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Date: 25/01/2021

Subject: Paper III Part A.

1 A. **Influenza** Commonly known as Viral fever. ae flu.
Causes by: Viral infection.
Symptoms: Fever, cold, coughs etc.

1 B. **Double Salt.**

1 C. **Angiography**

1 D. **Copyright** Intellectual right of an individual on his or her written, creative or artistic work.
- legally enforcable

1 E. **Gravity**
Acceleration ~~Force of attraction~~ due to gravitational force of a body known as Gravity.

Gravity of Earth (g) = $9.8\ m/s^2$

F. **Electric Field** Imaginary lines, where area near current flowing or ~~qu~~ charge flowing body, where we feed electric effect.

G. **Probability** Possibility to occuance of certain event out of total possible outcomes.

$$\text{Probability (P)} = \frac{\text{Favourable event}}{\text{Total number of events.}}$$

$$0 < P < 1$$

H. **Insat 3dr** Earth obeservational satellite. launched by ISRO.

I. **Gene mapping.**

J. **Protein Synthesis** Chemical phenomenon in which protein is form, from amino acids by Ribosomes. in human body.

1 k.	**Bandwidth** Range, in which certain wavelegths are found.
	Ex.
1 L.	**Magnetic flux** Number of magnetic field lines passing through an unit area is known as magnetic flux.
	flux = $\frac{dB}{dA}$.
1 M	**Cartosat**
1 N.	**Radioactive isotopes** Radioactively acharge ions of an elements.
	Ex. $_{92}U^{235} + {}_0n^1 \longrightarrow {}_{92}U^{236}$
	used in nuclear reactions.
1. 0.	**GM Crop** - Genetically modified Crop.
	- Manupulative seeds by biotechnology
	- To improve crop production.

2 A. **Nuclear Fission** } When an element break into part and release large amount of energy, known as Nuclear Fission.

Eg. $_{92}U^{236} \longrightarrow {}_{36}Kr^{78} + {}_{56}Ba^{155} + 3{}_{0}n^{1} + 177\ MeV$

Working: Uranium is, first thought bombarding neutrons, got radio activity charged. and its nucleaus break into part, gives 2 elements plus release energy due to energy gap. This reaction countinued as chain reaction.

2 B. **Aryabhatta** } Indian Polymath, during 5th & 6th Century CE.

Books: Aryabhatt, Aryabhatt Samhita.

Contribution → Astrophysics → Calculate distance between moon & earth, Explain motion of earth & lunas ellipse.

→ Maths → Sine table and work in Trignometry.

2 C. Innovation deals with manipulation of things through scientific knowledge to ipus their efficiency.

Innovation in the field of HOUSING.

① Spatial mapping. proper mapping of contour of the location. So a holistic plan can be form.

② Cementing technique. fast and strengthen bin binding material. To give affordability and security. to house.

2 D. Endocrime Glands } Glands which releases chemicals in human body to perform, proper functioning.

Function: Total 7 Endocrine glands each perform different function.

↳ Pituitary gland: Growth & Controlling.

↳ Thyroid gland: Maintain iodine level.

↳ Adrenal gland: (Emergency gland), Fear, Anger, increase heart beats.

↳ Gonads → Release reproductive hormones.

2 G. Nano technology: Dealing with production & study of equipments, ranging 2.
1 to 100 nano meter.
It is an Emerging technology.
Ex. Carbon tube, Nano Rod etc.

Help ful in Disease diagnosis

Carbon tube, nano rods, quantum rods etc. can be use in diagonosis of disease as they provide, Better penetration, proper handling, observation etc. endoscopic treatment are successful and provide many possibility in future.

2. H. Petroleum: ~~Bio~~ fossile fuel, extract from ~~Crust~~ exploration into earth crust. Generaly found around coastal region.
Formation: Due to submergance of organic substance in millions of year ago and due to high pressure Petroleum formed.
types: Coke, Petrol, Diesel etc.

1. I. Geo stationary satellite launch Vehicle Mark 3. also known as BAHUBALI. is game changes in Indian Space Industry. because.

↳ High capacity to launch many satellite at single launch.

