ENVIRONMENT ECOLOGY

**ENVIRONMENT**

**Abiotic Environment** comprises the physical components or non-living elements like air, water, soil, rock etc whereas **Biotic Environment** includes all the living elements on the Earth like plants and animals etc. Name the sphere, where biotic environment interact with abiotic environment?

**Biosphere**

Our atmosphere comprises nitrogen (78%) oxygen (21%) etc and solid or liquid droplets suspended in air are called **Paniculate Matter** (PM). Sometimes particulate matters were shorter diameter (less than 10 urn) and can be respirable and create long breathing problems. These are called RSPM. In which city RSPM is highest in India?

**Vadodara (Gujarat)**

The solid surface of Earth is called **Lithosphere**, the water bodies including oceans on the surface of Earth is called **Hydrosphere**, the gaseous sphere of Earth is called **Atmosphere** and the interactive zone of all these three is called **Biosphere**. What is the name of ice sheets in solid form that includes weather system and is the source of large climate variation?

**Cryosphere**

In the hydrosphere, now sea level change has become an environmental concern throughout the world. **Inter-governmental Panel for Climate Change** (IPCC) reported the sea level is rising rapidly since 1993. What is the major cause of sea level rising?

**Melting of Glaciers**

The impact of sea level rise will shrink drainage basin area and consequential flood in littoral area, drown islands and coastal lowlands that includes many famous and developed cities and will increase the number of climate refugees. What is the government of India’s initiative to protect its coastal areas from such effect?

**Integrated Coastal Zone Management Programme**

Areas above 4000 m from sea level normally do not support tree growth and excluding these areas India has 25.22% forest cover but 367 sq km deaease in forest cover since 2009. What is the proportion of forest cover in North-Eastern states to the total forests in India?

25%

India has just 1% of world’s forest reserve and its annual productivity is only 7.5 cubic feet. What is the target to cover forest in India according to its forest conservation programme?

One-third (33%)

Under Integrated Coastal Zone Management India government released Coastal Regulation Zone notification in 2011 replacing 1991 notification and for first time include an Island Protection Zone Notification, 2011 to cover Andaman & Nicobar and Lakshadweep islands. Along with conservation and protection of coastal areas, what is the other major objective of coastal regulation zone?

**Livelihood Security**

Coastal Regulation Zone notification 2011, includes CRZ-I (ecological sensitive), CRZ-II (built-P area), CRZ-III (rural area) and CRZ-IV (water area up to territorial water). Which one was not a part of previous notification of 1991?

**CRZ-IV (Water Area)**

**Environmentalism** is a political and social movement that aims at protection and preservation of nature and environment. In India, government released National Environment Policy 2006 to mainstream environmental concern to all development activities. Which articles in our Constitution influences such policy?

**Article-48(A), Article-51A(g) and Article-21**

Ozone layer lies in stratosphere of our atmosphere that protect the biosphere by absorbing harmful Ultraviolet (UV light) radiations. Now man-made emissions of CFCs make ozone hole that is an environmental concern. Which international convention is associated with protection of ozone hole?

**Vienna Convention**

Among important environmental protection measures Indian initiatives are like Prevention of Cruelty to Animals Act, 1960, The Atomic Energy Act, 1962 for regulation of radioactive elements, Insecticides Act, 1968, Forest Conservation Act, 1980, and Environmental Protection Act, 1986. When the Wildlife Protection Act was passed?

1972

**Forest Survey of India** established in 1981 and published biennial assessment report on forest cover in the country since 1987. According to India State of Forest Report 2011, total 78.29 million hectares of land is covered by forests. What is the proportional representation of forests to the total geographical area of India?

23.81%

Deforestation is mainly the conversion of tropical forest to agricultural land and the rate is about (–) 5.2 mha per year (about the size of Costa Rica). Which
two continents are largest net losers of forests? 

**South America and Africa**

Even though total forest cover declined, mangrove forest cover increased by 23.34 sq km and most of them in Gujarat by afforestation and protection programmes. Madhya Pradesh has largest forest cover followed by Arunachal Pradesh. In terms of percentage of forest cover to total geographical area, which are top two states in India?

**Mizoram (90.68%) and Lakshadweep (84.56%)**

Forest products contribute about 1% of world’s GDP and 30% of world’s forest are primarily used for production of wood and non-wood products. Forests renew the oxygen supply and absorb carbon dioxide from the atmosphere and moderate greenhouse effect. Forests are one of the most efficient carbon sink and carbon sequestration agent in the world. Which is the largest carbon sink or carbon storage on Earth?

**Oceans (93%)**

The five most forest-rich countries are Russia, Brazil, Canada, the USA and China. 12% of the world’s forests are designated for conservation of biological diversity and 13% are legally protected. China is now the largest annual net -gainer of forests. Which country is the largest annual looser of net forest area?

**Brazil**

The UN declared 2010 as International Year of Biodiversity, 2006 was declared as International Year of Deserts and Desertification and International Year of Ocean was declared in 1998. Which year was celebrated as International Year of Forests?

2011

**Rajiv Gandhi Environmental Award for Clean Technology**

is given to industrial units for prevention of environmental pollution. **National Awards for Excellence in Foresting** is given to Indian nationals for research in foresting education. Which award encourages rural community for protection of wildlife and protection of rural environment?

**Amrita Devi Bishnoi Wildlife Protection Award**

**Important Facts**

- **Renewable Energy**
  - Solar, wind, geothermal, tidal etc.
- **Non-renewable Energy**
  - Coal, petroleum, natural gas etc.
- **Coal**
  - Most abundant fossil fuel
- **Polymetallic**
  - Concentric layers of iron and manganese
- **Nodules**
  - Hydroxide around a core and found at sea bottom
- **Natural Gas**
  - Cleanest fossil fuel on Earth
- **Synthetic Natural Gas (SNG)**
  - Mixture of carbon monoxide and hydrogen
- **Syn**
  - Gas Synthetic gas formed by gasification of organic or fossil based carbonaceous materials and acts as a fuel
- **Small Hydro**
  - Hydro electricity projects up to 25MW capacity Projects in India.
- **Lamba**
  - Asia’s largest windfarm located in Gujarat
- **Biogas Energy**
  - Energy gas produced from organic waste
- **Bio-fuels**
  - Wide range of fuels derived from biomass and covers solid, liquid and gaseous biofuels.
- **Bio-alcohol**
  - Biologically produced alcohols, commonly ethanol, through the fermentation of sugars.
- **Ethanol Fuel**
  - Most common bio-fuel worldwide, particularly in Brazil. Produced from wheat, com, sugarcane, molasses etc.
- **Bio-diesel**
  - Most common bio-fuel in Europe, produced from oils or fats using trans-esterification.
- **Bio-ethers**
  - Fuel ethers act as octane rating enhancer.

