

14505

NEERU MANDIR

Date: 25/10/2021

Subject: Biology Part A

A } Influenza } Commonly known as viral fever or flu

Causes by viral infection

Symptoms: Fever, cold, cough etc.

2

B } Double Salt

9

C } Angiography

9

D } Copyright } Intellectual right of an individual on

his or her written, creative or artistic

work

legally enforceable

9

E } Gravity

Accelerates force of attraction due to gravitational

force of a body known as gravity

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

9



F.

Electric field Imaginary lines, where area near

current flowing or  $q$  charge flowing  
body where we feel electric  
effect.

Unit

G.

Probability - Possibility to occurrence of certain  
event out of total possible outcomes.

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

$$0 < P < 1$$

2

H.

Insat 3d1 Earth observational satellite.  
launched by ISRO.

6

I.

Gene mapping

7

J.

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

2

3



**Bandwidth**

Range, in which certain wavelengths are found.

**Magnetic flux**

Number of magnetic field lines passing through an unit area is known as magnetic flux.

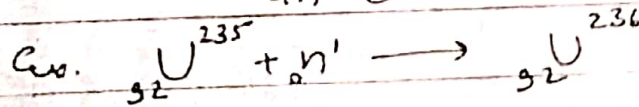
$$\text{flux} = \frac{dB}{dA}$$

**Cartosat**

?

**Radioactive isotopes**

Radioactively charge ions of an elements.



used in nuclear reactions.

**Gm (crop)** - Genetically modified crop.

- Manipulative seeds by biotechnology
- To improve crop production.

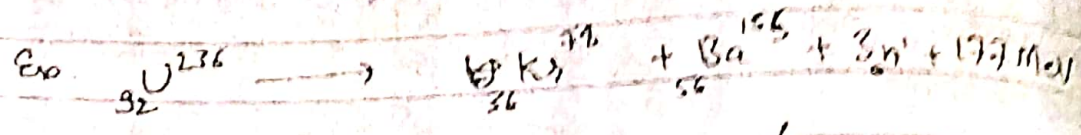
eg. ?



discuss

9  
[ ] [ ]  
[ ] [ ]  
[ ] [ ]  
[ ] [ ]  
[ ] [ ]  
[ ] [ ]

Nuclear Fission When an element break into part and release large amount of energy. known as Nuclear Fission.



Working: Uranium is, first <sup>through</sup> a bombarding neutron, got radio activity charged and its nucleus break into part, gives 2 elements plus release energy due to energy gap. This reaction continued as chain reaction.

3  
[ ] [ ]  
[ ] [ ]

Aryabhata / Indian Polymath, during 5<sup>th</sup> & 6<sup>th</sup> Century CE.

Books: Aryabhata, Aryabhata Samhita.

[ ] [ ]  
[ ] [ ]  
[ ] [ ]

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

→ Maths → Sine table and work in Trigonometry.



2 C.

Innovation deals with manipulation of things through scientific knowledge to improve 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.

Endocrine 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.

1/3

3

②



2. 3. Nano technology: Dealing with production & study of equipments, ranging 1 to 100 nano meter.

It is an Emerging technology.  
Ex. Carbon tube, NanoRod etc.

Helpful in Disease diagnosis

Carbon tube, nanorods, quantum rods etc. can be use in diagnosis of disease as they provide, Better penetration, proper handling, observation etc.

endoscopic treatment are successful and provide many possibility in future.

2. 4.

Petroleum: Fossil fuel, extract from ~~crust~~ exploration into earth's crust. Generally found around coastal region.

Formation: Due to submergence of organic substance in millions of year ago and due to high pressure petroleum formed.

Types: Coke, Petrol, Diesel etc.

2

6



D. I

Geo stationary satellite launch vehicle  
mark 3 also known as BAHUBALI.

is game changer 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.

easy

Add more fact

2. J

Biopesticides } Environmental friendly  
pest controls, known as

Bio pesticides. So ~~manas~~

Advantages: ↳ less harm to soil.

↳ Do not affect crop.

↳ Eco friendly.

↳ low cost.

Challenges ↳ lack of research & development.

