CHAPTER 15

Biodiversity and Conservation

15.1 Biodiversity

1. Which of the following regions of the globe exhibits highest species diversity?
(a) Western Ghats of India
(b) Madagascar
(c) Himalayas
(d) Amazon forests *(NEET 2020)*

2. According to Robert May, the global species diversity is about
(a) 1.5 million (b) 20 million
(c) 50 million (d) 7 million.
(NEET 2020)

3. Which of the following is the most important for animals and plants being driven to extinction?
(a) Alien species invasion
(b) Habitat loss and fragmentation
(c) Drought and floods
(d) Economic exploitation *(NEET 2019)*

4. Decline in the population of indian native fishes due to introduction of *Clarias gariepinus* in river Yamuna can be categoriesd as
(a) co-extinction
(b) habitat fragmentation
(c) over-exploitation
(d) alien species invasion. *(Odisha NEET 2019)*

5. Alexander von Humboldt described for the first time
(a) laws of limiting factor
(b) species area relationships
(c) population growth equation
(d) ecological biodiversity. *(NEET 2017)*

6. Which of the following is correctly matched?
(a) Aerenchyma – *Opuntia*
(b) Age pyramid – Biome
(c) *Parthenium hysterophorus* – Threat to biodiversity
(d) Stratification – Population *(NEET-II 2016)*

7. Red list contains data or information on
(a) all economically important plants
(b) plants whose products are in international trade
(c) threatened species
(d) marine vertebrates only. *(NEET-II 2016)*

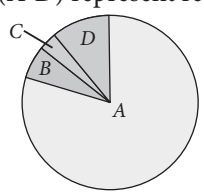
8. Which is the national aquatic animal of India?
(a) Blue whale (b) Sea-horse
(c) Gangetic shark (d) River dolphin
(NEET-I 2016)

9. Which of the following is the most important cause of animals and plants being driven to extinction?
(a) Habitat loss and fragmentation
(b) Co-extinctions
(c) Over-exploitation
(d) Alien species invasion *(NEET-I 2016)*

10. A species facing extremely high risk of extinction in the immediate future is called
(a) vulnerable (b) endemic
(c) critically endangered (d) extinct. *(2014)*

11. The organization which publishes the Red list of species is
(a) ICFRE (b) IUCN
(c) UNEP (d) WWF. *(2014)*

12. Given below is the representation of the extent of global diversity of invertebrates. What groups the four portions (A-D) represent respectively?



	A	B	C	D
(a)	Insects	Crusta-ceans	Other animal groups	Molluscs
(b)	Crustaceans	Insects	Molluscs	Other animal groups
(c)	Molluscs	Other animal groups	Crusta-ceans	Insects
(d)	Insects	Molluscs	Crusta-ceans	Other animal groups

(2014)

13. Which of the following represent maximum number of species among global biodiversity?
(a) Fungi (b) Mosses and Ferns
(c) Algae (d) Lichens
(NEET 2013, 2012)

14. Which of the following has maximum genetic diversity in India?
(a) Mango (b) Wheat
(c) Groundnut (d) Rice
(Karnataka NEET 2013, 2011)

15. Which organization publishes the 'Red Data Book'?
(a) IUCN (b) UNEP
(c) WWF (d) GEF
(Karnataka NEET 2013)

16. Which one of the following have the highest number of species in nature?
(a) Fungi (b) Insects
(c) Birds (d) Angiosperms
(2011)

17. Biodiversity of a geographical region represents
(a) endangered species found in the region
(b) the diversity in the organisms living in the region
(c) genetic diversity in the dominant species of the region
(d) species endemic to the region. *(Mains 2011)*

18. Study the four statements (i–iv) given below and select the two correct ones out of them.
(i) A lion eating a deer and a sparrow feeding on grains are ecologically similar in being consumers.
(ii) Predator star fish *Pisaster* helps in maintaining species diversity of some invertebrates.
(iii) Predators ultimately lead to the extinction of prey species.
(iv) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders.
The two correct statements are
(a) (ii) and (iii) (b) (iii) and (iv)
(c) (i) and (iv) (d) (i) and (ii).
(2010)

19. The Indian rhinoceros is a natural inhabitant of which one of the Indian states?
(a) Uttarakhand (b) Uttar pradesh
(c) Himachal Pradesh (d) Assam
(Mains 2010)

20. Which one of the following has maximum genetic diversity in India?
(a) Mango (b) Wheat
(c) Tea (d) Teak *(2009)*

21. The table gives the populations (in thousands) of ten species (A-J) in four areas (p-s) consisting of the number of habitats given within brackets against each. Study the table and answer the question which follows.