In India, Environment (Protection) Act 1986 was enacted to protect and improve environment. **Eco Mark Scheme** was launched in 1991 to, encourage consumers to use by-products of less harmful environment impact. India’s first policy was enacted in 1894 and revised in 1952, and 1988. When National Forest Commission (NFC) was set-up in India?

2003

The Food and Agricultural Organisation (FAO) of the United Nations monitors the world’s forest at 5 to 10 years intervals since 1946, latest was Global Forest Resources Assessment 2010 covering 233 countries. Total forest cover in the world is 4 billion hectare with only an average of 0.6 hectare per capita. What is the percentage coverage of forest land to total land on Earth?

31%

National Mission for Green India plan aims at doubling afforestation and eco-restorations in next ten years. National Action Plan on Climate Change (NAPCC) is a recent programme for protection of environment in India. Which programme aims at imbibing value of forest conservation in children?
ENVIRONMENT ECOLOGY

**National Green Corps**

Indira Gandhi Paryavaran Puraskar is an award instituted by Ministry of Environment and Forests in 1987 to encourage public participation in environment protection. **Indira Priyadarshini Vriksha Mitra Award** was instituted in 1986 to recognise pioneering and innovative contribution in afforestation. Which award encourages writers in Hindi, related to environment?

**Medini Puraskar**

Article-218(A), Article-51 (A) (g) and judicial interpretation of Article-21 of Indian Constitution deals with the protection of forests. India now has 88 National Parks and 490 Wildlife Sanctuaries. National Environment Awareness campaign launched in 1986 to create awareness. Which programme deals with the public participation for forest development?

**Joint Forest Management**

Champions of Earth award was established by UNEP in 2004. It recognises outstanding environmental leaders. Green Stay Awards recognise efforts to prevent and respond to environmental disasters around the world. Which award is annually given to grassroot environmental activists, each from six geographical regions of the world?

**Goldman Environmental Prize**

Ernst Haeckel has invented the term ‘Ecology’ that is the relation of animals to its organic as well as inorganic environment. Ramdeo Mishra is considered as ‘Father of Indian Ecology’. Who is called Father of Ecology?

**Alexander VonHumboldt**

Large scale areas of similar vegetation and climatic characteristics is called **Biome**. Every biome is home to a number of ecosystems. **Ecosystem** is the smallest unit that can sustain life in isolation and on individual member of a species is called **Organism**, and all organisms of a species is called **Population**. All the species living in an area is called **Community**.

In Ecology, when animals and plants are given equal” emphasis, it is termed as **Bioecology, Synecology** is the study of communities and **Auteology** is the study of species. What is the term used to explain the functional existence of living organisms with its abiotic environment and biotic sphere?

**Ecosystem**

Each organism is better grow in a particular natural environment where the species population freely interbreed and sustain. The natural ecosystem may be Terrestrial, Freshwater, Estuarine or Oceanic and its loss or degradation may lead to extinction of such particular organism. What is the natural environment called?

**Habitat**

Earth’s biosphere at sub-global level can be divided into biogeographical realms. Eurasia is called **Palearctic realm**, North America is called **Narcotic realm**, South America is called **Nontropical realm**, Africa is called **Ethiopean realm** and Australia is called **Australian realm**. What is South and South-East Asia is called, of which India is a major part?

**Oriental Realm**

Even though human is a part of ecosystem, it often disturb the natural cohesion between biotic and abiotic components. Disruption of ecosystem may lead to extinction of species of both plants and animals. Some species, if eliminated, seriously affect the ecosystem. What are these species called?

**Keystone Species**

Components of structural aspects of ecosystem are like inorganic compounds as Carbon, Nitrogen, Carbon dioxide and water. Organic compounds as Protein, Carbohydrates, Lipids which links abiotic and biotic components, climatic regimes like Temperature, Moisture, Light and Topography. Which is called ‘Producer’ that forms matter and energy for next consumers with the help of above components?

**Plants**

Ecosystem functions through several biogeochemical cycles and energy-transfer mechanism. Plants, herbivores and carnivores form Food chains and all the food chains joined together to form **Web of Life** that power the ecosystem. Which is the major source of all energies in the ecosystem?

**Sun**

Every living organism is in someway dependent on other organism. Plants are called **producer** whereas those that feed on green plants are called **herbivores** and those that feed on these herbivores and other animals are called.

**Carnivores**

Individuals of different species interact with one another. Inter-specific interactions can be positive, neutral or negative. What is the interaction that occurs among organisms of the same species?

**Infra-Specific Interaction**

Intra-specific interactions occur among same species. Social Dominance is visible among anti community. **Social Hierarchy** is found among poultry. Give one example of species where territoryiaity is found?

**Dogs**

As every organism depend on other for their sustenance then a proper food chain is established in the

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ecosystem through which biomass is exchanged and transferred with both energy and matters along steps of organisms called **trophic level**. Above the producers, other trophic levels are called **consumer**. Micro-consumers like fungi etc are called **Saprotrophs** and what is the term used for large animals?

**Phagotrophs**
Herbivorous animals like insects, deer, elephants, small fishes etc those feed on producers in a specific ecosystem. Thus are commonly called **Primary Consumer**

The decomposition is a vital function in nature, without this, all the nutrients would be tied up in dead matter and no new life would be produced. In an ecosystem, abiotic components are abundant, producers and decomposers are largest in number. What is the relation among the number of species and population along the trophic levels between Producers and Decomposers in terms of stored energy?

**They Decrease towards Higher Tropical Level**

Most ecosystems are highly complex and consist a large number of species. Tropical ecosystems are especially species-rich. Equatorial rainforest is highly diversified and coral reef is called rainforest of ocean due to its large biological growth and density. Some species are extremely rare and occur only at a few locations. These species are called **Endemic Species**

**Commensalism** is one type of positive inter-specific interaction when an individual obtains a benefit from a different species without damaging it. Whereas **Mutualism** occurs when an individual species obtain benefit from another species and other species also benefited from this, but not in an obliged manner. What is the relationship between two individuals of different species benefiting mutually in an obliged manner?

**Symbiosis**
Competence occurs when two different species in a community have the same needs for one or more factors from the environment and there is un-intentional non-violence struggle between these species. This is a neutral type inter-specific interaction. How is the relation between two competing species?

