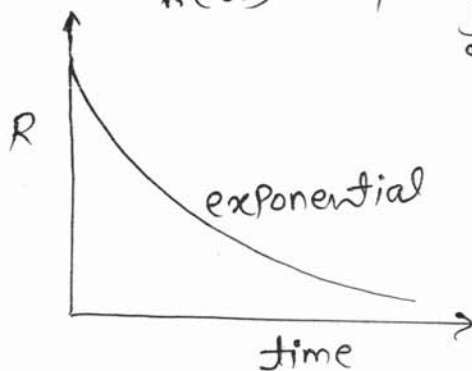
$$R = f(t) \quad \text{pdf: } f(t) = \lambda e^{-\lambda t}$$

$$\text{cdf: } F(t) = \int_0^t \lambda e^{-\lambda t} dt$$

$$R(t) = 1 - F(t)$$

$$R(t) = 1 - \int_0^t \lambda e^{-\lambda t} dt$$

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



R - Reliability

t - time

λ - failure rate

$$\text{at } t=0, R(t) = 100\%$$

Note: Exponential $\Rightarrow$ when failure rate is constant w.r.t. time.

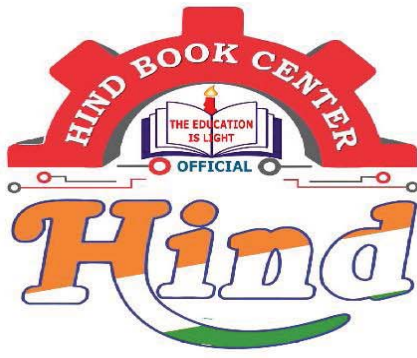
Weibull $\Rightarrow$ when failure rate increases/decreases w.r.t. time

To find λ:

MTTF: mean time to failure

$\rightarrow$ It is referred as avg. time, an item may be expected to function before the failure.

$\rightarrow$ It is used for non repairable items



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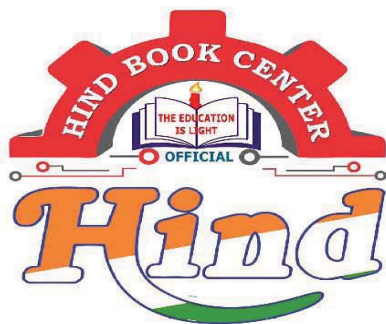
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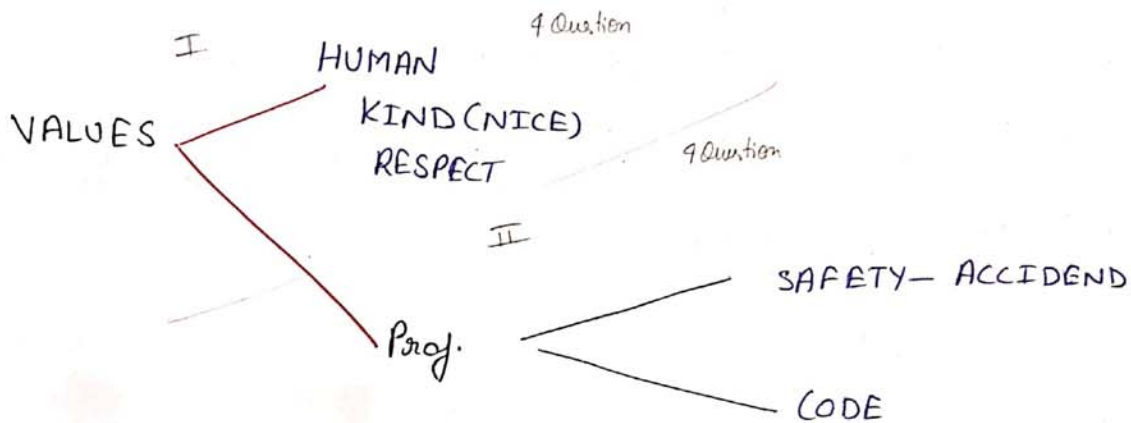
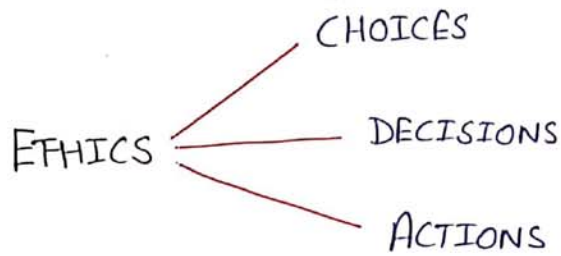
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DEFINATION OF ETHICS :-
/ MORAL

- "a body of ^{"Allowed"} prescription & prohibitions, do's & don't's"
- "Ethics -- may be styled as art of self government, self control, self + Discipline (regulation)".
- "the standards of conduct (minimum standards) derived from the philosophical & religious traditions of society"
- "Ethics is concerned about what is right, fair, just or good, about what we ~~each~~ ought to do" (DYNAMIC & SITUATIONAL)
- Branch of philosophy which seeks to address issues related to concepts of right and wrong.

- Branch of philosophy that is concerned with human conduct/
Right Behaviour.

- Examination of the our moral judgments.

- ~~• examination of our moral~~

- An attempt to help human in leading good life by applying moral principles

* Ethics enquires into

- human actions, motives, intentions voluntary actions and so on.

- questions such as- what is virtue (character), law, duty? what obligations are common to all?

* Source of Ethics

- God & religion.

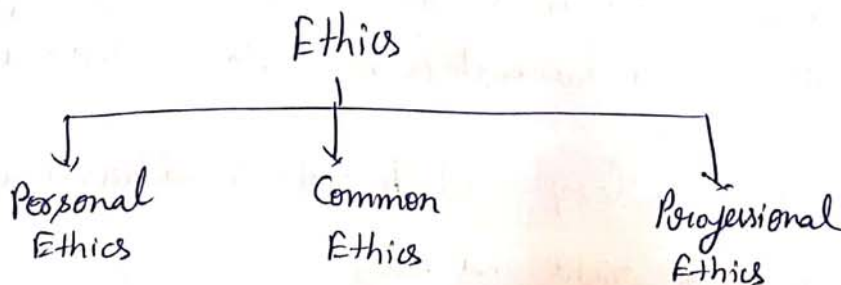
- Human conscience

- A rational Moral cost-benefit analysis of actions and their effects

- The example of good human beings (role models)

Political Power (Law/Rules)

PROFESSIONAL ETHICS



- A distinguished as common morality & personal ethics.
- Common morality set of moral beliefs shared by almost everyone
- Personal ethics or morality is a set of moral beliefs that a person holds
- Professional ethics is the set of standards adopted by professionals.

What is a profession?

Features :-

- Advance expertise :- skill, knowledge, continuous learning
- Self Regulation :- standards of conduct
- Public good :- Serving public good
- Way of making a living.
- Enter voluntarily & leave voluntarily.

* Characteristics of Professional Ethics

- Professional ethics is stated in formal code.
- Focuses on issues that are important for & in that profession.
- Regulates professional relationship.
- Moral Obligations of Professional (Safety & Quality) (Engineers)

Being Ethical in values



Being ethically ~~ist~~ literate



Being ethically competent / skills

Ethical Literacy :-

- Comprehending complex ethical issues.
- Ability to comprehend the **consequences of one's Actions**.

Assertion / Reasons

- Every member of all-India service shall maintain "**HIGH ETHICAL STANDARDS**".
- **Ethical Literacy = Ethical standards.**

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)}
(^(Fiduciary) **SECRET**)
- Embrace and **Promote ethical behaviour.**