BIODIVERSITY

* Variety of a all living things is biodiversity.
* Total number of species estimated, range from **7 to20 million**.
* Vast majority of species are concerned in **the tropical and subtropical regions**.
* Variation of life at all levels of biological organization with in a species, among species and ecosystems is called **biodiversity**.
* According to ecologists, totality of genes, species and ecosystems of a region is called **biodiversity**.
* Diversity of genes within a species is called - **genetic diversity**.
* Genetic variations occur due to **genetic recombinations, gene or chromosomal mutations**.
* Genetic diversity within a species increases with **environmental variability**
* Estimate of number of genes distributed across the world's flora & fauna is $\mathbf{10^{10}}$
* Diversity among species in an ecosystem is called **species diversity**.
* Examples of species diversity are **biodiversityhot spots.**
* Simplest measure of biodiversity is **Species richness.**
* Number of species per unit area is **Species richness.**
* Species richness increases from **high latitudes to low latitudes.**
* The peak of the species richness is not at equator but between 20^0 N and 30^0 N.
* The level of species richness increases rapidly from northern region towards equator but decreases slowly from the equator to southern region
* Relative abudance of the different species making up the richness of the area is called **species evenness**
* Variety of ecosystems on earth is called **ecosystem diversity**
* Diversity with in a particular area, community or ecosystem is called **alpha diversity**
* Number of taxa (species usually) present is an ecosystem is a measure of **alpha diversity**
* Species diversity between two ecosystems is **Beta diversity.**
* Comparing the number of taxa that are unique to each of the ecosystem is **Beta diversity.**
* Sorensen's similarity index is $\beta = \frac{2C}{S_1 + S_2}$

where S_1 = total number of species in first community.

S_2 = total number of species in second community.

C = number of species common to both com munities.

* Measure of overall diversity for different eco systems within a region is **Gamma diversity.**
* The area that is uniform in environmental condi tions and in its distribution of animal and plant life is **biotope**
* An area constituting a natural ecological community with characteristic flora, fauna and environmental conditions and bounded by natural borders is called **ecoregion**.
* Largest biogeographic division of the earth's surface based on historic and evolutionary dis tribution patterns of plants and animals is called **ecozone/biogeographic realm.**
* Large areas of the earth's surface where plants and animals developed in relative isolation over long periods of time, and separated from one another by barriers like oceans, broad deserts or mountain ranges that prevent migration of animals is called **ecozone**.
* Unique species of a particular area are called **endemic species**.
* Sites of active speciation are areas rich in **endemic species**.
* Biodiversity is very low in **polar regions**.
* Biodiversity is distributed mostly in **tropics**.
* Biogeographic region that is both a significant reservoir of biodiversity and is threatened with destruction is **biodiveristy hot spot**.
* Biodiversity hot spots were originally identified by **Dr. Norman Myers.**
* Organisation that is focussed on biodiversity hot spot is **Conservation International (CI)**.
* Biodiversity hot spots related to India are **Himalayan, Indo–Burma, Western ghats & SriLanka.**
* World wide Fund for Nature (WWF) focussed over **200 ecoregions** for the conservation of biodiversity.

ROLE OF BIODIVERSITY

* As each species have a specific kind of function like capturing & storing energy, production and decomposition of organic material, etc, Biodiversity has **an ecological role**.
* Fixing of atmospheric gases, regulation of climate are **ecological roles of biodiversity**.
* As biodiversity is a reservoir of resources for

the manufacture of food, pharmaceuticals and cosmetics, it plays an **economic role**.

* Number of animals used as food **-12**
* Number of crops cultivated for food supply **-15**
* 2/3rd of total food is supplied in the form **Wheat, Corn & Rice**.
* Medicine to treat malaria is extracted from the bark of ***Cinchona*** **is -Quinine**.
* Drug useful to treat heart problems, **digitalin** is extracted from **Foxglove plant.**
* Pain relieving medicine **morphine** is exctracted from **Poppy plant**.
* Drugs obtained mostly from tropical rain forests are **anticancerous drugs**.
* Anticancerous drugs obtained from *Vinca* plant **Vinblastin & Vincristin**.
* Drug obtained from **Sarpagandha** is useful in the treatment of **hypertension.**
* Biodegradable pesticide extracted from ***Chrysanthemum*** is **Pyrethrin**
* Bacterium that is used as biopesticide ***Bacillus thuringiensis***
* Morethan 50% of biodiversity is harboured by **Tropical rain forests**.
* Biodiversity has ethical and scientific roles
* Homeostasis of ecosystem is maintained by **biodiversity**
* Biodiversity provides environmental services like water resources, soil pollution, pollution control

CAUSES OF EXTINCTION

* Main cause of species extinction in forests is **deforestation**.
* Reduction in regeneration of forests and low levels of biodiversity is due to **forest fires.**
* Endemic species may not survive due to introduction of non–native species.
* Endemic species of great African lakes Victoria, Malawi & Tanganyika are reduced due to the entry of the species **Nile perch**.
* Examples of exotic plant species responsible for the extinction of wild species are ***Hyacinth*****, Lantana bushes, Eupatorium shrubs,** ***Parthenium***.
* Exclusive Mauritius tree ***Clavaria major*** be came an endangered species due to the extinc tion of ***Ruphus cuculeatus*** **(Dodo)**
* Endemic species are protected from the invarion of other species by **natural barriers**.
* Highly fecund, ultra competetive, generalist species responsible for the loss of endemic species in an area are called **superspecies**.
* Amplification of pollutants in different trophic levels of a food dchain is called **biomagnification**.

