ENVIRONMENT NOTES - PART I

1. BIODIVERSITY HOT SPOTS

A biodiversity hotspot is a biogeographic region with significant levels of biodiversity that is threatened with destruction.
For example forests are considered as biodiversity hotspots.
Criteria: It must contain at least 0.5% or 1500 species of vascular plants as endemics, and it has to have lost at least 70% of its primary vegetation.
India: Western Ghats, The Himalayas, Indo-Burma region and the Sunderland (Includes Nicobar group of Islands)

2. SHIFTING CULTIVATION

A form of agriculture, in which an area of ground is cleared of vegetation and cultivated for a few years and then abandoned for a new area until its fertility has been naturally restored.

3. GREEN UREA

Green Urea fertilizer contains a new formulation of urease inhibitor.
This delays the conversion of urea to ammonium by suppressing urease activity.
While urease activity is on hold, the fertilizer is protected against volatilization, giving time for it to be moved into the soil with rain, irrigation or cultivation. Once in the soil, it is much less susceptible to volatilization losses.
Ammonia volatilization is a chemical process that occurs at the soil surface when ammonium from urea fertilizer is converted to ammonia gas at high pH. It is very high in waterlogged conditions.

4. NEEM COATED UREA

With 46% N content, Urea is the most Popular Nitrogenous fertilizer. When Urea is applied to soil it is broken down into Ammonia and Nitrate in the presence of water. This process is called nitrification. This process make nitrogen available to plants. But if the process of nitrification is too rapid nitrogen will escape to atmosphere. And there is a concentration of nitrates in the soil. Excess nitrates reaches underground water. Excess nitrate in groundwater when used causes diseases such as blue baby syndrome.
Coating urea with Neem inhibits the fast nitrification.
GOI has made it mandatory to produce at least 75% of domestic urea as Neem coated urea only.

5. GENETIC CROPS

Genetically modified crops (GM Crops) are plants used in agriculture, the DNA of which has been modified using genetic engineering methods. In most cases, the aim is to introduce a new trait to the plant which does not occur naturally in the species.

GMO crops in India: GM Soybean, GM Maize, GM Cotton.

6. BIOTECHNOLOGY

Biotechnology deals with techniques of using live organisms or enzymes from organisms to produce products and processes useful to human.
In vitro fertilization leading to a 'test-tube' baby, synthesizing a gene and using it, developing a DNA vaccine or correcting a defective gene are all part of biotechnology
Genetic engineering- Techniques to alter the chemistry of genetic material (DNA RNA) to introduce these in to host organisms and thus change the phenotype of the host organism.

7. GREEN PLANTS

Green plants make their own food. Animals (including humans) cannot synthesize food and they feed on either plants or other animals. In all cases the food for animals comes directly or indirectly from plants.

8. MANURE

Manures are organic substance obtained from dead plants and animal wastes.

9. AGRICULTURE

The development of agriculture is about 10,000 years old. 'Agre' means field and 'cultura' means cultivation. The crops were of wheat and barley.
Learning to grow crops meant that humans no longer had to wander around for food and could settle down in communities.

10. AIR QUALITY

Moderately Polluted 101-200 May cause breathing discomfort to people with lung diseases such as Asthma , and discomfort to people with heart disease children and older adults Colour code- yellow
Poor 201-300 Colour code Orange
Very Poor 301-400 RED
Severe 401-500 DEEP BLOOD RED
The index is centered around five chief pollutants.
articulate matter with a diameter less than 10 micrometre and particulate matter less than 2.5 micrometers
Ozone, Nitrogen dioxide, Carbon monoxide

11. POTASSIUM BROMATE AND POTASSIUM IODATE

Potassium Bromate and Potassium Iodate are carcinogenic chemicals. They are used in bread making. The All India Bread Manufacturers Association decided to stop the use of these chemicals immediately.

12. CARBON NEUTRAL

The Indira Gandhi International (IGI) Airport has become Asia-Pacific's only and one of the world's few airports to achieve a carbon neutral status. The announcement in this regard was made by Airport Council International (ACI) during the Airport Carbon Accreditation certificate presentation ceremony to IGI in Montreal, Canada.