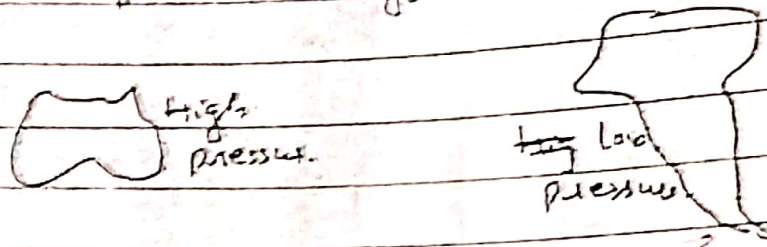
↳ less effective on some ~~crop~~  
pest etc.

22

Q



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.

23. Aspect Monsoon: EL-Nino is tri-annual phenomenon, aspect 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 mty<sup>3</sup> liquid waste. and having highest number of cattle.

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



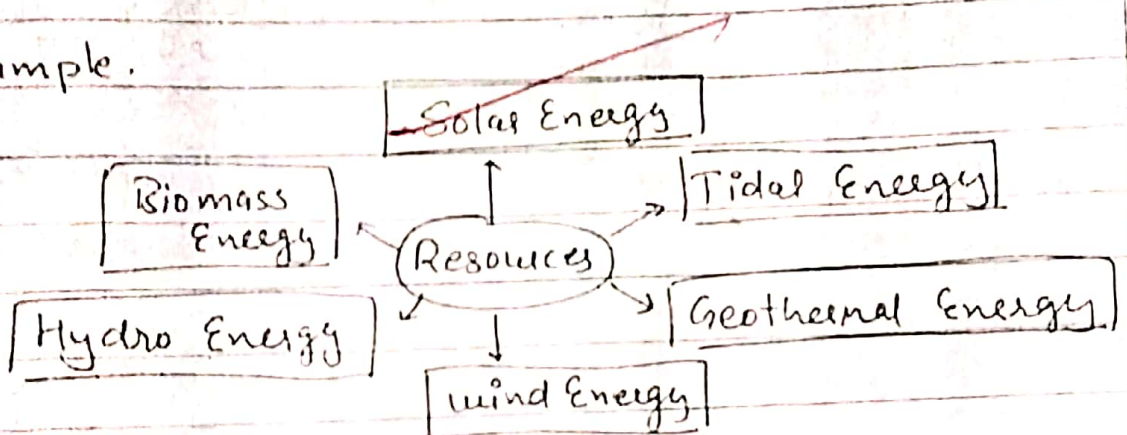


3 A

## Renewable sources of Energy

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

Example.



## Non Renewable Source of Energy

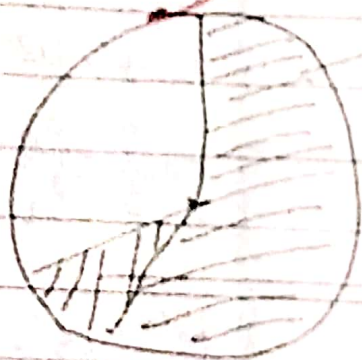
Energy resources, those are in limited amount on earth and soon get exhaust, known as non renewable energy resources.

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



According to an estimate Petroleum will get exhausted 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  
65%

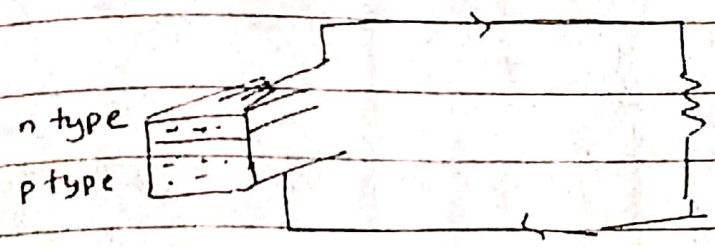
Nuclear energy 6.7%

Solar Energy

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



Solar panel 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.