CONSERVATION OF BIODIVERSITY

* The process of protecting an endangered species in its natural habitat is called **In–situ conservation/ On–site conservation**.
* Recovery of a population in the surrounding where they developed their distinct characters is possible by **In–situ conservation**.
* Development of a network of protected areas comes under **In–situ conservation**
* Natural habitats of certain endangered species, where no biotic interference is allowed are earmarked as **National Parks**.
* Earliest National Parks are **Yellowstone National Park-USA & Royal National Park-Australia**.
* The areas where only specific endangered fauna are protected and limited biotic interference is permitted **Sanctuaries**.
* The area where boundaries are not subscribed and private ownership of land is allowed are **Sanctuaries**.
* The area meant for conservation of biosphere reserves and for improvement of relationship between man & environment is termed as **biosphere Reserve**.
* The protected area for the whole ecosystem is **Biosphere Reserve**.
* The protected site for longterm scientific research & education is **Biosphere Reserve**.
* Functions of biosphere reserves are:
  1) Conservation function
  2) Development function
  3) Logistic function
* Undisturbed & legally proteceted area of a biosphere reserve is **Core zone**.
* The zone that surrounds the core zone and accomodates resource management strategies, research, education is **Buffer zone**.
* Outer most part of biosphere reserve where sustainable resource management practices are promoted by cooperation between reserve management and local people is **Transition zone**.
* Undisturbed areas protected by local commu nities are **sacred forests/ lakes**.
* Conservation of genetic resources of species away from their area of origin or development is called**ex–situ conservation / off-site conservation**.

* Methods of ex–situ conservation are **off – site collection & gene banks**.
* Collection of wild and domesticated organisms in botanical gardens and zoos etc is called **off-site collection**.
* Types of genes banks:
  1) Seed gene banks
  2) Field gene banks
  3) In–virto preservation
  4) Cryopreservation
* Seeds which can tolerate upto 3% moistuure, anaerobic conditions, low temperature for pro longed periods are stored in **Orthodox seed banks Eg: Cereals, Legumes etc.**
* Maintaining recalcitrant plants in orchards is called **field gene banks**.
* Development of callus, embryoids, pollen grains, shoot tips for plants without visible seeds by using tissue culture methods in laboratories is called ***in vitro* preservation**.
* The method by which rapid multiplication of endangered species occurs is ***in vitro* preservation**.
* The technique by which embryos, animal cells spermatozoa are preserved at -196^{0}C is **Cryopreservation**.

IUCN AND RED DATA BOOKS

* The international organization, founded in 1948 to encourage preservation of wild life, natural environment & living resources is **IUCN/ World conservation union**
* "Red Data List" is maintained by **IUCN**.
* Red data list created in **-1963**
* The latest list created in **2006 - May 4**
* According to latest Red data list whole species evalutated are **-40,168**
* Additional sub species **-2,160**
* Critically endagerad+endangered+vulnerable species are called **-Threatend species**
* Number of threatened speceis **-16,118**
* Among them
  Animals **- 7,725**
  Plants **- 8,390**
  Lichens & mushrooms **- 3**
* Number of categories given by IUCN Red List is **- 9**
* If the last individual of a species is died it is termed as **extinct**
* Extincts species of Maritius - **Dodo**
* If a species is known to survive only in cultivation or in captivity, the category is **Extinct in the wild**
* When a species is facing an extremely high risk of extinction in the wild in immediate future, it is placed under **Critically endangered**
* Critically endangered species - ***Podophyllum Berberis nilgiriensis***
* When a species is facing high risk of extinction in the wild in near future it belongs to the category **endangered**
* Endangered species - **Red panda Lion tailed macaque**
* When a taxon is not endangered but is facing a high risk of extinction in the wild in medium term future, it belongs to the category

Vulnerable

* Vulnerable species - ***Antelope cervicapra***
* When a taxon is not qualified for conservation dependent but closer to vulnerable are termed as **Near threatened**
* The taxon which do not qualify for conserva tion dependent or near threatened is termed as **Least concerned**
* The taxon with inadequate information to make an assessment based on its distribution and population status is considered as **Data deficient**
* The taxon which is not yet been assessed against the criteria is termed **Not evaluated**

WILDLIFE IN INDIA

* **Biomes in India** (**3**): Tropical humid forests; Tropical dry/deciduous forests; Warm deserts / semideserts.
* **Hot spots in India** (**3**): Western Ghats/ SriLanka; Indo – Burma region (Covering Eastern Himalayas); Himalayan region.
* **Ecoregions in India** (**10**): Trans – Himalayan; The Himalayan; The Indian desert; Semi arid zones; Western ghats; Deccan peninsula; The Gangetic plain; North East India; Islands & Coasts
* India is one of the centres of origin of cultivated plants out of **12**
* World heritage sites in India(**5**)

Khaziranga National Park - Assam.
Manas National Park - Assam.
Sunderbans National Park - West Bangal.
Keoladeo Ghana National Park - Rajasthan

Nanda Devi National Park - Uttarkhand.