Area and No. of habitats	Species, and their populations (in thousands) in the areas									
	A	B	C	D	E	F	G	H	I	J
p (11)	2.3	1.2	0.52	6.0	-	3.1	1.1	9.0	-	10.3
q (11)	10.2	-	0.62	-	1.5	3.0	-	8.2	1.1	11.2
r (13)	11.3	0.9	0.48	2.4	1.4	4.2	0.8	8.4	2.2	4.1
s (12)	3.2	10.2	11.1	4.8	0.4	3.3	0.8	7.3	11.3	2.1

Which area out of p - s shows maximum species diversity?
(a) s (b) p (c) q (d) r *(2008)*

22. Which one of the following pairs of organisms are exotic species introduced in India?
(a) *Lantana camara*, water hyacinth
(b) Water hyacinth, *Prosopis cinereria*
(c) Nile perch, *Ficus religiosa*
(d) *Ficus religiosa*, *Lantana camara* *(2007)*

23. One of the endangered species of Indian medicinal plants is that of
(a) *Ocimum* (b) garlic
(c) *Nepenthes* (d) *Podophyllum*. *(2007)*

24. Which of the following pairs of an animal and a plant represents endangered organisms in India?
(a) Banyan and black duck
(b) *Bentinckia nicobarica* and red panda
(c) Tamarind and rhesus monkey
(d) *Cinchona* and leopard *(2006)*

25. According to IUCN Red List, what is the status of Red Panda (*Ailurus fulgens*)?
(a) Critically endangered species
(b) Vulnerable species
(c) Extinct species
(d) Endangered species *(2005)*

26. Which group of vertebrates comprises the highest number of endangered species?
(a) Mammals (b) Fishes
(c) Reptiles (d) Birds *(2003)*

27. Which endangered animal is the source of the world's finest, lightest, warmest and most expensive wool – the shahtoosh?
(a) Nilgai (b) Cheetal
(c) Kashmiri goat (d) Chiru *(2003)*

28. Wildlife is continuously decreasing. What is the main reason of this?
(a) Predation
(b) Cutting down of forest
(c) Destruction of habitat
(d) Hunting *(2002)*

29. Indri-indri lemur is found in
(a) Madagascar (b) Mauritius
(c) India (d) Sri Lanka. *(2000)*

30. Occurrence of endemic species in South America and Australia is due to
(a) these species has been extinct from other regions
(b) continental separation
(c) there is no terrestrial route to these places
(d) retrogressive evolution. *(2001)*

31. Which of the following is mainly responsible for the extinction of wildlife?
(a) Pollution of air and water
(b) Hunting of flesh
(c) Destruction of habitats
(d) All of these *(1999)*

32. What is the major cause of diminishing wildlife number?
(a) Felling of trees
(b) Paucity of drinking water
(c) Cannibalism
(d) Habitat destruction *(1998)*

33. The breeding place of Flamingo (Hansawar) in India is most likely
(a) Runn of Kutch (b) Ghana Vihar
(c) Sambhar lake (d) Chilka lake. *(1996)*

34. The abundance of a species population, within its habitat, is called
(a) relative density (b) regional density
(c) absolute density (d) niche density. *(1995)*

35. The most important human activity, leading to the extinction of wildlife, is
(a) pollution of air and water
(b) hunting for valuable wildlife products
(c) introduction of alien species
(d) alteration and destruction of the natural habitats. *(1994)*

15.2 Biodiversity Conservation

36. The Earth Summit held in Rio de Janeiro in 1992 was called
(a) for immediate steps to discontinue use of CFCs that were damaging the ozone layer
(b) to reduce CO_2 emissions and global warming
(c) for conservation of biodiversity and sustainable utilisation of its benefits
(d) to assess threat posed to native species by invasive weed species. *(NEET 2019)*

37. Which one of the following is not a method of *in situ* conservation of biodiversity ?
(a) Sacred grove (b) Biosphere reserve
(c) Wildlife sanctuary (d) Botanical garden
(NEET 2019)

38. Western Ghats have a large number of plant and animal species that are not found anywhere else. Which of the following terms will you use to notify such species?
(a) Endemic (b) Vulnerable
(c) Threatened (d) Keystone
(Odisha NEET 2019)