Discuss India's future solar energy requirement with just

9



3 B.

## Solid waste Managements

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

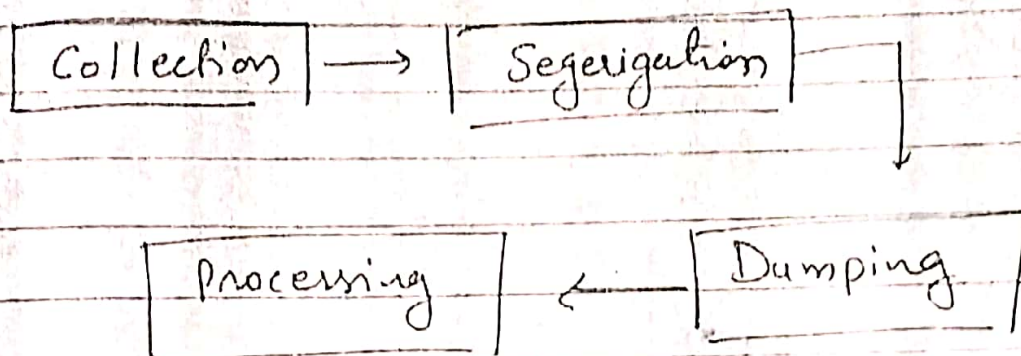
As of now, we are producing 165 MMT solid waste every year and by 2040, our solid waste production will reach 412 MMT/ ever year. Which automatically draw our attention toward its management.

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 conveyer belt, Manual separation etc.



Dumping } After segregation now

solid waste dumped into  
yard and some waste

directly burn. plastics and  
metals are collected for

further use.

Reuse } plastic & metals are

sent for recycle

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

Road material } Plastic can be use in  
road formation.

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



## ECOLOGICAL FOOTPRINT

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

Term ecological foot print was coined in a world 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 in Earth.



Ecological footprint = ~~2.1~~ 1.75.

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

## Importance

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



✓ faster rate.

✓ To mitigate this the mechanism  
had been proposed  
like, Carbon credit,  
Green tax, etc.

✓ It is vital concern area in  
terms of climate change.

①

②



Part B IE

1 A

Modem } Signal 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 1<sup>st</sup> group and second period.

3 electron.



Use: Lithium ion battery.

*Handwritten note:* 3 electrons

1 C

Pituitary 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. Bio Diversity.

1. F. Carbon Foot print: Amount of carbon use of air produced by human being.

Shows the Green house gas production

1. G. Biometric Identification: Include finger print, Retina scan, etc.

Advantage: Identification, security

1. H. PSLV-XL. Polar satellite launch vehicle. XL.

launch ISRO's polar satellite 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.

①

Include: Area, Volume, Surface area etc.

1. K.

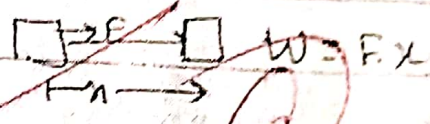
Active Remote Sensing: Actively observing and capturing information, without coming in physical contact with the object.

②

1. L.

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

In displacement is possible. work is positive. ep.



1. M.

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

③

④

1. O.

Strong Acid: Acid having pH near 1. Ex. HCl (conc), H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>.

⑤



2.7.1) **FTT** - Light fidelity means communications through photons of light.