* Number of Biosphere Reserves in India **-14**
* Number of Ramsar Wetlands **-6**
* Kolleru lake of A.P is considered as **Ramsar Wetland**
* Number of National Parks in India **-88**
* Number of sanctuaries in India **-490**
* Biosphere Reserves of India that form **a part of world network** are:
  1) Nilgiri Biosphere Reserve
  2) Nanda Devi Biosphere Reserve
  3) Sunderbans Biosphere Reserve
  4) Gulf of Mannar Biosphere Reserve.
* **33%** of endemic flora in India is concentrated mainly in
  North East region
  Western ghats
  North-West Himalayas
  Andaman & Nicobar Islands
* **62%** of endemic amphibian species are present in Western ghats.
* **50%** of the lizards in India are **endemic lizards**
* High degree of endemicity of lizards is seen in **Western ghats.**
* India is homeland of **167 cultivated species** and **320 wild relatives of crop plants.**
* The Act under which all the threatened species are protected is **Wildlife Protection Act 1972**
* Organisations which work together for conser vation of wildlife are **IBW & WWF**.
* Wildlife week is **First week of October**.
* Advisory body to Government of India is **Indian Board of Wildlife (IBW)**.
* Acts related to wildlife conservation in India are
  The Indian Forest Act **-1927**
  The Wildlife (Protection)Act **-1972**
  The Forest Conservation Act **-1980**
  The Air Act **-1980**
  The Environment (Protection) Act **-1986**
* India is a signatory to **Convention on International Trade in Endangered Species(CITES) in 1972**
* **National Parks in India:**
  First National Park of India **- Jim Corbett National Park**
  Jim Corbett National Park – Uttaranchal (Tigers are protected)
  Gir National Park - Gujarat (Lions are protected)
  Kaziranga National Park – Assam (One–horned Rhinoceros is Protected)
  Periyar National Park – Kerala (Tiger & Elephant reserve).
  Kanha National Park – Madhya Pradesh
  Sri Venkateswara National Park – Andhra Pradesh
  Kasu Brahmananda Reddy National Park – Andhra Pradesh
  Mahavir Harina Vanasthali National Park – Andhra Pradesh
* **Sanctuaries in India:**
  Ranthambore Sanctuary -Rajasthan
  Mudumalai Sanctuary - Tamil Nadu
  Papikonda Sanctuary - Andhra Pradesh
  Eturunagaram Sanctuary - Andhra Pradesh
  Pulicat Sanctuary - Andhra Pradesh
  Coringa Sanctuary - Andhra Pradesh
* **Protected areas near water bodies for migratory birds:**
  Kolleru lake - Andhra Pradesh
  Ranganthittu Bird Sanctuary - Karnataka
  Bharathpur bird Sanctuary - Rajasthan [Keoladeo Ghana National Park]
* **Biosphere Reserves in India:**
  Nilgiri - Karnataka, Kerala & Tamilnadu
  Nanada Devi - Uttarakhand
  Sunderbans - West Bengal
  Gulf of Munnar - Tamil Nadu
  Manas - Assam
  Great Nicobar - Andaman & Nicobar Islands
  Thar Desert - Rajasthan
  Little Rann of Kutch - Gujarat
* **Special projects for endangered species:**
  Project Tiger
  To preserve ***Panthera tigris tigris***
* **Tiger reserves in India:**
  Indravathi Tiger Reserve -Chattishgarh
  Nagarjuna Srisailam Tiger Reserve - A.P
  Crocodile Breeding Project
* World's first captive breeding of crocodiles is started at **Crocodile Breeding Project** Tikerpada, Orissa
* Crocodiles protected in Crocodile breeding project, Tikerpada, Orissa are:
  Crocodylus porosus- Brackish water crocodile
  Crocodylus palustrus - Freshwater swamp crocodile
  Gavialis gangeticus - River crocodile
* **Snow leopard reserve** of Himalayas is protect ing the species ***Uncia uncia*** (Snow leopard)
* **Project elephant** is started to protect Asiatic elephant ***Elephas maximus indicus***

* Elephants are protected in Periyar National Park – Kerala
* ***Panthera leo persica*** (Asiatic lion) is protected in **Gir National Park -Gujarath**
* **Organizations in India:**
Botanical Survey of India (BSI)
Zoological Survey of India (ZSI)
Bombay Natural History Society(BNHS)
Wild life Protection Society of India
Deharadun
* International Crops Research Institute for Semi Arid Tropics (ICRISAT), Hyderabad.
* Germplasm of groundnuts, pigeon pea, chickpea, pearl millet & sorghum are conserved by the institute **– ICRISAT**
* **Endangered species in India:**
Panthera leo persica - Asiatic lion
Antelope cervicapra - Black buck (State animal of A. P.)
Ailurus ochraceus - Red panda
Macaca silenus - Lion tailed macaque
Panthera tigris - Tiger
Elephas maximus indicus - Elephant
Cervus elaphus hanglu - Kashmiri stag
Sus salvanius - Pygmy hog
Grus leucogeranus - Siberian crane
Loris tardigradus - Slender loris

BIODIVERSITY

LEVEL -I

374. Genetic variability among the individuals of same species is
1) Species diversity 2)Genetic diversity
3) Biodiversity 4) Beta diversity

375) Genetic diversity of a species leads to evolution mainly by means of
1) Genetic recombinations
2) Gene mutations
3) Chromosomal mutations
4) Natural selection

376) Which of the following conditions are favourable for the development of a distirict localized population?
1) Large area (or habitat)
2) High rate of geneflow
3) Low rate of gene flow
4) Interbreeding with in a species

377) Genetic variations do not occur in a population by
1) Sexual reproduction
2) Asexual reproduction
3) Genetic recombinations
4) Mutations.