**Indirect**
Among negative type inter-specific relations, predation is one example. In this, predator or the killer feeds on the prey (victim). What is the relation in which one species gets benefitted from other but gradually damages the other even without imposing immediate death?

**Parasitism**

**Ecological Succession** is the process by which communities of plant and animal species in an area are replaced by other over a period of time. **Primary Succession** takes place over bare or unoccupied area such as rocks, newly formed deltas, emerging volcano islands or on glacial moraines. What are the plants called, which invade the bare rocks first where foil is absent?

**Pioneer Species**

<table>
<thead>
<tr>
<th>Name</th>
<th>Reserve For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Namdapha Sanctuary</td>
<td>Elephant, panther, sambar, tiger, cheetal, king cobra</td>
</tr>
<tr>
<td>Kaziranga National Park</td>
<td>One Horned rhinoceros, gaur, elephant, leopard, wild buffalo</td>
</tr>
<tr>
<td>Sonai Rupa Sanctuary</td>
<td>Elephant, sambar, one-horned rhinoceros</td>
</tr>
<tr>
<td>Gautam Buddha Sanctuary</td>
<td>Tiger, leopard, sambar, cheetal, barking deer</td>
</tr>
<tr>
<td>Achanakmar Sanctuary</td>
<td>Tiger, boar, cheetal, sambar, bison</td>
</tr>
<tr>
<td>Valvadore National Park</td>
<td>Wolf, black buck</td>
</tr>
<tr>
<td>Wild Ass Sanctuary</td>
<td>Wild ass, wolf, nilgai, chinkara</td>
</tr>
<tr>
<td>Gir Forest</td>
<td>India’s biggest wildlife sanctuary famous for gir lions</td>
</tr>
<tr>
<td>Nagarhole National Park</td>
<td>Tiger, Indian bison, elephants</td>
</tr>
<tr>
<td>Dandeli Sanctuary</td>
<td>Tiger, panther, elephant, cheetal, sambar, wild boar</td>
</tr>
<tr>
<td>Bhadra Sanctuary</td>
<td>Elephant, cheetal, panther, sambar, wild boar</td>
</tr>
<tr>
<td>Banerghatta National Park</td>
<td>Elephant, cheetal, deer, grey partridge, green pigeon</td>
</tr>
<tr>
<td>Bandipur Sanctuary</td>
<td>Elephant, tiger, panther, sambar, deer, birds</td>
</tr>
<tr>
<td>Ranganthittoo Bird Sanctuary</td>
<td>Important bird sanctuary</td>
</tr>
<tr>
<td>Tungabhadra Sanctuary</td>
<td>Panther, cheetal, sloth bear, four-horned antelope</td>
</tr>
<tr>
<td>Dachigam Sanctuary</td>
<td>Kashmiri stag</td>
</tr>
<tr>
<td>Pachmarhi Sanctuary</td>
<td>Tiger, panther, boar, sambar, nilgai, barking deer</td>
</tr>
<tr>
<td>Gandhi Sagar Sanctuary</td>
<td>Cheetal, sambar, chinkara, wild birds</td>
</tr>
<tr>
<td>Bandhavgarh National Park</td>
<td>Tiger, panther, cheetal, nilgai, wild boar</td>
</tr>
<tr>
<td>Simlipal Sanctuary</td>
<td>Elephant, tiger, leopard, gaur, cheetal</td>
</tr>
</tbody>
</table>
**ENVIRONMENT ECOLOGY**

<table>
<thead>
<tr>
<th>National Park</th>
<th>State/Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunderban Tiger Reserve</td>
<td>West Bengal</td>
</tr>
<tr>
<td>Jaldapara Sanctuary</td>
<td>West Bengal</td>
</tr>
<tr>
<td>Ghana Bird Sanctuary</td>
<td>Rajastan</td>
</tr>
<tr>
<td>Kanchenjunga National Park</td>
<td>Sikkim</td>
</tr>
<tr>
<td>Vedanthangal Bird Sanctuary</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>Dudhwa National Park</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>Chandraprabha Sanctuary</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>Corbett National Park</td>
<td>Uttar Pradesh</td>
</tr>
</tbody>
</table>

(titled in memory of Jim Corbett)

The assemblage of pioneer plants is collectively called **Pioneer Community**. A pioneer species generally show high growth rate, but short life span. **Secondary Succession** occurs after elimination of an existing vegetation by natural events like hurricane or forest fire. Which type of succession is the emergence of grass on the coast of Tamil Nadu after Tsunami in 2004?  

**Secondary Succession**  
Each transitional community in the process of succession is called **Serai Community**. Primary succession takes a longer time than secondary succession. Pioneer species on dry rocks are called Xerarch and on **aqueous** bodies are called Hydrarch. What is called the terminal stage of succession where stable, mature and more complex, communities are developed?  

**Climax Community**  
Creepers or Climbers are commonly found in tropical rainforests. A special type of species that are not creepers but survive in the trees in the tropical rainforests in a non-parasitic manner and makes its own food using photosynthesis. Which are these species?  

**Epiphyte**  
Ecological niche is the place of a species in the food chain. A habitat has several ecological niches and supports a number of species. Two or more species cannot use the same niche, despite having a mutualistic association. What is the maximum limit of species that exist in an ecological niche?  

**Single Species**  
Every ecosystem has a certain capacity to sustain its components without deterioration and called its **Carrying Capacity**. When less species exist it is called underpopulated and overpopulated/over shooting when population exceeds carrying capacity. What term is used to describe the appropriate species diversification and population for which the ecosystem sustain better?  

**Optimum Population**  
In the biosphere, light is an important abiotic factor that is the main supply of energy for organisms. About 1.94 calories per sq cm per minute solar energy reaches earth among which 0.582 calories are reflected back by dust and cloud and 0.4 calories are absorbed by atmosphere and 0.97 calories reaches terrestrial ground. What is the process that chlorophyll of plants converts solar energy to chemical energy?  

**Photosynthesis**  
Among all solar radiations ultra violet radiations are absorbed by ozone layer which protects biosphere, UV lights also works in limiting some biochemical reactions that could be harmful for living beings UV lights also annihilates pathogens and can cause savourable mutations in all life forms. Which light is used by insects to differentiate one flower from another?  

**Ultra Violet Light**  
Biomass is the mass of living biological organisms in a given area or ecosystem at a given time and **Primary Productivity** is the rate at which an ecosystem’s producers create biomass. Producers are otherwise called **Autotrophs**. Which term describes not only the physical space occupied by organism, but also its functional role in the community of organisms?  