13. PARIS AGREEMENT

The Union Cabinet has given its approval to ratify the Paris Agreement (on climate change) on Gandhi Jayanti i.e. on 2nd October 2016. The Paris Agreement was adopted by 185 nations in December 2015. India had signed the agreement in New York in April 2016. So far, 191 countries have signed the agreement. The Paris treaty on Climate Change will come into force when 55 countries contributing to 55 percent of total global emission ratify the agreement.
India has ratified the Paris Agreement on climate change on the 147th birth anniversary of Mahatma Gandhi. India's Permanent Representative to UN, Syed Akbaruddin handed over the Instrument of Ratification signed by President Pranab Mukherjee to the United Nations in New York. With this, India became 62nd country to ratify the agreement. These 62 countries including India are responsible for almost 52 percent of Green House Gases (GHG) emission

The Paris Agreement to combat climate change agreed last year officially entered in to force on 4th of Nov. Now nearly 200 countries will start executing plans to slash their greenhouse gas emissions. The pact seeks to keep a global temperature rise this century well below 2 degrees celcius above pre-industrial level. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. Appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place to achieve the ambitious goals of the agreement. It will also support action by developing countries and the most vulnerable countries, in line with their own national objectives.

14. IUCN

The International Union for Conservation of Nature is an international Organization working in the field of nature conservation and sustainable use of natural resources.
HQ: Switzerland
Founded: 5 October, 1948
Focus: Nature conservation, biodiversity

15. SPIDER MONKEY

Spider monkeys are found in tropical forests of Central and South America, Southern Mexico to Brazil.
They have disproportionately long limbs and long prehensile tail.
They hang from trees by holding different branches with their long limbs and long tail shaped like spider. They do not have thumb. They live in rain forest.
They belong to genus Ateles. The genus has 7 species
They are in the IUCN Red List as endangered species.

16. HAZARDUOUS MATERIAL

AMERICIUM: The radioactive source in smoke alarms.
IT IS KNOWN AS CARCINOGENIC
LEAD: used in batteries, CRT monitor glass, one 15-inch CRT tube contains 1.5 pounds of lead. *LEAD EXPOSURE IMPAIRED COGNITIVE FUNCTIONS; BEHAVIOURAL DISTURBANCES; ATTENTION DEFICITS; CHILDREN ARE MORE PRONE.*
MERCURY: in fluorescent tubes, thermostats, flat screen monitors: *SENSORY IMPAIRMENT, MEMORY LOSS, MUSCLE WEAKNESS.*

CADMIUM: Used in nickel-cadmium batteries now banned: *SEVER DAMAGE TO THE LUNGS AND KIDNEY; DEFICIT IN COGNITION AND BEHAVIOUR*.

17. PYGMY HOG

The pygmy hog is a critically endangered wild pig.
It was previously spread across Bangladesh, Bhutan, India and Nepal. But now only found in India.
The current population is about 150 only
They are found in Assam, Manas National Park.
Scientific name Porcula savania
Pygmy hog is diurnal animal (active during day). It is omnivor.
Pythons, and large carnivores are main predators of adult pygmy hogs.
Females live in small family groups called sounders. Males live solitary life.

18. E- WASTE

Electronic waste is a term for electronic products that have become unwanted, non- working or obsolete, and have essentially reached the end of their useful life.
Most electronics that are improperly thrown away contain some form of harmful materials such as BERYLLIUM, CADMIUM, MERCURY, LEAD.
Recycling and disposal of e-waste may involve significant risk to health and great care must be taken.
CRTs are relatively high concentration of lead and phosphors.
An estimated 50 Million tons of e-waste are produced each year.

19. SEA COW

It is plant eating water mammals living in rivers and bays along the tropical Atlantic Ocean

20. SEA HORSE

Sea horse is the name given to small marine fishes in the genus Hippocampus

21. STAR TORTOISE

The Indian star tortoise is a species of tortoise found in dry areas and scrub forest in India and Sri Lanka. It is quite popular in exotic pet trade. Star tortoise is found in illegal trade.

22. SEA LION

Sea lions are sea mammals characterized by external ear flaps, long fore flippers, the ability to walk on all fours, short, thick hair, and a big chest and belly. They eat herring salmon and sardines

23. BAGASSEE

Bagasse is the by-product of sugar cane processing.
It is the fibrous matter. Bagasse is used as a biofuel and in the manufacture of pulp and building materials.
For each 10 tonnes of sugarcane crushed, a sugar factory produces nearly 3 tonnes of wet bagasse
Molasses is a viscous by-product of the refining of sugarcane into sugar. Molasses is used in the production of citric acid, rum, as an iron supplement, as an additive in livestock feeds. Molasses is also used as a soil additive to promote microbial activity.

24. FOOD CHAIN

A food chain shows how the organisms are related with each other by the food they eat. Each level of a food chain represents a different trophic level.
A food web is the natural interconnection of food chains.
Food chain starts from producer organisms such as grass or trees and ending at apex predator or decomposers such as bacteria or fungi.