378) Which of the following is considered as a "unit" of biodiversity?
1) Ecosystem
2) Biotic community of an ecosystem
3) Species
4)Biodiversity hotspot

379) Different varieties of species living in a region is refered as
1)Global biodiversity 2)Ecosystem diversity
3)Genetic diversity 4)Species diversity

380) Simplest measure of biodiversity is
1) Beta diversity 2)Gamma diversity
3) Species diversity 4) Species richness

381) High degree of species richness is found in
1)Higher latitudes 2)Lower latitudes
3) North pole 4)South pole

382) Number of kinds of species living per unit area is called
1)Species evenness 2)Species richness
3)Species diversity 4)Ecosystem diversity

383) Measure of number of taxa within the ecosystem is
1)Alpha diversity 2)Beta diversity
3)Gamma diversity 4)Species diversity

384) Measure of overall diversity for different ecosystems within a region is known as
1)Global diversity
2)Ecosystem diversity
3)Gamma diversity 4)Alpha diversity

385) An area that is uniform in environmental conditions and distribution of flora & fauna is called
1) Biotope 2)Ecozone 3)Ecoregion
4)Biogeographical realm

386) Species which are unique to a particular area are called
1) Exotic species 2) Endemic species
3)Native species 4)Rare species

387) Which of the following are considered as "sites of active speciation"?
1)Areas rich in mineral resources & Water
2)Areas rich in endemic species
3)Areas with lower Shannon – Weiner index
4)Areas with lower levels of species evenness.

388) Which of the following regions exhibit high degree of biodiversity?
1) Arctic regions 2) Higher latitudes
3) Tropical regions 4) Antarctic region

389) "Biodiversity hot spots" were originally identified by
1)Whittaker 2) Simpson
3)Norman Myers 4)Haeckel

390) Biodiversity hotspots of India are
1)Philippines 2) Sri Lanka
3) Japan 4) Mountains of southwest china

391) Biodiversity hot spot of India covering the Eastern Himalayas
1) Indo – Burma 2) Eastern Ghats
3)East Melanesian islands
4)Indian ocean islands

392) Which of the following can be considered as part of "infra structure" provided by an ecosystem ?
1) Decrease of flooding
2) Purification of water & air
3) Soil fertility
4) Moderation of climate

393) An ecosystem is said to be "stable & resilient" due to the presence of
1)Uniform environmental conditions
2) More number of producers & less number of consumers
3) Higher species diversity
4)Moderate climatic conditions.

394) Number of animals used as protein source for human beings
1)15 2)12 3) 10 4)150

395) Number of food crops being cultivated
1)15 2)150 3) 30 4) 40

396) Organisms used as biopesticide are
1) Bacillus licheniformes
2) Bacillus thuringiensis
3)Lactobacilli 4)Rhizobium

397) Pyrethrin is extracted from the plant
1)Ocimum 2)Chrysanthemum
3) Cinnamomum 4) Coriandrum

398) Which of the following plants yields antihyper tensive drug?
1)Aswagandha 2)Sarpagandha
3)Belladona 4) Kalabanda

399) Drug used for pain relief is
1) Digitalin 2) Morphine
3)Quinine 4) Penicillin

400) Drug obtained from fox glove plant is used in the treatment of
1) Hypertension 2)Cancers
3) Malaria 4)Heart ailments

401) Drugs obtained from the plant Vinca are used in the treatment of
1)Diabetes 2)Cancers
3) Malaria 4) Skin allergies

402) Which of the following is a product of animals?
1)Fragrances 2) Leather
3) Paper 4) Resins

403) Drug extracted from poppy plant is
1) Morphine 2) Vinblastin
3) Coumarin 4) Digitalin

404) Which of the following is not true about "ecoregion"?
1)Ecologically & geographically defined area, next to ecozone.
2)Large area of land water with distinct natural communities and species
3) Large area bounded by natural borders rather than artificial borders.
4)Largest biogeographic division of earth's surface basing on histonic & evolutionary distribution patterns of plants & animals.

405) Large areas of the earth's surface where flora & fauna are isolated, over long periods of time & separated from other areas by oceans, deserts, mountain ranges etc., are called
1) Bioregions
2)Biogeographic realms
3)Ecoregions 4) Biotopes

406) Unique species of a given area are called
1) Endemic species 2)Exotic species
3)Native species 4)Non native species

407) Biodiversity is mostly seen in
1) Higher latitudes 2) Polar regions
3)Tropical forests 4)Large desert areas

408) Maintainence of national parks, sanctuaries etc, is a method of
1)Off-site conservation
2)Ex-situ conservation
3)Off-site collection
4)On – site conservation

409) Which of the following is not a feature of national parks?
1)Protection of wild life without biotic interference
2) Tourism is permissible
3) Only flora are protected
4) Commercial exploitation is not allowed.

410) Only endangered species , are protected in
1)National parks
2)Sanctuaries
3)Biosphere reserves 4)Nureries

411) Which of the following is a protected area for the whole ecosystem?
1) National parks 2) Biosphere reserves
3) Biodiversity hot spots 4) Sanctuaries.