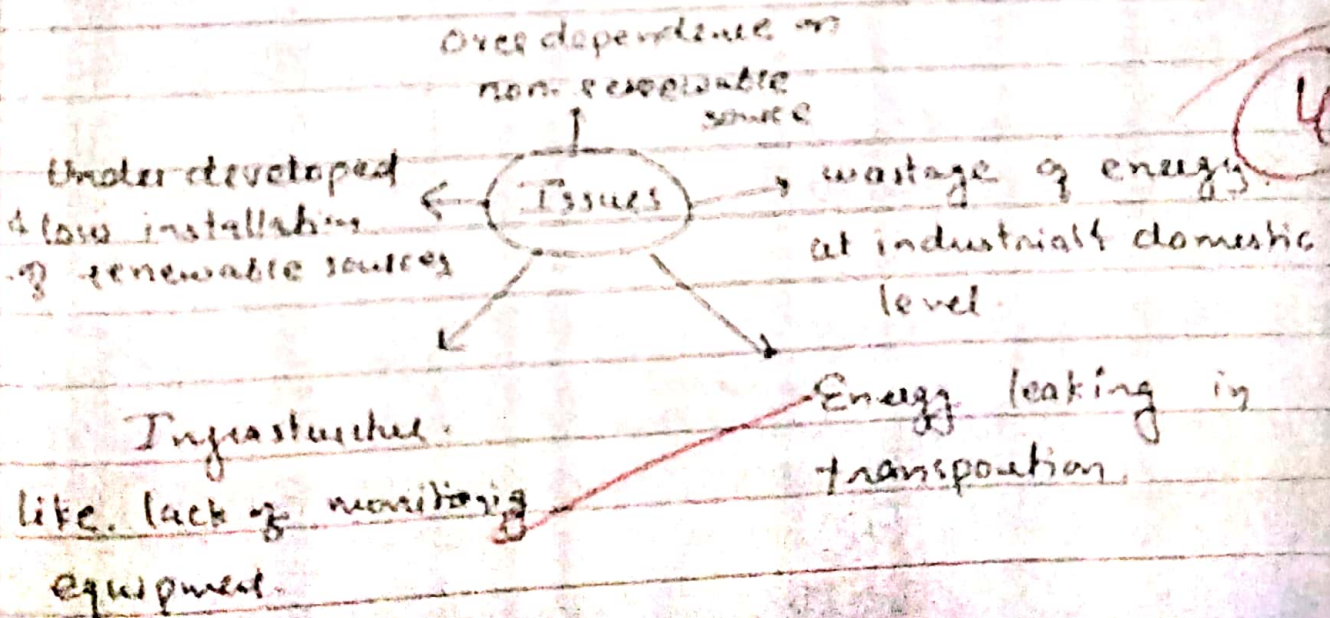
- They 20-times faster than WiFi.
- Still under developed

2.7.2)

2.7.2) **WiFi** - Wireless fidelity means communication through electronic waves.

- Slower than Light
- Developed

2.8) **Energy management**: Use of energy in sustainable manage include reducing the wastage, increase production and maintenance.



4

2.9



Super fast emerging

Quantum Computer: developing technology in field of computing

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

Principle: Quantum particles. Quantum physics.

Application: Health, meteorology, Agriculture, transport etc.

1. F

Application Internet.

Agriculture:   
 -> weather forecasting information   
 -> Information about crops & technique.

Health -> Telemedicine   
 -> Remote Consultation.

W

Transport -> Global positioning system.

E-Governance -> Accountability, transparency & information dissemination.



2. 9.

Net metering: Innovative electrical meter.

uses solar panels, runs backward if consuming domestically produced electricity flows through it.

line electricity.  domestic electricity.

Use: To promote domestic production of electricity.

Use to solar panel. Counter for saving need.

2. I

RNA: Riboxy Nucleic Acid are unstructured nucleic acid, found in viruses.

Need healthy cell to grow.

Type → ~~Positive~~ 4 types of RNA

~~Add list~~



14 di

3 5

Trips: Trade related Intellectual Property 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 losing its exclusive rights of production & sell.

Promote Innovation.

Drawback: ~~It~~ limit the usefulness.  
- Duplication of products.

2 k

WIPO: World Intellectual Property Organisation

formed in 1967.

Head Quater: Geneva, Switzerland.

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

24

24



2. 2. 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.

M. Given, A can do the work in 6 day  $\Rightarrow$  efficiency =  $\frac{1}{6}$

B can do the work in 8 days  $\Rightarrow$  efficiency =  $\frac{1}{8}$

To find:

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

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

$\Rightarrow \frac{48}{14} \Rightarrow \left[ \frac{24}{7} \text{ days} \right] \Rightarrow \left[ 3.42 \text{ days} \right]$

Ans. they will finish the work in  ~~$2\frac{4}{7}$  days.~~



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

He propose three stages of nuclear energy programme, in 1950s.

① First stage:

Pressurized heavy water reactor (PHWR) mechanism.

heavy water i.e.  $D_2O$  used as coolant.