↳ Cost effective therefore attract foreign ~~to~~ currency. and countries

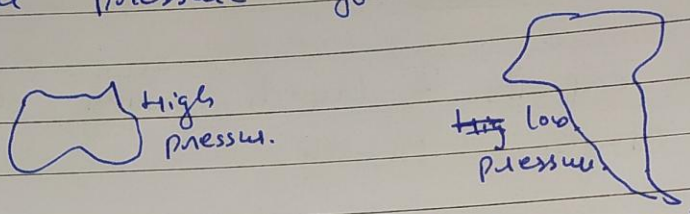
↳ Able to launch at Geo stationary orbit.

2. J. Biopesticides } Environmental friendly pest controls, known as Bio pesticides. ~~Eg. Manav~~

Advantages: ↳ less harm to soil.
↳ Do not affect crop.
↳ Eco friendly.
↳ low cost.

Challenges ↳ lack of Research & development.
↳ less effective on some ~~pest~~ pest etc.

2 K. **EL-Nino:** Natural phenomenon which generated near Atacama desert and Australian coast to create a pressure difference pool.



High pressure at Australian coast & low pressure at Andean coast.

Affect Monsoon: EL-Nino is tri-annual phenomenon, affect monsoon generation.

2. L. **Bio Mass Energy** Energy that can be produce by bio mass.

i.e. solid waste, liquid waste, Animal waste etc.

Possibility: India produce 165 mmT solid waste, 6600 m/m^3 liquid waste. and having highest number of cattle.

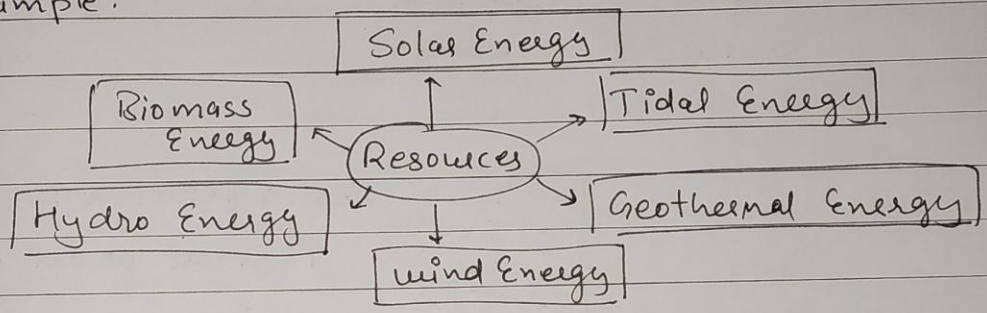
Techniques:
- → Bio gas power plant.
- → Petrochemical plants.
- → thermal use etc.

3 A.

Renewable sources of Energy.

Energy resources, those are in abondunce in nature and can not be exhaust, known as renewable resources of energy.

Example.



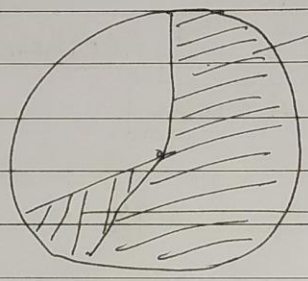
Non Renewable Source of Energy

Energy resources, those are in limitated amount on earth and soon get exhaust, known as non renewable energy resources.

Ex. Coal Thermal Energy, Natural gas, petroleum etc.

According to an estimate Petroleum will get exhaust in 130 years, natural gas in 43 years & coal in 130 years if we keep exploiting these at current rate.

Indian energy demand is highly depended on non-renewable source of energy.

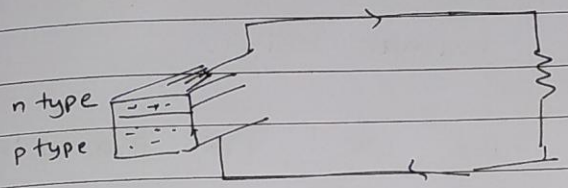


→ Coal & petroleum Thermal power energy 63%.

→ Nuclear energy 6.7%.

Solar Energy is the game changing resource of energy, which has total 750 GW potential in India.