412) Part of biosphere that is undisturbed & legally protected is
1) Sanctuary 2) Buffer zone
3)Core zone 4) Transition zone

413) Part of biosphere where research & educational activities are allowed is
1) Core zone 2) Bufferzone
3) Transition zone 4) National parks

414) Conservation of genectic resources of species away from their area of origin or development is
1) In – situ conservation
2) On- site conservation
3)Ex-situ conservation
4)Afforestation.

415) Collection of wild & domesticated organisms in botanical gardens & zoos is considered as
1) Off- site conservation
2) On – site conservation
3) In – situ Conservation 4)Social forestry

416) Which of the following are stored at –196^{o}C ?
1)Pollengrains 2) Spermatozoa
3)Callus 4)Embryoids

417) Method useful for the rapid multiplication of endangered plants is
1)Cryopreservation 2)Invitro reservation
3)Tissue culture 4)Gene banks

418) Recalcitrant seeds do not require
1)Aerobic conditions & low moisture
2) Low temperature & Low moisture
3) Higher temperature & higher moisture
4) Anaerobic conditions & low temperature

419) Human effort is required mainly for the conservation of
1) Near threatened species
2) Rare species
3)Vulnerable species 4)Endangered species

420) The animal species whose numbers have fallen to a critical low level
1)Pavo cristatus 2)Felis bengalensis
3)Gavialis gangeticus
4) Tylatotriton verrucosus

421) "Red Data List " in 1963, was published by the organization
1)IUCN 2)WWF
3)Conservation International
4)Global 200 Initiative

422) Lion tailed Macaque & Red panda are listed as
1) Critically endangered species
2) Rare species
3) Endangered species
4) Near threatened species

423) Taxa which do not qualify for conservation dependent but close to qualifying for vulnerable are
1) Near vulnerable 2) Near threatened
3) Least concerned 4) Endangered

424) A taxon which has not yet been assessed against the criteria is
1) Least concern 2) Data deficient
3) Not evaluated 4)Near threatened

425) Amphibian species are endemic mostly in the region
1) Andaman & Nicobar islands
2) North – West Himalayas
3) Western Ghats
4) North – East India

426) Captive breeding of crocodiles first started in
1) California, U.S.A
2) Uttar pradesh, India
3) Orissa, India
4) Tamilnadu, India.

427) A: Biodiversity is useful in maintaining the homeostasis of ecosystems.
R: Biodiversity provides environmental services like water – resources, soil protection, pollution control

428) A:- Pyrethrin is a biodegradable pesticide of animal origin
R:- Biopesticides increase water pollution

429) A:- Biodiversity has an ethical role
R:- Sacred forests & lakes are protected by local communities

430) A:- Species diversity is higher at lower latitudes
R:- At lower latitudes, area is large with more solar radiation, mineral & water resources

431) A:- Alpha diversity is measured by counting the number of taxa with in the ecosystem.
R:- Alpha diversity is species diversity between ecosystems.

432) A:- Exclusive tree of Mauritius Clavaria major is an endangered species
R:- Dodo bird became extinct in 17th century

433) A:- Clavaria major trees are very few in Mauritius after the extinction of Dodobird
R:- Dodo bird facilitated the germination of seeds as they pass through the gut of bird.

434) A:- Ex – situ conservation allows the preservation of large population of plants with minimum genetic erosion
R:- Planting germplasts in seed banks & growing the wollemi pine in nurseries are examples of ex – site conservation

435) The project that developed at Tikerpada of Orissa is
1) Crocodile breeding project
2) Project Tiger
3) Project Elephant
4) Snow leopard reserve

436). First National Park of India is
1) Kanha National Park of M.P.
2) Jim Corbett National Park of Uttaranchal
3) Periyar National Park of Kerala
4) Gir National Park of Gujarath

437) One-horned Rhinoceros is protected in
1) Gir National Park – Gujarath
2) Kaziranga National Park – Assam
3) Periyar Sanctuary – Kerala
4) Kanha National Park – M.P

438) Critically endangered species (CR) is
1) *Antelope cervicapra*
2) *Macaca silenus*
3) *Berberis nilgiriensis*
4) *Ailurus ochraceus*

439) Total number of ecoregions in India and World respectively is
1) 50 and 500 2) 20 and 200
3) 10 and 200 4) 15 and 125

440) Wildlife week is observed on
1) first week of November
2) second week of December
3) last week of August
4) first week of October

441) Generally the recalcitrant plants are maintained in
1) *in vitro* preservation
2) cryopreservation
3) field gene banks 4) off-site collection

442) The undisturbed and legally protected area of ecosystem in biosphere reserve is called
1) core zone 2) buffer zone
3) transition zone
4) compensation zone

443) Pollutants that released into the environment enter the organisms and amplify in trophic levels through
1) green house effect
2) decomposers
3) biomagnification 4) biodegradation

444) Eupatorium shrubs are the typical examples of
1) on-site preservation
2) off-site preservation
3) species interdependence
4) invasion of nonnative species

445) Read the following and choose the correct combinations

Example	Extraction	Usage
I. *Cinchona*	Quinine	Malaria control
II. Fox glove plant	Digitalin	Anticancerous drug
III. Poppy plant	Morphine	Pain relief
IV. *Vinca*	Vinblastin	Antihypertensive drug

1) I and II 2) II and III
3) I and III 4) II and IV

446) Which of the following focused on biodiversity hot spots?
1) World Conservation Union
2) Global 200 initiative
3) Conservation International
4) World Wide Fund