Under this stage several nuclear power plant had been constructed.

② Fast Breeder Reactors (II stage).

Operating since 1985, ~~new~~ 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 power programme not only able to build nuclear power generation out also nuclear weapon generation.

~~Discussed in detail~~

⑤



8  
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~~ facilitates generation.

Limitation } effectiveness not equivalent

- to other resources
- labour intensive.
- Need more land & ~~technical assistance~~ which is an issue in small area.



New technology is bio energy.

① Petrochemical plants:

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

Ex. Jatropha, etc.

India have ~~63 million~~ hector ~~green~~ land that ~~is~~ proposed to its production.

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

② Methane gas → ~~Plastic~~



Urban waste management & fuel generation

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

Ministry proposed 1860 energy generation from urban waste.

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

4



## Global warming

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

### Causes

① Population: Human population is increasing and hence carbon foot ~~print~~ have been increased.

② Pesticides: Use of pesticides, the accelerate environmental pollution as they contain harmful chlorine substance.

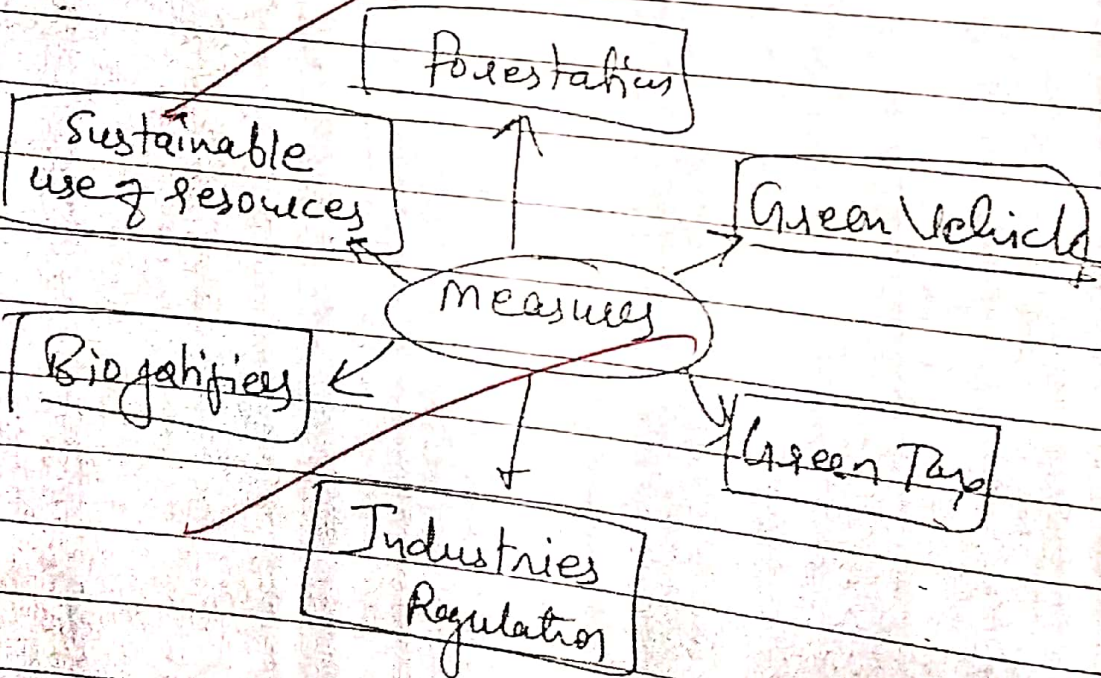
③ Vehicle: Motor vehicles like, car, bike, bus etc. producing large amount of carbon gas which add up to global warming.



④ Industries Industries are producing highly hazardous gases.

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

### MEASURES





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

(2) Green Vehicle: i.e. electric or manual vehicle.

(3) Green Tax: Tax on activities which are affecting environment.

(4) Regulation: Industries are compelled to use ~~modern~~ techniques & proper gas processing mechanism installations.

(5) Biodegradable: less harmful to environment.

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

(9/5)

(33)

- word limit is too less, ~~asked~~ More fast by all questions.
- Attempt all questions