39. All of the following are included in '*ex-situ* conservation' except
(a) wildlife safari parks (b) sacred groves
(c) botanical gardens (d) seed banks.
(NEET 2018)

40. Which one of the following is related to *ex-situ* conservation of threatened animals and plants?
(a) Biodiversity hotspots
(b) Amazon rainforest
(c) Himalayan region
(d) Wildlife safari parks *(NEET 2017)*

41. The region of biosphere reserve which is legally protected and where no human activity is allowed is known as
(a) buffer zone (b) transition zone
(c) restoration zone (d) core zone.
(NEET 2017)

42. How many hotspots of biodiversity in the world have been identified till date by Norman Myers?
(a) 17 (b) 25
(c) 34 (d) 43 *(NEET-II 2016)*

43. Which of the following national parks is home to the famous musk deer or hangul?
(a) Keibul Lamjao National Park, Manipur
(b) Bandhavgarh National Park, Madhya Pradesh
(c) Eaglenest Wildlife Sanctuary, Arunachal Pradesh
(d) Dachigam National Park, Jammu and Kashmir
(NEET-II 2016)

44. The species confined to a particular region and not found elsewhere is termed as
(a) endemic (b) rare
(c) keystone (d) alien. *(2015)*

45. In which of the following, both pairs have correct combination?
(a) *In-situ* conservation : Seed Bank
Ex-situ conservation : National Park
(b) *In-situ* conservation : Tissue culture
Ex-situ conservation : Sacred groves
(c) *In-situ* conservation : National Park
Ex-situ conservation : Botanical Garden
(d) *In-situ* conservation : Cryopreservation
Ex-situ conservation : Wildlife Sanctuary
(2015 Cancelled)

46. Cryopreservation of gametes of threatened species in viable and fertile condition can be referred to as
(a) *in situ* conservation by sacred groves
(b) *in situ* cryo-conservation of biodiversity
(c) *in situ* conservation of biodiversity
(d) advanced *ex situ* conservation of biodiversity.
(2015 Cancelled)

47. An example of *ex-situ* conservation is
(a) national park (b) seed bank
(c) wildlife sanctuary (d) sacred grove. *(2014)*

48. Which one of the following is not used for *ex-situ* plant conservation?
(a) Shifting cultivation (b) Botanical gardens
(c) Field gene banks (d) Seed banks
(NEET 2013)

49. The largest tiger reserve in India is
(a) Valmiki
(b) Nagarjunasagar-Srisailam
(c) Periyar
(d) Nagarhole. *(Karnataka NEET 2013)*

50. Which one of the following areas in India, is a hotspot of biodiversity?
(a) Eastern Ghats (b) Gangetic Plain
(c) Sunderbans (d) Western Ghats *(2012)*

51. Select the correct statement about biodiversity.
(a) The desert areas of Rajasthan and Gujarat have a very high level of desert animal species as well as numerous rare animals.
(b) Large scale planting of Bt cotton has no adverse effect on biodiversity.
(c) Western ghats have a very high degree of species richness and endemism.
(d) Conservation of biodiversity is just a fad pursued by the developed countries.
(Mains 2012)

52. Sacred groves are specially useful in
(a) generating environmental awareness
(b) preventing soil erosion
(c) year-round flow of water in rivers
(d) conserving rare and threatened species.
(Mains 2012)

53. Consider the following statements (A – D) each with one or two blanks.
(A) Bears go into (1) during winter to (2) cold weather.
(B) A conical age pyramid with a broad base represents (3) human population.
(C) A wasp pollinating a fig flower is an example of (4) .
(D) An area with high levels of species richness is known as (5) .
Which one of the following options, gives the correct fill ups for the respective blank numbers from (1) to (5) in the statements ?
(a) (3) – stable (4) – commensalism, (5)-marsh
(b) (1) – aestivation, (2) – escape, (3) – stable, (4) – mutualism
(c) (3) – expanding, (4) – commensalism, (5) – biodiversity park
(d) (1) – hibernation, (2) – escape, (3) – expanding (5) – hotspot *(Mains 2011)*

54. Which one of the following is an example of *ex-situ* conservation?
(a) Wildlife sanctuary (b) Seed bank
(c) Sacred groves (d) National park *(2010)*

55. Tiger is not a resident in which one of the following national parks?
(a) Sunderbans (b) Gir
(c) Jim Corbett (d) Ranthambhor *(2009)*