Solar panal can direct convert solar energy into electrical energy. through semiconductor.



Solar panel

As ministry of energy estimated by 2030 we will consume 4 times of energy than today. That means solar energy is one of the best way to reach ~~that~~ such energy producing capacity. India got almost 300 sunny days.

Jodhpur solar park, Rewa solar power plant etc. are crucial steps and National Solar mission is working towards achieving 100 GW energy by 2022.

3 B. **Solid waste Managements**

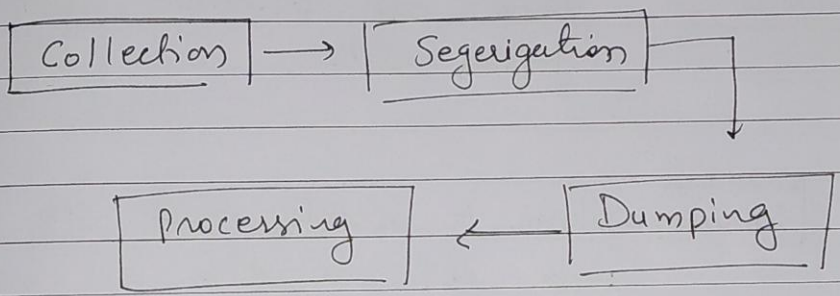
Solid waste managements deals with the effective and innovative management of waste produce by human being.

As of now, we are producing 165 MMT solid waste every year and by 2040, our solid waste production will reach 412 MMT/ ~~ever~~ year. Which automatically draw our attention toward its management.

If our management will not get innovative and efficient, we need 10% of our land to just keep those waste.

That's why solid waste management is vital for us.

Various techniques used in solid waste management.



Collection → Door to Door, by dustbin Installation at public place. etc.

Segregation → Separate solid & wet waste separately. by collecting into different bins like Green & Blue.
by convert belt, Manual separation etc.

Dumping → After segregation now. solid waste dumping into yard. and some waste directly burn. plastics and metals are collected for further use

Reuse → plastic & metals ~~and~~ are send for recycle

Fuel formation → Solid waste can also convert into bio fuel.

Road mostar → Plastic can be use in road formation.

Solid waste management give us a possibility to produce energy from it. that's how it will serve as dual motives.

3 c.

ECOLOGICAL FOOTPRINT

Emphasis the fact that how much an human being affect environment by in one years, is known as ecological foot print.

Term ecological foot print was coined in a would summit for environment conservation.

Calculation of ecological foot print.

Foot print is the ratio of individual foot print (consumption & affect) to per capita biological capacity available on Earth.

Ecological footprint = ~~2~~ 1.75.

That means we are consuming 1.75 time of biological capacity of earth.

Importance

- Awareness about our nature.
- Sustainable development.
- Policy making.
- Mapping concern area.
- Every year ~~earth day~~ conception day is observed which gradual shorten i.e. we are using resources at

faster rate.

To mitigate this five mechanisms had been proposed.
Like, Carbon credit,
Green tax, etc.

It is vital concern area in terms of climate change.

Part B II.

1 A. **Modem** Singnal modulator, use to catch signal and modulate them to use in computer or any device.

Use: Internet, Telephone etc.

1 B. Lithium: (Li) element of 1st group and second period.

3 electron.

use: Lithium ion battery.

1 C. Pitituary Gland: Pea shaped, endocrine gland.

→ Master gland, control all other glands.

1. D. Mitochondria: Power house of cell.

↳ Can produce its own protein

↳ Release energy in the form of ATP.

1 E. Alfa Diversity.

1. F. Carbon Foot print: Amount of carbon use of or produced by human being.
Shows the Green house gas production.

1. G. Biometric Information: Include finger print, Ratina scan, etc.
Advantage: Identification, security.

1. H. PSLV-XL. Polar satellite launch Vielicle. XL.
launch ISRO's polar satelite.
at polar orbit.

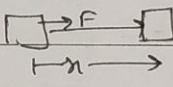
1. I. Nano Particle: Particle having physical size between 1 nano meter to 100 nano meter.