**Ecological Niche**  
Chemosynthesis is the less common form of production that relies on energy from chemicals, rather than solar energy to create organic resources. Evapotranspiration includes both transpiration of water molecules and evaporation that in large scale control the weather. What is the biochemical process of regulating internal body heat to maintain a stable temperature with respect to environmental change?  

**Thermoregulator**  
Consumers rely on the producers to gather energy. Rather than performing photosynthesis or Chemosynthesis, consumer performs aerobic respiration, which converts sugar and oxygen into carbon dioxide, water and energy. Consumers are otherwise called **Heterotrophs**. Decomposers also called Saprotrophs or Detritivores that consume both dead cells of producers and consumers and convert it into simple elements, and so elements on Earth are cycled endlessly between their biotic and abiotic states within ecosystem not destroyed or lost completely. Which type of system, the whole Earth would be?  

**Closed System**

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ENVIRONMENT ECOLOGY

Every ecosystem has several interrelated mechanisms like water cycle, Carbon cycle, oxygen cycle, nitrogen cycle and the energy cycle. Energy cycle is based on the flow of energy through the ecosystem. Which is the most important aspect of energy cycle through which energy is transferred?

**Food Chain**

Different plants and animals are linked to one another through food chains. Each food chain has three or four links. However, each plant or animal can be linked to several other plants or animal through different linkages making a complex food web which establishes thousands of interrelationships in nature. This complex structure is otherwise called

**Web of Life**

According to Ten Percent Law of transfer of energy, only about 10% of the organic matter is stored as flesh during the transfer of energy from one trophic level to the next. There are two types of food chains one is Grazing Food Chain, which is the other one?

**Detritus Food Chain**

Food Web shows more holistic view of energy transfer. Increase in the diversity of species in an ecosystem raises the stability of that ecosystem. All food webs start with autotrophs and end with decomposer. Nitrogen and phosphorus are two most important nutrients of aquatic ecosystem. Who pioneered the concepts of food cycle, food chain and food size in his book ‘Animal Ecology’?

**Charles Elton**

Ecological Pyramids are the graphic representation of trophic levels in an ecosystem. They are of three types i.e. Biomass Pyramid, Pyramid of Number and Pyramid of energy. Pyramid of Biomass in a terrestrial ecosystem is upright. What is the nature of Pyramid of Biomass in an aquatic habitat?

**Inverted**

Pyramid of Number represents the number of organisms at each trophic level. It is normally upright but sometimes inverted in grasslands as some insects feeds on single tree. **Pyramid of Energy** is the total amount of energy at each trophic level. What is the nature of Pyramid of Energy?

**Always Upright (Never Inverted)**

Sometimes toxic materials are injected to higher trophic level and accumulated at the higher order creatures. Micro organisms also cannot degrade some toxics like mercury and they routinely expelled into sea beds and transformed into methyl mercury by bacteria and are eaten by fish, when human eat these fishes they get affected. What is the term used to denote such phenomena?

**Biomagnification**

Ecological Footprint is the amount of land and water productivity to the waste produced by the population of any region or land. **Bio-indicators** are like biological processes or species that are used to assess the quality of the environment and how it changes over time. The cyclic movement of nutrient material between biotic and abiotic environment is called

**Bio-geochemical Cycle**

Forest ecosystem includes both plant diversity and animals inhabited there. Evergreen forest grow in high rainfall areas, deciduous forests are found in regions with a moderate amount of seasonal rainfall. Name the famous trees of deciduous forests in India?

**Teak and Sal**

Thorn forests are found in the semi-arid regions of India and abundance with xerophytic species that are able to conserve water. Mangrove forests grow along the coast especially in the river deltas, mix with saline and fresh water. The mangrove trees have breathing roots that emerge from the mud banks. Where in India we can find coniferous forests?

**Himalayan Region**

Grasslands cover areas where rainfall is low and the soil has low depth and poor. Himalayan belt has high cold pastures, tall elephant grass is found in the semi-arid belt South of Himalayan foothills and semi arid grasslands’ on western India, Central India etc. What type of grassland ecosystem found on Will-slopes along side the extremely moist evergreen forests in South India?

**Sola Forest**

Himalayan pasture belt extends up to the snow lines and Himalayan wildlife requires both forest and grassland ecosystems. Animals migrate up into higher altitude grasslands in summers and move down into the forest in winters. Himalayan ecosystem has large variety of flowers and medicinal plants. Wolf, black, Caracal, bustards and floricans are inhabitants of which ecosystem?

**Semi-arid Plains/ Desert Ecosystem**

**Pollutants and their Effect**

<table>
<thead>
<tr>
<th>Sources</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Municipal and</td>
<td>Reduced Dissolved Oxygen (DO); increased</td>
</tr>
<tr>
<td>domestic waste</td>
<td>hydrogen sulphide levels; incidence of</td>
</tr>
<tr>
<td></td>
<td>coliform and faecal streptococci; high</td>
</tr>
<tr>
<td></td>
<td>Biological Oxygen Demand (BOD)</td>
</tr>
<tr>
<td>Industrial waste</td>
<td>Affect DO, temperature, turbidity, pH,</td>
</tr>
<tr>
<td></td>
<td>ammonia values; increases BOD, suspended</td>
</tr>
<tr>
<td></td>
<td>solids</td>
</tr>
<tr>
<td>Toxic metals</td>
<td>Causes change in chemical and biochemical</td>
</tr>
<tr>
<td></td>
<td>processes, increase in turbidity, lethal</td>
</tr>
<tr>
<td></td>
<td>and sublethal effects on marine life</td>
</tr>
<tr>
<td>Oil pollution</td>
<td>Causes smothering, clogging and toxicity</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>Affect nutrient levels and may cause</td>
</tr>
</tbody>
</table>
**ENVIRONMENT ECOLOGY**

<table>
<thead>
<tr>
<th><strong>Activity</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dredging and reclamation</td>
<td>Affects habitats of marine organisms; lethal and sublethal effects; affects flushing capacity of the waterbody increases in nutrient levels and can cause excessive algal bloom; may also cause damage to coral reefs and coastal nurseries.</td>
</tr>
<tr>
<td>Discharge of coolant</td>
<td>Raises the temperature of the water; can cause the growth of the blue-green algae.</td>
</tr>
<tr>
<td>waters</td>
<td></td>
</tr>
<tr>
<td>Toxic chemicals</td>
<td>Causes lethal and sublethal effects on marine organisms.</td>
</tr>
<tr>
<td>Offshore mining</td>
<td>Increases particulate loading which can lead to loss of light and reduced primary productivity smothering and clogging of benthic communities.</td>
</tr>
<tr>
<td>Radio nuclides</td>
<td>Bio-accumulation in fish and other benthic communities.</td>
</tr>
</tbody>
</table>

Desert or semi-arid ecosystem has thorny vegetation like babul. Rann of Kutch has a specialised semi-arid ecosystem, they become desert in summer’s and marshland during monsoons. Great Rann is famous as it is only known breeding colony of the greater and lesser flamingos in our country. The Little Rann of Kutch is famous for Wild Ass.