56. Which one of the following is not observed in biodiversity hotspots?
(a) Lesser inter-specific competition
(b) Species richness
(c) Endemism
(d) Accelerated species loss *(2008)*

57. World Summit on Sustainable Development (2002) was held in
(a) Argentina (b) South Africa
(c) Brazil (d) Sweden. *(2008)*

58. Identify the odd combination of the habitat and the particular animal concerned.
(a) Sunderbans – Bengal Tiger
(b) Periyar – Elephant
(c) Rann of Kutch – Wild Ass
(d) Dachigam National Park – Snow Leopard *(2007)*

59. Which of the following is considered a hotspot of biodiversity in India?
(a) Aravalli hills (b) Western ghats
(c) Indo-gangetic plain (d) Eastern ghats *(2006)*

60. Which one of the following is not included under *in situ* conservation?
(a) National park (b) Sanctuary
(c) Botanical garden (d) Biosphere reserve
(2006)

61. Which one of the following is the correctly matched pair of an endangered animal and a national park?
(a) Great Indian bustard : Keoladeo National Park
(b) Lion : Corbett National Park
(c) Rhinoceros : Kaziranga National Park
(d) Wild ass : Dudhwa National Park *(2006)*

62. Biodiversity Act of India was passed by the Parliament in the year
(a) 1992 (b) 1996
(c) 2000 (d) 2002. *(2005)*

63. In your opinion, which is the most effective way to conserve the plant diversity of an area?
(a) By tissue culture method
(b) By creating biosphere reserve
(c) By creating botanical garden
(d) By developing seed bank *(2004)*

64. Viable material of endangered species can be preserved by
(a) gene bank (b) gene library
(c) herbarium (d) gene pool. *(2000)*

65. MAB stands for
(a) mammals and biosphere
(b) mammals and biology programme
(c) man and biology programme
(d) man and biosphere programme. *(1997)*

66. Identify the correct match between tiger reserve and its state.
(a) Manas - Assam
(b) Corbett - Madhya Pradesh
(c) Bandipur - Tamil Nadu
(d) Palamu - Odisha *(1995)*

67. Which of the following is the matching pair of a sanctuary and its main protected wild animal?
(a) Kaziranga-Musk deer
(b) Gir-Lion
(c) Sunderban-Rhino
(d) All of these *(1995)*

ANSWER KEY

1.	(d)	**2.**	(d)	**3.**	(b)	**4.**	(d)	**5.**	(b)	**6.**	(c)	**7.**	(c)	**8.**	(d)	**9.**	(a)	**10.**	(c)
11.	(b)	**12.**	(d)	**13.**	(a)	**14.**	(d)	**15.**	(a)	**16.**	(b)	**17.**	(b)	**18.**	(d)	**19.**	(d)	**20.**	(a)
21.	(a)	**22.**	(a)	**23.**	(d)	**24.**	(b)	**25.**	(d)	**26.**	(a)	**27.**	(d)	**28.**	(c)	**29.**	(a)	**30.**	(b)
31.	(c)	**32.**	(d)	**33.**	(d)	**34.**	(d)	**35.**	(d)	**36.**	(c)	**37.**	(d)	**38.**	(a)	**39.**	(b)	**40.**	(d)
41.	(d)	**42.**	(c)	**43.**	(d)	**44.**	(a)	**45.**	(c)	**46.**	(d)	**47.**	(b)	**48.**	(a)	**49.**	(b)	**50.**	(d)
51.	(c)	**52.**	(d)	**53.**	(d)	**54.**	(b)	**55.**	(b)	**56.**	(a)	**57.**	(b)	**58.**	(d)	**59.**	(b)	**60.**	(c)
61.	(c)	**62.**	(d)	**63.**	(b)	**64.**	(a)	**65.**	(d)	**66.**	(a)	**67.**	(b)						

Hints & Explanations

1. (d) **2. (d)**

3. (b) : Habitat loss and fragmentation is the most important cause of driving the animals and plants to extinction. When large habitats are broken into small fragments due to various human activities, mammals and birds requiring large territories and certain animals with migratory habitats are badly affected, leading to population declines. The same can be applicable to the plant (forest) loss and degradation as millions of species are being cut and cleared for the expansion of agricultural land, harvesting timber, forest fire, as well as overgrazing.

4. (d)

5. (b) : Alexander von Humboldt described species area relationship for the first time. He observed that within a region, species richness increases with increasing explored area, but only upto a limit.