25. LARGEST FOREST

Madhya Pradesh has the largest forest cover of 77,522 square kilometer in terms of area in the country followed by Arunachal Pradesh with forest cover of 67,321 square kilometer.

26. NOKREK BIOSPHERE RESERVE

Nokrek National Park or Nokrek Biosphere Reserve is a national park located Approximately 2 kms from Tura Peak in West Garo Hills district of Meghalaya.
UNESCO added this National park to its list of Biosphere Reserves in May 2009. Area of the park is 48 sq.km.

27. LOGTAK LAKE

Loktak lake is the largest freshwater lake in Northeast India and is famous for the phumdis floating over it.
Keibul Lamjao is the only floating national park in the world.
It is located near Moirang in Manipur state Area- 287 sq.km.

28. BARAIL RANGE

Highest Hill range of Assam
Area - 80000 ha. Altitude- 100-1959m
It is - IBA (Important Bird and Biodiversity Areas)
The Barail range forms one of the most diverse ecosystems.
Blyth's Tragopan, Cinereus Vulture, Lesser Adjutant, Swamp Frankolin
Primates- Slow Loris, Stump –tailed Macaque, Capped Langur, Hoolock Gibbon, Clouded Leopard, Golden Cat, Wild Dog, Sambar,
Endangered – White –winged Duck Asacornis scutulata

29. NAMDAPHA NATIONAL PARK

Namdapha National Park is the largest protected area in the Eastern Himalaya biodiversity hot spot and is located in Arunachal Pradesh in North east India.
It is also the third national park in India in terms of Area. (1985 sq km.)
The park harbours the northernmost lowland evergreen rainforests in the world. The area is also known for extensive Dipterocarp (tropical lowland rainforest trees) forests, comprising the northwestern parts of the ecoregion of Mizoram-Manipur-Kachin rain forests.
Fauna - snow leopard, clouded leopard, red giant flying squirrel. Red panda, slow loris,
Birds- horn bills, white bellied heron (endangered bird)

30. DAPHLA / DAFLA HILLS

Daphla hills is a tract of hilly country on the border of western Arunachal and Assam occupied by an independent tribe called Daphla. It lies to the north of the Tezpur and Noth Lakhimpur and is bounded on west by the Aka Hills and on the East by the Abor Range.
It has The Pahui Wild Life Sanctuary
Sessa Orchid Sanctuary
Eagle nest Wild life Sanctuary

31. GARO HILLS

The Garo Hills are part of the Garo-Khasi range in Meghalaya. They are mainly tribal dwellers. It is one of the wettest places in the world. Garo hills are known for abundance of wildlife.

32. KHASI HILLS

The Khasi Hills are part of the Garo-Khasi range in Meghalaya. The region is inhabited mainly by tribal Khasi dwellers. One of its capitals Cherrapunji is considered one of the wettest places in the world.

33. GRASSLANDS

Grasslands are areas where the vegetation is dominated by grasses. Grasslands occur naturally on all continents except Antarctica. Grasslands are found in most eco regions of the Earth. Grassland vegetation can vary in height from very short, as in chalk grassland to quite tall as in the case of North American tall grass prairie, South American grasslands and African savannas.
Grasslands often occur in areas with annual precipitation between 600mm and 1500mm and average mean annual temperatures ranges from -5 and 20 degrees. however, some grasslands occur in colder and hotter climate conditions. Grasslands can exist in habitats that are frequently disturbed by grazing or fire, as such disturbances prevents the encroachment of woody species. Also prevent woody encroachment as low nutrient levels in the soil may inhibit the growth of forests and shrub species.

34. RESOURCES

Natural Resources- Naturally occurring substances on earth that are valuable and necessary in their unmodified form, and fulfill our needs in one way or another, such as land, air and water are called resources.
Biotic Resources-The resources that we derive from living organisms are termed as biotic resources. Ex. Cereal crops, fruits and vegetables, fish etc
Abiotic Resources -The resources that we get from non-living beings are termed as abiotic resources Ex. Land, water, air, minerals etc.
Renewable Resources- These resources do not get exhausted after use because they can be replenished by natural processes within a relatively short span of time. Ex. Solar energy, air, water, animals, plants
Non-Renewal Resources- Nonrenewable resources get exhausted with use. They do not get replenished by natural processes within the lifespan of a human being and, thus when exhausted cannot be replaced. Ex. Oil, natural gas, coal
Agricultural Resources- All crops are agricultural resources Ex. Cereals, fibre crops- jute, cotton
Pastoral resources- those resources that we get from animals- milk, meat, hide, etc

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