Among aquatic ecosystem, fresh water ecosystem includes rivers, pond and lakes etc. Marine ecosystem are highly saline while brackish areas have less saline water. Name the special type of aquatic ecosystem in which the water level functions dramatically in different season and now protected by national and international initiatives?

Wetland Ecosystem

Ecoline is a gradation from one ecosystem to another, where there is no sharp boundary between these two. An Ecotone is the transition area between two biomass, where two communities meet and integrate. What is the term used to describe two change in behaviour and living pattern in species in accordance with the changes in the environment?

Adaptation

Coral reefs are very rich in species and are found in only a few shallow tropical seas. In India, it is found in Andaman-Nicobar islands and Gulf of Kutch. Brackish water ecosystem in river deltas are covered by mangrove forests, and in India largest mangrove swamps are found in Sundarbans. Which aquatic ecosystem is one of the most productive ecosystem in terms of biomass production?

Mangrove Forests

Prairies are generally humid and densely covered in tall grass and inhabited by grazing animals like oxen and bison. Steppes vegetation is found in less moisture region and inhabited by mammals like antelope. Savanna are distinguished by their warmer, drier climate and seasonal drought and inhabited by endangered rhinos and elephants. All these biomass are broadly which type of ecosystem?

**Grassland Ecosystem**

Ecosystems can destroyed by pollution, climate change, land clearing, deforestation, resource exploitation, decline in species’ population and anthropogenic activities. What is the term used to describe the functional destruction of aquatic ecosystem when fertilizer induced in water by sewage and run off and consequently decreases Biological Oxygen Demand (BOD) level with algal boom?

**Eutrophication**

The Productivity of an ecosystem refers to the rate of production of organic matter per unit area in unit time. Gross Primary Productivity (GPP) refers to total rate of photosynthesis including organic matter used up in respiration and depend upon chlorophyll content. When respiratory utilisation is excluded it is called Net Primary Productivity (NPP). What is the rate of storage of organic matter not used by the heterotrophs or consumers?

**Net Productivity**

Some animals are specialised in their feeding habit, very efficient but always has threat of extinction if any change in the lower trophic level. Koala bear is a specialist species, what is its food?

**Leaves of Eucalyptus**

Species community develops from bare, nude ground and gradually succeed by other efficient communities through series of stages till a final stable state or climax is achieved. The initial stage is called Pioneering Stage and the final stage is called Climax. What are the intermediate stages called?

**Serai**

Autotrophic successions begins predominantly in organic environment and dominated by autotrophic organisms. Heterotrophic succession occur by heterotrophic organisms when environment is predominantly organic. Autogenic succession results from changes brought about by the organisms themselves. What type of succession occur when external factor is responsible for succession?

**Allogenic Succession**

In cold climatic ecosystem, some organisms go underground to save them, is called Hibernation and Aestivation is the ecological process of adapting to the hottest climatic conditions by organisms. The adaptability of seeding and flowering in lower temperature and in low light in polar regions of very short spring season is called

**Vernalisation**

Majority of grasslands are found around the trop-
ENVIRONMENT ECOLOGY
ics. Among natural grasslands Savannas in Africa, Prairies in North America and Steppes in the Southern Russia are the important ones. South-East Asian grasslands are semi-natural and man modified. Temperate grassland soils contain more organic material than tropical soils. What is the distribution of grassland to total land on Earth?

One-Fifth (20%)
Tropical rainforests are one of the most productive ecosystem and treasure house of nature, now face greatest anthropogenic threats. Amazon rainforest is the largest tropical rainforest which produce 40% of world’s oxygen. 40% of tropical rainforest have now already been lost in Latin America and South-East Asia. It provides one-fourth of all medicinal contents and habitat to half of Earth’s animal, insects and flora. How much percentage coverage of tropical rainforest to Earth surface?

2%

E-Wastes and their Effects

<table>
<thead>
<tr>
<th>Element</th>
<th>Use in Technology</th>
<th>Harmful Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>Used primarily in soldering of circuit boards and other device components</td>
<td>Extremely harmful to the human body; damages both the central and peripheral nervous systems; can cause seizures, retardation, high blood pressure, damage to the kidneys and liver; adversely affects child development</td>
</tr>
<tr>
<td>Beryllium</td>
<td>Forms significant portions of electrical connectors and battery contacts</td>
<td>Long term exposure can be carcinogenic, especially for the lungs. Extreme exposure can lead to a potentially fatal condition known as Acute Beryllium Disease</td>
</tr>
<tr>
<td>Arsenic</td>
<td>Used in some integrated circuits and semiconductors</td>
<td>Arsenic is a notoriously potent poison; causes severe damage to the digestive tract Attacks the central nervous and endocrine systems; harmful to mouth, teeth and gums; poses risk in the neurodevelopment of unborn fetuses</td>
</tr>
<tr>
<td>Mercury</td>
<td>Can be found to a degree in batteries and circuit boards</td>
<td>Toxic to humans in ways similar to arsenic fatal in large doses:</td>
</tr>
<tr>
<td>Antimony</td>
<td>Used in production of diodes and batteries</td>
<td>Potentially carcinogenic; Repeated exposure can damage the lungs, Kidneys and liver</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Used in soldering semiconductors and chip resistors</td>
<td></td>
</tr>
</tbody>
</table>

Pioneer species are the first species to be developed in the first stage of ecological succession. Keystone species are affecting many other organisms in the ecosystem and Indicator species serves as early warning that a community or ecosystem is being degraded. The species that plays a major role in shaping communities by creating and enhancing a habitat that benefits other species are called

Foundation Species

Ecological Efficiency is the percentage of energy transferred from one trophic level to another in a food chain or food web. It depends on the carrying capacity and the population of species. It is maximum in optimum population. When the population exceeds the carrying capacity of its habitat, sharp reduction occur in the population. What is the ecological term denote such phenomena?