1 J. Mensuration: Measure of of a physical geometry.

Include : Area, Volume, Surface area etc,

1. K. Active Remote Sensing: Actively observing and capturing information, without coming in physical contact with the object.

1. L. Positive Work: Work is amount of force required to displace an object.

in displacement is possible. work is positive. ex. 

$W = F.x.$

1. M. QR code: Use for digital addressing. by scaning QR code we can get information or can pay to vendor.

1. O. Strong Acid: Acid having pH near 1. Ex. HCL (conc.). H_2SO_4. HNO_3.

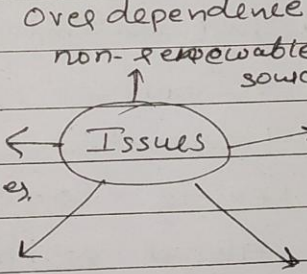
2 A. LIFI: Light fidality means, communication through photons of light.

- they 200 times faster than Wifi,
- Still under developed.

WIFI: Wireless fidality means communication. through electronic waves.

- Slowee then Lifi.
- Developed.

1. B. Energy management: Use of energy in sustainable manage include reducing the wastage, increase production and maintenace.



Infrastructure. like, lack of monitoring equipment.

Quantum Computer: Super fast emerging developing technology in field of computering.

Quantum Computer can solve an equation within minutes which a super computer need years.

Principle: Quantum particles, Quantum physics.

Application: Health, meterology, Agriculture, transport etc.

Application internet.

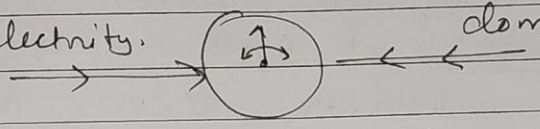
Agriculture: → Weather forecasting information
└ Information about crops & technique.

Healty → Telemedicine
└ Remote Consultation.

Transport → Global positioning system.

E-Governance → Accountability, transparency & information assimilation.

2 Q. **Net Metering:** Inovative electrical meter. which runs backward if consumption domestically produced electricity flows through it.

line electricity.  domestic electricity.

Use: → To promote domestic producing of electricity.
→ Use to solar panel.
→ Counter fore coming need.

1. I **RNA**: Riboxy Nucleic Acid are unstructured nucleic acid, found in Viruses. Need healthy cell to grow.

Type → ~~Austin~~ 4 types of RNA.

2 3. Trips: Trade related Intellectual Propeerty right: a mechanism of World Trade organisation (WTO). which deals with security of patent of a product.

Significance: A product can sell & purchase across the globe. without loosing its exclusive rights of production, & sell.
Promote innovations.

Drawback: Limit the usefulness.
- Duplication of products.

2 k. WIPO: World Intellectual Property Organisation
formed in 1967.
Head Quater: Geneva, Switzeland.

Objective: - To secure intellectual property right
- To registers patent & copy right.
- To monitor such rights.

2. L. DRS Technology: Reviewing an umpires decision by appealing to field umpire.

Working: Third umpire review the event at slow motion & Ultra sonic wave level to make right decision.

Advantage: - Fairness increase.

Disadvantage - Time consuming, Questioning on field umpire.

Technology use: Ultrasonic waves, Nonotechnology etc.

2. M. Given, A can do the work in 6 day ⇒ efficiency = 1/6

B can do the work in 8 days ⇒ efficiency = 1/8

To find:

If A & B do work together, then no. of days to complete work.

Solution ⇒ $\frac{1}{6} + \frac{1}{8} = \frac{14}{48}$

⇒ $\frac{48}{14}$ ⇒ $\boxed{\frac{24}{7} \text{ days}}$ ⇒ $\boxed{3.42 \text{ days.}}$

Ans. they will finish the work in $2^{4}/_{7}$ days.

3. c. Nucleas energy programme was proposed by Dr. Homi Bhabha.

He propose three stages of nucleas energy programme in 1950s

① First stage :

Pressurized heavy waters reactor (PHWR) mechanism.

Heavy water i.e. D_2O used as coolent.

Under this stage Several nuclear power plant had been constructed.