447) Biogeographical realm is also called
1) biotope 2) ecoregion
3) ecozone 4) biota

448) $\beta = 2C/S_1+S_2$ in which the 'C' is
1) number of species in second community 2) beta biodiversity
3) number of species in first community
4) number of species common in both communities

449) A significant reservoir of biodiversity is
1) hot spot 2) species evenness
3) species richness 4) biotope

450) Read the following and choose the correct combinations
I. Biodiversity within the species is genetic diversity
II. Biodiversity among the species is species diversity
III. Biodiversity within an ecosystem is alpha diversity
IV. Beta diversity is a species diversity between two ecosystems
1) I and II only 2) I, II and III only
3) I, IV only 4) All the above

LEVEL -II

451) A measure of biodiversity which quantifies how equal the populations are numerically is called
1)Species richness 2)Species evenness
3)Species diversity 4) Alpha diversity

452) Comparasion of a species diversity between different ecosystems is called
1)Alpha diversity 2)Beta diversity
3)Gamma diversity 4)Species diversity

453) Organisation which is focussed on biodiversity hotspots is
1) World wild life fund for Nature
2) Conservation International
3) Global 200 initiative
4)International Union for Conservation of Nature & Natural resources

454) Which of the following is not an animal product?
1) Perfumes 2) Silk
3) Lubricants 4) Latexes

455) Which of the following does not help in the protection of environment?
1)Natural vegetation
2)Recycling of nutrients
3)Breakdown of pollutants
4)Eco – tourism

456) Which of the following is not a threat to biodiversity?
1)Introduction of exotic species
2) Introduction of "super – species"
3)Interdependence of species
4) Collection of wild and domesticated organisms in botanical gardens & zoos.

457) Reduction of endemic species in great African lakes is due to
1)Erosion of barriers
2) Invasion of nonnative species
3)Interdependence between species
4) Invasion of super – species

458) Regeneration of biodiversity is reduced mainly by
1)Pollution 2) Forest fires
3)Changes in global environment
4)Extinction of species

459) In the geological history natural extinction of species occurred mainly due to
1) The presence of predators
2) The geological changes
3) The changes in environmental conditions
4) Species inter dependence.

460) Which of the following organisms of an ecosystem mainly get affected by the biomagnification of pollutants?
1)Producers 2)Herbivores
3) Predators 4)rimary consumers

461) Part of the biosphere where settlement, cropping, forestry & recreation are allowed
1)Core zone 2)Buffer zone
3)Transition zone 4) National parks

462) Undisturbed areas protected by local people
1) Sanctuaries 2) Sacred forests & lakes
3)Nationalparks 4)Biosphere erves

463) A taxon which is seen only in cultivation or in captivity is considered as the category
1)Extinct 2)Critically endangered
3)Near threatened 4) Extinct in the wild

464) Which of the following is facing a high risk of extinction in wild in the "medium term" future?
1) Ailurus ochraceus
2) Antelope cervicapra
3) Macaca silenus
4) Elephas maximus

465) A:- Diverse ecosystems are more resilient and can withstand environmental stress
R:- Biodiversity is a reservoir of resources for the production of food, medicines, cosmetics etc.

466) A:- Generally, the levels of endemism of an area and that of species richness are positively correlated.
R:- Oceanic islands exhibit high levels of endemism as well as species richness

467) A:- The peak of species richness is seen at equatorial region
R:- Species richness increases rapidly from southern region to equator and then decreases from equator to northern region

468) Find out the correct combination
A)Cereals & Legumes can tolerate the moisture content upto 3 %, aerobic conditions & low temperature
B) Cocoa, Tea, Coconut cannot survive low moisture & low temperature
C) Recalcitrant plants are grown in orchards
D) Embryoids, pollengrains are stored by cryopreservation method
1) A & B are correct 2) B & C are correct
3) C & D are correct 4) A & D are correct

469) Match the following and choose the correct answer

List- I	List- II
A. *Ailurus ochraceus*	I. Lion tailed macaque
B. *Sus salvanius*	II. Red panda
C. *Macaca silenus*	III. Pigmy hog
D. *Uncia uncia*	IV. Snow leopard

1) A–III, B–I C–II, D–IV
2) A–I, B–II, C–III, D–IV
3) A–II, B–III, C–I, D–IV
4) A–II, B–IV, C–I, D–III

470) About how much percentage of amphibian species are endemic with the majority occurring in the Western Ghats?
1) 50% 2) 40%
3) 62% 4) 82%

471) Match the following and choose the correct answer

List- I	List- II
A. The Indian Forest Act	I. 1980
B. The Wildlife (Protection) Act	II. 1927
C. The Forest Conservation Act	III. 1972
D. The Environment (Protection) Act	IV. 1986

1) A–III, B–I C–II, D–IV
2) A–I, B–II, C–III, D–IV
3) A–II, B–III, C–I, D–IV
4) A–II, B–IV, C–I, D–III

472) Read the following and choose the correct combinations
I. The boundaries for National Parks are not circumscribed
II. Private ownerships in sanctuaries are not allowed
III. Biosphere reserve is a protected area for the whole ecosystem
1) I and II 2) I and III
3) II only 4) III only