Dieback

BIODIUERSITY

Biodiversity is the variety of species and ecosystems on Earth and the ecological processes of which they are part. It includes genetic diversity, species diversity, ecological diversity and functional diversity. Who has given the idea of biodiversity hot spots?

Norman Myers

Biodiversity follows some basic laws: greater is the stability of resources, greater is the diversity; diversity increases as a function of climax i.e. climax increases the diversity, greater is the diversity, greater is the stability and diversified communities exploit less diversified ones. What is the natural or forced cross breeding occur across the community?

Mutation

Alpha Diversity is the total number of species found in a particular region. Beta Diversity is the structural diversity found in species in a ecosystem and Gamma Diversity is the rate of change of species with the expanding geographical region. Who has given the concept of alpha, beta and gamma diversity?

RH Whittaker

Eastern Himalayan region is a distinct floral region and comprises of Nepal, Bhutan and states of East and North-East India and a contiguous sector of Yunnan province in South-Western China. The region also called Cradle of Speciation. Name the endangered plant species listed in Red Data Book and found in the region and helpful in treatment of cancer.

Taxol Plant

Indo-Burma biodiversity hot spot region spread from Eastern Bangladesh to Malaysia and includes North-Eastern India. South of Brahmaputra river, Andaman-Nicobar Islands, Myanmar, Southern China, Cambodia, Vietnam and Thailand. Which type of climatic condition is found in this region?

Tropical Moist Climate
A **Biodiversity Hotspot** is a biogeographic region with a significant reservoir of biodiversity that is under threat. These are Earth’s biological richest and most endangered terrestrial eco-region. How many biological hot spots are detected till today by Conservation International?

34

Western Ghats biodiversity hot spot spread across six states in India and one of the richest centre of endemism. Most of the amphibians are endemic. Rare faunas like Lion-tailed Macaques, Nilgiri Langur, Nilgiri Taher, Flying Squirrel and Malabar Gray Hornbill. Recently, two Committees are set-up separately for assessment and protection measures of the region. Name them.

**Madhav Gadgil Panel and K. Kasturirangan Committee**

To be declared as a biological hot spot, a region must contain at least 0.5% or 1500 species of vascular plants as endemics. Caribbean islands is North and Central America, Atlantic forest in South America, Caucasus and Mediterranean basin in Europe, Horn of Africa and Madagascar in Africa, Japan, New Zealand, Philippines in Asia Pacific are hot spots. Name the biological hot spots in India?

**Eastern Himalayas, Indo-Burma and Western Ghats Biological Diversity** term was first coined by Raymond F. Dasmann. Sundarbans has the largest block of tidal holophytic mangrove forests in the world and Great Barrier Reef in Australia is the largest coral reef biodiversity in the world. Countries with richest biodiversity are mostly located in which region?

**Equatorial Region**

Trans-Himalayan region constitutes 5.6% of the total geographical area having high altitude, cold and arid climate. The region is favourable habitat for biggest population of wild sheep, goat in the world. Rare fauna includes snow leopard, migratory fragile ecosystem. Which region of Jammu and Kashmir belongs to this region?

**Ladakh**

Himalayan zone constitute 6.4% of total geographical area with rich biodiversity and extremely fragile ecological zone. Hangul and musk deer are endangered species in the region. Name the recent programme undertaken by government of India for protection of biodiversity of this region?

**National Action Plan for Sustaining Himalayan Ecosystem**

Indian desert zone constitute about 6.6% of total geographical area including Thar and Kutch desert. Desert cat, Houbara Bustard are species found there. Name the endangered species found in the region which once spread across India and Pakistan, now confined only to a small patch of desert India due to loss of grassland habitat to agriculture?

**Great Indian Bustard**

Biodiversity hot spots are natural regions habitat to adversified species. Now those domesticated species are found had also a natural habitat which was genetically more diversified. What are these regions?

**Gene Pool Centres**

Semi-arid region constitute about 16.6% of the total geographical area and is a transition zone between desert and dense Western Ghats. Sambar, Chital, Lion, Caracal, Jackal, Wolf are endangered species in the region. Lion is now confined to which state of India, once the King of the Jungle across India?

**Gujarat**

Deccan plateau is the largest bio-geographic zone in India constituting about 42% of total land and is mostly semi-arid with deciduous vegetation. Barking deer and gaur in moisten areas, Elephant in Biharo-Odisha and Tamil Nadu-Karnataka belt, wild buffalo are some species here. Where is the critically endangered swamp deer is found?

**Madhya Pradesh**

India consists two Realms-Himalayan Pallarctic Realm and Sub-continental Malayan Realm, 5 biomass, 10 bio-geographic zones and 25 bio-geographic provinces. How much biodiversity of the world is in India?

7-8%

Golden Langur from Asom-Bhutan region and Flying Squirrel from Arunachal Pradesh are two threatened species recently found in this region. Name a famous National Park which lies in Arunachal Pradesh?

**Namdapha National Park**

Western Ghats constitutes 4% of total geographical area and is a major tropical evergreen forest zone. The biodiversity hot Spot is home to endemic Nilgiri Langur, Grizzled Giant Squirrel, Nilgiri Taher, Travancore Tortoise and Turtle etc. In which region, it is stretches from North to South?

**South ofTap to Kanyakumari**

Gangetic plain constitute 10.8% of total geographical area along Ganges river system. Prominent faunas are rhino, hog deer, elephant etc. Which is the major cause of environmental and ecological concern in this region?

**Pollution and Deforestation**

North-East region constitutes 5.2% of total geographical area transition zone between India, Indo-Malayan and Indo-Chinese bio-geographical region and meeting point of Himalayan and Peninsular India and so, called bio-geographical gateway in India. Which location in this region is concentrated with most
ENVIRONMENT ECOLOGY

of the endangered species?

**Khasi Hills**

Biodiversity is now conserved through mostly two methods *In-situ* and *Ex-situ*. *Ex-situ* conservation is the conservation of biodiversity at an artificial location including Botanical Garden, Zoological Park etc and *in-situ* conservation is the conservation strategies implemented in the original habitation of the species. Name two *in-situ* conservation strategies?