② Fast Breeder Reactors (II stage).

operating since 1995, ~~Here~~ potential to produce nuclear energy at faster rate.

Stage III (Thorium Based Reactors)

Abstraction of thorium, as India it self can produce Thorium by proper techniques.

Thorium Based reactor changes the magnitude and the created high production.

These three systematic stages of nuclear powes Programme not only able to build nuclear powes generation but also nuclear weapon generation.

3 B. New technology in field of Bio energy.

Bio Energy → Renewable energy which can be generated from bio mass produced by human & Animal & Plants.

Advantages →
- low cost.
- Easy to maintain
- Raw material easy to available
- waste Management
- fertilizer generation.

limitation →
- effectiveness not equivalent to other resources
- labour intensive.
- Need more land & technical assistance which is an issue in rural area.

New technology is bio Energy.

① Petrochemical plant:

Plants whose are having natural ability to generate lipa and that can be converted into bio fuel.

Eg. Jacrota., etc.

India have 63 million hectors barren land that is proposed to its production.

② Bio gas: Modified version of bio gas to remove its limitation made it more reliable & efficient.

③ ~~Mortal journals~~ → Plastic

- Urban waste management & fuel generation

Urban areas produced 6600 MMT liquid waste which ~~have~~ is converting into bio energy.

Ministry proposed 18GW energy generation from urban waste.

As innovative measures & energy generation are vital for future demands.

3 A.

Global warming

Gradual increase in the average temperature of the earth is typically known as Global warming.

Causes ① **Population**: Human population increasing and hence carbon foot print have been increased.

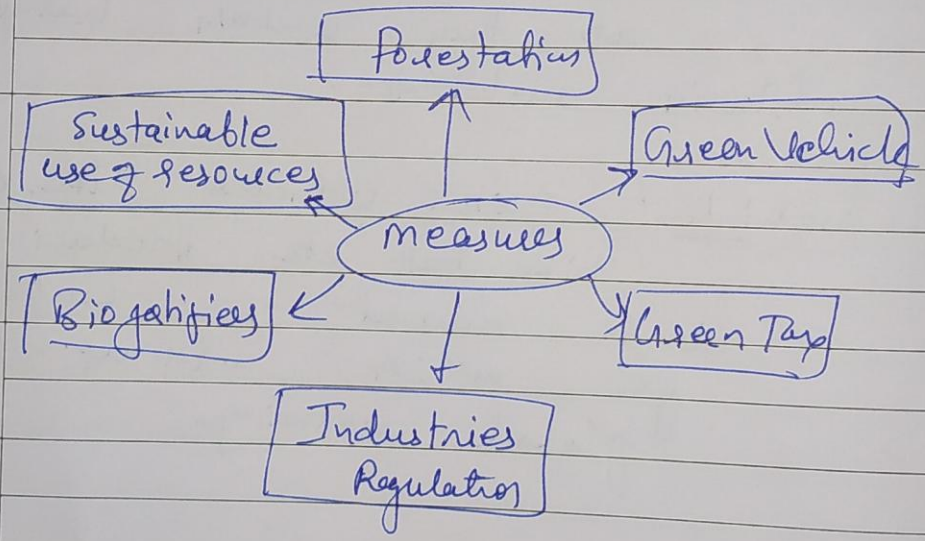
② **Pesticides**: Use of pesticides, the accelerate environment pollution. as they contain harmful chlorin substance.

③ **Vehicle**: Motor vehicles like, car, bike, bus etc. producing large amount of carbon gas which add up to global warming.

④ **Industries** Industries are producing highly hazardous gases.

⑤ **Deforestation** Trees are vital to counter carbon balance by but ~~by~~ due to deforestation the balance is affected.

MEASURES



(1) Forestation: Trees & Biota can produce oxygen & consume carbon di oxide.

(2) Green Vehicle: i.e. electronic as manual vehicle.

(3) Green Tax: Tax of activities vehicles are affecting environment.

(4) Regulation: Industries are compaile to use modern techniques & proper gas processing mechanism installing.

(5) Biofertilizer: less harmful to environment.

(6) Sustainable use: By awareness, & proper maintance & natural resources & reduce conventional energy resources.