473) **Assertion (A):** *Clavaria major* has become endangered species by the extinction of dodo bird
Reason (R): Dodo bird is a "super species"
1) Both 'A' and 'R' are true and 'R' is the correct explanation to 'A'
2) Both 'A' and 'R' are true but 'R' is not the correct explanation to 'A'
3) A is true R is false
4) 'A' is true but 'R' is false

LEVEL -III

474) Which of the following areas is said to have greater " species evenness & species rich ness"?
1)Area with 40 foxes & 50 dogs & 100 bears
2)Area with more than 1000 foxes only
3)Area with 40 foxes & 42 dogs & 40 bears & 100 birds
4) Area with 40 foxes, 45 dogs, 42 insects, 38 birds

475) Which of the following takes into account the number of species as well as the evenness of species?
1) Pielou's eveness index
2) Shannon – Weiner index
3)Simpson's index
4) Species diversity index

476) Which of the following is not a cause of habitat degradation?
1)Conversion of forests & grasslands to agricultural land
2)Draining of natural wetland systems to establish croplands.
3) Conversion of multistory natural forests into forests of teak, sal etc
4)Erosion of barriers

477) Which of the following is an example of " species – interdependence"?
1) Chrysanthemum & Nileperch
2)Parthenium & peacock
3) Clavaria & Dodo
4) Podophyllum & Felis bengalensis

478) Which of the following organisms are more susceptible to extinction?
1)Organisms having small size
2)Organisms which show cosmopolitan distribution
3)Organisms whose population size is small
4) Organisms feeding at lower trophic levels of a food chain

479) The country whose economy is almost totally dependent on its forest wealth is
1) Australia 2) Brazil
3) Kenya 4)Sri Lanka

480) Migratory bird sanctuaries are located mainly in the states
1)Rajasthan, Kerala, Tamilnadu
2)Andhra pradesh, Karnataka, Rajasthan
3)Gujarat, Maharashtra, Rajasthan
4)West Bengal, Assam, Orissa

Directions to Qs 87 to 100

A:- Assertion R:- Reason

1) both A & R are true and R is the correct explanation of A
2) both A & R are true and R is not correct explanation of A
3) A is true but R is false
4) Both A and R are false

481) A:-Numerous medical cures will be foreclosed and forever lost due to the loss of biodiversity
R:- Holocenc extinction leads to the loss of geneti materials useful for medical research

482) Read the following statements and choose the correct combination
A)In – situ conservation is protection of endangered species in their natural habitat
B)Ex – situ conservation provides a backup solution to in-site conservation projects
C)Ex-situ conservation is usually seen as the ideal conservation strategy
D) In- situ conservation helps in maintaining the recovering populations in the environment
The correct statements are
1) A,B & C 2) B,C & D
3) A,B & D 4) A,C & D

483) Find out the correct combination
A)In – vitro preservation is a method of in – situ conservation
B)Seed – gene banks & field genebanks are methods of ex- situ conservation
C) Maintaining botanical gardens & zoos is a method of on-site conservation
D) Cryopreservation is a method of off – site conservation
1) A & D are correct 2) B& C are correct
3) B & D are correct 4) A & C are correct

484) Arrange the following in the ascending order
A) Sanctuaries B) World heritage sites
C) National parks D)Biosphere reserves
1)A B C D 2) B DCA
3)C B D A 4) ADCB

485) Find out the incorrect statement from the following
1)Selection is the phenomenon that regulates genetic variations in interbreeding population
2) Selection brings out changes in the frequency of genes within the genepool
3) Variations in the habitats bring differences in gene pool of a population
4) Variations occur mostly in the genes controlling fundamental biochemical process.

486) Find out the incorrect statement regarding the scientific role of biodiversity
1)Biodiversity provides clues about evolution of living ocgamisms
2) Biodiversity helps in developing some medicines to cure various diseases
3)Biodiversity helps in maintaining homeostasis of ecosystems & control of pollution
4) Biodiversity helps in understanding the role of each species in ecosystems and to understand the functioning of life

Match the following & choose the correct options

487)

National park	State
A) Keoladeo National park	i) Assam
B) Nandadevi National park	ii) West Bengal
C) Kaziranga	iii) Rajasthan
D) Sunderbans National park	iv) Uttaranchal

	A	B	C	D
1)	i	iv	ii	iii
2)	iii	i	ii	iv
3)	iii	iv	i	ii
4)	iv	ii	iii	i

488)

List – 1	List –2
A) Yellowstone National park	i) Earliest in U.S.A
B) Jim Corbett National park	ii) Earliest in India
C) Royal National park	iii) Earliest in Australia
D) Gir National park	iv) Lions are protected

	A	B	C	D
1)	i	ii	iii	iv
2)	ii	iii	iv	i
3)	iii	iv	i	ii
4)	i	ii	iv	iii

489)

List – 1	List –2
A) Tropical humid forests	i) Biogeographic region
B) Indo – Burma	ii) Biome
C) Deccan peninsula	iii) Biodiversity hot spot
D) Gulf of Mannar	iv) Biosphere reserve

	A	B	C	D
1)	ii	iv	iii	i
2)	ii	iii	i	iv
3)	iii	i	iv	ii
4)	iv	i	iii	ii

490)

List – 1	List –2
A) Wildlife protection Act	i) 1948
B) Wild life week	ii) 1963
C) Forest conservation Act	iii)1972
D) IUCN Red List	iv) First week of October
E) World Conservation union	v) First week of December
	vi) 1980