**Biosphere Reserve and National Park**

Potential Sites yet to be Designed as Biosphere Reserve

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>State</th>
<th>Type</th>
<th>Key Fauna</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seshachalam Hills</td>
<td>Seshachalam hill ranges covering parts of Chittoor and Kadapa districts</td>
<td>Andhra Pradesh</td>
<td>Eastern Chats</td>
<td>Saltwater</td>
</tr>
<tr>
<td>Great Nicobar Biosphere Reserve*</td>
<td>Southern most Islands of Andaman and Nicobar Islands</td>
<td>Andaman and Nicobar Islands</td>
<td>Islands</td>
<td>Crocodile</td>
</tr>
<tr>
<td>Dihang-Dibang Manas</td>
<td>Part of Siang and Dibang valley</td>
<td>Arunachal Pradesh</td>
<td>Eastern Himalayas</td>
<td>Golden</td>
</tr>
<tr>
<td>Great Rann of Kuchchh</td>
<td>Part of Kuchchh, Rajkot, Surendranagar and Patan districts</td>
<td>Gujarat</td>
<td>Desert</td>
<td>Langur, Red Panda</td>
</tr>
<tr>
<td>Cold Desert</td>
<td>Pin Valley National Park and surroundings Chaudhurad and Sarchu and Kibber Wildlife Sanctuary</td>
<td>Himachal Pradesh</td>
<td>Western Himalayas</td>
<td>Indian Wild Ass</td>
</tr>
<tr>
<td>Agasthamalai Biosphere Reserve</td>
<td>Neyyar, Peppara and Shendunury Wildlife Sanctuary and their adjoining areas</td>
<td>Kerala, Tamil Nadu</td>
<td>Western Chats</td>
<td>Nigiri Tahr, Elephants</td>
</tr>
<tr>
<td>Panna</td>
<td>Part of Parma and Chattarpur districts</td>
<td>Madhya Pradesh</td>
<td>Semi-Arid</td>
<td>Giant Squirrel, Flying Squirrel</td>
</tr>
<tr>
<td>Pachmarhi Biosphere Reserve*</td>
<td>Parts of Betul district, Hosangabad district and Chhindwara district</td>
<td>Madhya Pradesh</td>
<td>Semi-Arid</td>
<td>Giant Squirrel, Flying Squirrel</td>
</tr>
<tr>
<td>Achanakamar</td>
<td>Part of Annupur, Dindori and Bilaspur districts</td>
<td>Madhya Pradesh</td>
<td>Matkala Range</td>
<td>Red Panda</td>
</tr>
<tr>
<td>Amarkantak*</td>
<td>Part of Caro hills</td>
<td>Chhattisgarh</td>
<td>East Himalayas</td>
<td>Gaur</td>
</tr>
<tr>
<td>Nokrek*</td>
<td>Part of Mayufthanj district</td>
<td>Meghalaya</td>
<td>East Himalayas</td>
<td>Royal Bengal Tiger</td>
</tr>
<tr>
<td>Simlipal*</td>
<td>Part of delta of Ganges and Brahmaputra river system</td>
<td>Odisha</td>
<td>Deccan Peninsula</td>
<td>Snow Leopard, Red Panda</td>
</tr>
<tr>
<td>Sunderbans*</td>
<td>*</td>
<td>Paschim Banga</td>
<td>Cannetic Delta</td>
<td>Nilgiri Tahr, Lion tailed macaque</td>
</tr>
<tr>
<td>Khangchendzonga</td>
<td>Parts of Kangchenjunga hills</td>
<td>Sikkim</td>
<td>East Himalayas</td>
<td>Snow Leopard, Red Panda</td>
</tr>
<tr>
<td>Nilgiri Biosphere Reserve*</td>
<td>Part of Waynad, Nagaramole Bandipur and Muchamala</td>
<td>Tamil Nadu, Kerala</td>
<td>Western Chats</td>
<td>Dugong or Sea Cow</td>
</tr>
<tr>
<td>Gulf of Mannar*</td>
<td>Indian part of Gulf of Mannar extending from Rameshwaram Islands in the North to Kanyakumari in the South of Tamil Nadu and Sri Lanka</td>
<td>Tamil Nadu</td>
<td>Coasts</td>
<td>Gaur</td>
</tr>
<tr>
<td>Nandadevi*</td>
<td>Parts of Chamoli district, Pithoragarh district and Bageshwar district</td>
<td>Uttarakhand</td>
<td>Western Himalayas</td>
<td>Snow Leopard, Red Panda</td>
</tr>
</tbody>
</table>

*Sites are part of world Network of Biosphere Reserves*
ENVIRONMENT ECOLOGY

The National Biosphere Reserve Programme was initiated in 1986. Now India has created a network of 102 National Parks, 526 Wildlife Sanctuaries, 57 Conservation Reserves, 4 Community Reserves with a total 689 protected areas. What is the total proportion of area now under protected areas in India?

5.06%

UNESCO’s World Heritage Convention is responsible for listing of world heritage sites, which include both cultural and natural sites. Natural heritage sites like Kaziranga National Park, Manas National Park, Nandadevi National Park and Keoladeo National Park are included in the list. Which is the last one added in the list in 2012?

Western Ghats

The idea of ‘Biosphere Reserve’ was initiated by UNESCO in 1973-74 under its Man and Biosphere (MAB) Programme. Biosphere reserves are design to protect and conserve the natural and cultural landscapes extending over large area of terrestrial or coastal/marine or both. How many biosphere reserves India has?

14

Ramsar Convention signed in 1971 and come into force in 1975 and now 158 countries are part to this international convention. It provide a specific montrax record for immediate remedial measures against pollution and ecological degradation. Chilka in Odisha, Loktak in Manipur and Keoladeo in Rajasthan were first to be listed under the Convention. Which is the latest one to be included in the list in India?

Nal Sarovar Bird Sanctuary, Gujarat (2012)

Critically Endangered species are extremely high risk of extinction in the wild. Endangered species with high risk whereas Vulnerable species have high risk of endangerment. All the three as a whole called Threatened Species

UN Conference on Environment and Development Conference at Rio de Janeiro in 1992 also called Earth Summit. Earth Summit find out three major outcomes. UNFCCC for reverse climate change and Agenda-21 dedicated to promotion of sustainable development. Which mission is dedicated for protection of biodiversity?

Convention on Biological Diversity (CBD)


Whale

International Union for Conservation of Nature (IUCN) publishes Red List since 1963 and it is world’s most comprehensive inventory of the global conservation states of biological species. Species are classified into 9 groups through criteria such as rate of decline, population size, area of geographic distribution, degree of population and distribution fragmentation etc. Name the category which denotes the list of species not found on Earth?

Extinct

Among major international conventions, Convention on International Trade on Endangered Species of wild flora and fauna of 1976 deals with strict controls over export and import of endangered species and their products. CITES efforts to end the legal trade in wildlife and wildlife products. Which organisation efforts bring about a moratorium on commercial whaling?