	A	B	C	D	E
1)	iii	i	ii	v	iv
2)	ii	iv	v	iii	i
3)	iii	iv	v	ii	i
4)	i	iv	v	iii	ii

491)

Scientific Name	Common Name
A) Cervus elephus hangalu	i) Pygmy hog
B) Elephas maximus indicus	ii) Siberian crane
C) Ailurus ochraceus	iii) Elephant
D) Sus salvanius	iv)Kashmiri stag
E) Grus leuco geranus	v) Red panda

	A	B	C	D	E
1)	ii	iv	v	i	iii
2)	iv	iii	v	i	ii
3)	iv	v	iii	ii	i
4)	i	iii	v	iv	ii

492)

List – 1	List –2
A) Crocodile Breeding project	i) Hyderabad
B) Wild life preservation	ii) Orissa Society of India
C) ICRISAT	iii) Assam
D) Rhino	iv)Dehradun

	A	B	C	D
1)	iv	iii	ii	i
2)	ii	i	iii	iv
3)	ii	iv	i	iii
4)	i	iii	iv	ii

493)

Technical name	Common name
A) Gavialis gangeticus	i)River crocodile
B) Uncia uncia	ii) Leopard cat
C) Crocodylus palustris	iii)Snow leopard
D) Crocodylus	iv) Freshwater porosus Swamo crocodile
E) Felis bengalensis	v)Brackish water Crocodile

	A	B	C	D	E
1)	i	iii	iv	v	ii
2)	ii	i	iv	v	ii
3)	ii	i	v	iii	iv
4)	iii	v	iv	i	ii

Find Out the correct combination

494)

Protected area	Protected animal	State
A)Kaziranga National park	One – horned rhinoceros	Assam
B) Corbett National park	Lions	Uttarpradesh
C) Gir National park	Tigers	Gujart
D) Mahavir Harina Vanasthali National park	Black buck	Andhra pradesh

1) A & B are correct 2) B & C are correct
3) A & D are correct 4) B & D are correct

495) Study the following

Protected area	Activities allowed	Method of Conservation
A) Core zone of biosphere reserve	Research & educational Activities	Onsite conservation
B) Sanctuaries	Tourism & Private ownership	In – situ conservation
C) Transitional zone of biosphere reserve	Cropping, settlement, vocation	Off – site collection
D) National parks	Tourism	In – situ conservation

1) A & B are true 2)B & C are true 3) A & D are true 4) B & D are true

496) Study the following

Type of Conservation	Protected species	Method
A)Ex-situ Conservation	Wild & domesticated species	Off – site collection
B) Off – site Conservation	cereals & Legumes	Recalcitrant seed banks
C) In – situ conservation	Coconut, Tea Jack fruit	Orthodox seed banks
D) Ex – situ conservation	Embryos, spermatozoa, Animal cells	Cryopreservation

1) A, B are true 2) B & C are true 3) A & D are true 4) C & D are true

497) Study the following

Category	Criteria	Example
A) Endangered	Facing high risk of extinction in near future	Macaca silenus
B) Critically endangered	Facing high risk in immediate future	Podophyllum
C) Vulnerable	Facing high risk in medium term – future	Cupressus cashmeriana
D) Near threatened	Extinct in the wild	Loris tardigradus

1) A & B are correct 2) B & C are correct 3) C & D are correct 4) A & D are correct

KEY (Level - I & II)

ELEMENTARY ASPECTS OF ECOSYSTEM

1)3 2)2 3)1 4)1 5) 2 6) 3 7)3
8)1 9)2 10) 2 11)3 12)3 13)4 14)4
15)3 16)2 17)4 18)3 19)3 20)3 21)3
22)2 23)2 24)3 25)1 26)4 27)3 28)1
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43) 1 44) 3 45)2 46) 2 47)2 48)2 49)1
50) 4 51) 1 52) 2 53)1 54)1 55)1 56)1
57)4

ABIOTIC FACTORS - LIGHT

58)1 59)2 60)3 61)4 62)2 63)2 64) 1
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114) 1 115) 3 116) 3 117) 4 118) 1 119) 2 120) 4
121)4 122)4 123) 1 124)4 125)1 126)1

TEMPERATURE AS AN ECOLOGICAL FACTOR

127)3 128)3 129)4 130)1 131)4 132)4 133)3
134)1 135)4 136)2 137)3 138)3 139)4 140)4
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162)1 163)1 164)2 165)1 166)3 167)1 168)4
169)1 170)4 171)1 172)2 173)4 174)3 175)1

WATER

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211)3 212)1 213)4 214)3 215)1 216)2 217)3
218)1 219)2 220)2 221)2

BIOTIC FACTORS (PRODUCERS, CONSUMERS, DECOMPOSERS AND INTERACTIONS)

222)3 223)3 224)1 225)2 226)4 227)2 228)1
229)4 230)3 231)1 232)2 233)1 234) 2 235) 1
236) 3 237) 2 238) 4 239) 2 240) 4 241)1 242)2
243)2 244)1 245)4 246) 3 247) 2

ECOLOGICAL SUCESSION, FOOD CHAINS, FOOD WEB, PYRAMIDS, FUNCTIONAL ASPECTS

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LAKE ECOSYSTEM

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POPULATION ECOLOGY

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MAN AND BIOSPHERE

LEVEL III

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BIODIVERSITY

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