International Whaling Commission, 1981

World Wide Found for Nature is world’s largest independent conservation organisation (NGO) deals with issues regarding the conservation, research and restoration of environment. What is the mascot of WWF?

Giant Panda

India is a signatory to the Convention on Conservation on Migratory Species. In 2007, it signed a MoU for conservation and management of marine ‘turtles and their habitats of the Indian ocean and South-East Asia. Which convention deals with conservation of migratory birds?

Bonn Convention

In India, Biological Diversity Act was signed in 2002 with Constitution of National Biodiversity Authority at Chennai. National Biodiversity Action Plan was formulated under the National Environment Policy, 2006. Which is an indicator of the state of global biodiversity?

Living Planet Index (LPI)

Wildlife Protection Act (WPA) was passed in 1972 for protection of wildlife. Other than WPA, CITES, the Indian Penal Code 1860, Customs Act, 1962, India Forest Act, 1927, Forest Conservation Act, 1981, Prevention of Cruelty to Animals Act, 1960 are some provisions for protection of wildlife. Which region is exception to all these acts?

Jammu-Kashmir

Under the Wildlife Protection Act, 1972, Project Tiger was the first programme to be implemented in this line. Later, Project Elephant was started in 1992, Project Rhino in 1987, Project Crocodile in 1975, Project Vulture in 2006 were implemented. Project Olive Ridley Turtle was launched in 1975, which is an endangered species. Where this species specifically found?

Bhitarkanika and Mouth of river Rushikuleya
Critically Endangered Species of India

**Birds**
- Jerdon’s Courser
- Forest Owlet
- White-Bellied Heron
- Himalayan Quail
- Pink-headed Duck
- Sociable Lapwing
- Siberian Crane

**Mammals**
- Pygmy Hog
- Kondana Rat
- Elvira Rat
- Flying Squirrel
- Malabar Civet

**Reptiles**
- Gharial
- Leather back Turtle
- Red Crowned Turtle

**Fishes**
- Ganges Shark
- Large Tooth Sawfish

National Parks acquire 1.22% of geographical area of the country. Madhya Pradesh and Andaman-Nicobar Islands have maximum nine National Parks. Which major state in India has no National Park?

- Punjab

**Jim Corbett National Park**

Yellow Stone National Park was the first National Park in the World. Largest tiger reserve in India is Nagarjunna Sagar. Sri Sailam Tiger Reserve in Andhra Pradesh. Khecheopalri Lake in Sikkim is a sacred place for both Buddhism and Hinduism and also a biodiversity spot. Name the first National Park in India?

**Ministry of Environment and Forests**

CLIMATE CHANGE

Now, the average temperature is about 15°C of the Earth. The mean temperature of the Earth is rose about 0.4°C in the 21st century. Greenhouse gases are the major reason for global warming. Which is the major greenhouse gas on Earth?

**Carbon dioxide**

Global warming may cause transgression of sea as rise in sea level, superstorms, longer spell of dry heat and intense rainfall, depletition of ecosystem, ocean acidification, shrinking ice sheets etc. When did the recent global warming began?

**Since Industrial Revolution**

Earth atmosphere acts as a shield to the terrestrial large radiations and capture it within and temperature consequently increases, such phenomena is called greenhouse house gas, effect with carbon dioxide, water vapour, methane, nitrous oxides, chlorofluoro carbons and ozone. Which greenhouse gas is emitted from biological matters like rotting vegetation, rice cultivation etc?

**Methane**

Among naturally occurring greenhouse gases, carbon dioxide emission occur by burning of fossil fuels. Methane is released in the course of drilling of petroleum and gas. Nitrous oxide is released by biomass burning and use of fertilizers. Name the man-made greenhouse gas, that is also cause for ozone layer depletion?

**Chlorofluoro Carbon**

Among the top carbon dioxide emitors, China leads in volume followed by the USA, European Union and India, but due to huge population India and China has lower per capita carbon dioxide emission in comparison to other countries. Which is the largest per capita carbon dioxide emitter country?

**Qatar (56.2 kg)**

**Major International Conventions**

- Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat, Ramsar (1971).
- Convention to Combat Desertification (CCD), Paris (1994).

Through UNFCCC, member countries form Conference of Parties (CoP) which held its summit annually. In 2012, it was held in Rio-de-Janeiro and in 2013, it was held in Warsaw, Poland. Where will be the UNFCCC Summit or CoP-20 held in 2014?

**Peru**

National Green Tribunal Act was passed in 2010 by Parliament under the provision of Article-21 of Con-
ENVIRONMENT ECOLOGY

stitution of India which assures citizens of India, the right to a healthy environment and provide speedy environmental justice and it is not bound by the procedure laid down by code of civil procedure but guided by principle of natural justice. What is the mandatory period for disposal of appeal?

6 Month

Kyoto Protocol was the first ever mandatory agreement set-up for reducing fossil burning or emission of carbon dioxide, came into force in 2005 by UNFCCC. The details of Protocol was adopted in Marrakesh, Morocco and referred to as Marrakesh Accord. What was the target reduction of greenhouse gases in the first Kyoto Protocol?

5.2% from 1990 Level

Kyoto Protocol has three market-based mechanisms, Emission Trading, the Clean Development Mechanism (COM) and Joint Implementation. Joint implementation involves carbon trading between Annex-1 countries or industrialised countries. Which mechanism deals with green development in developing countries? Clean Development Mechanism

Kyoto Protocol’s first commitment period was 2008-12 and it further amended and set a commitment period from 2013-20. What is the new target of reduction set-up in the Second Commitment Period?

18% below 1990 Level

In the new commitment period, a new Measurement, Reporting and Verification (MRV) framework for developed countries was added. Poznan Conference set a 2% levy on carbon trading to climate change fund. In which conference the Green Climate Fund was created?

Durban Conference

CoP14S was held in Doha, Qatar to include the adoption of amendment to Kyoto Protocol, the document is popularly known as Doha Climate Gateway. India is not binding by the Kyoto Protocol. What is the amount of Green Climate Fund to be raised?

$ 100 Billion

Primary pollutants are the air pollutants emitted directly from a source like S02, NO2, CO, CFG, C02 and suspended particulate matters and ammonia. Name one major secondary pollutant in the atmosphere?

Ground Level Ozone

The Inter-governmental Panel on Climate Change (IPCC) was created by UNEP and World Meteorological Organisation (WMO) in 1988 to assess the scientific knowledge on global warming. On its report, United Nations Framework Convention on Climate Change (UNFCCC) was established. At which summit, the UNFCCC was created?

Rio Conference (1992)