6. (c) : *Parthenium hysterophorus* is commonly known as congress grass or carrot weed. It is herbaceous annual plant of Family Asteraceae. It is a deadly invasive, noxious weed infesting cropped and non-cropped areas. It rapidly colonises area replacing the native vegetation and causes a number of human health related problems such as skin allergy, rhinitis and eye irritations. Also, being toxic and unpalatable it causes fodder scarcity. Hence, it is considered a threat to the biodiversity.

7. (c) : A red data book or red list is a catalogue of taxa facing risk of extinction. Red data book or red list was initiated in 1963.

8. (d) : River dolphin found in holy river Ganga, Brahmaputra, Indus and its tributaries is the National aquatic animal of India. Presence of river dolphin in Ganga indicates pure and freshwater.

9. (a) : Destruction of natural habitat causes the most serious threat to the biodiversity. Over-population, urbanisation and industrialisation lead to the destruction or fragmentation of natural habitats to fulfill the requirement of additional land. Loss of habitat results in annihilation of plants, microorganisms and forcing out of animals which in alien lands die out after some time. Fragmentation of habitats results in disruption of complex interactions amongst species, destruction of species in the cleared regions, annihilation of species restricted to deeper undisturbed parts of forests and decreased biodiversity in the habitat fragments.

10. (c) : The taxon under critically endangered category are facing very high risk of extinction in the wild and can become extinct at any moment in the immediate future.

11. (b) : IUCN is International Union of Conservation of Nature and Natural Resources which is now called World Conservation Union (WCU). It has its headquarters at Morges, Switzerland. It maintains a red data book or red list which is a catalogue of taxa facing risk of extinction. Red data book or red list was initiated in 1963. The Red list of year 2000 has made assessment of 18,000 species.

12. (d)

13. (a) : Fungi is a large kingdom of over 72,000 species. They are achlorophyllous, heterotrophic, spore forming, non-vascular, eukaryotic organisms which contain chitin or fungal cellulose in their walls and possess glycogen as food reserve. They are major decomposers of many ecosystems and are associate of many organisms.

14. (d) : Genetic diversity is the diversity in the numbers and types of genes as well as chromosomes present in different species and the variations in the genes and their alleles in the same species. *Oryza sativa* (rice) has 32,000-50,000 genes.

15. (a)

16. (b) : Insects have highest number of species found in nature. The insecta is the largest class of animals. It has over 7,00,000 species. The insects are the most successful land invertebrates and the only major competitors with humans for dominance in the world.

17. (b) : Biodiversity (biological diversity) is the existence of a wide variety of species (species diversity) or other taxa of plants, animals and microorganisms in a natural community or habitat, or of communities within a particular environment (ecological diversity), or of genetic variation within a species (genetic diversity). The maintenance of a high level of biodiversity is important for the stability of ecosystems.

18. (d) : Predator and prey evolve together. The prey is part of the predator's environment, and the predator dies if it does to get food, so it evolves whatever is necessary in order to eat the prey. Likewise, the predator is part of the prey's environment, and the prey dies if it is eaten by the predator, so it evolves whatever is necessary to avoid being eaten. So, predators cannot lead to the extinction of prey species.

Nicotine is an alkaloid found in the night shade family of plants (Solanaceae) that constitutes approximately 0.6–3.0% of dry weight of tobacco, with biosynthesis taking place in the roots and accumulation occurring in the leaves. Strychnine is an alkaloid plant toxin extracted chiefly from *Nux vomica*; formerly used as a stimulant. These are not metabolic disorder products but are metabolic wastes.

19. (d) : The Indian rhinoceros is a endemic of north-east region of India. Kaziranga National Park (Assam) is famous for rhinoceros.

20. (a)

21. (a) : Species diversity is related to the variety in the number and richness of the species within a region and is measured at the level of 'species'. Thus, it is the product of species richness and species evenness. Species richness refers to the number of species per unit area. As the area of the site increases, the number of species also increases due to more availability of natural resources. Species evenness is the relative abundance with which each species is represented in an area. Thus, variation in the number of species, kinds of species as well as the number of individuals per species lead to greater diversity. In the given table, the area which shows maximum species diversity is 's'.

22. (a) : In India, large variety of exotic animal and plant species have been introduced from other parts of the world through the ages. Some exotic plants have turned into weeds, multiplying fast and causing harm to the ecosystem, *e.g.* water hyacinth and *Lantana camara*.

23. (d) : An endangered species is a population of an organism which are at risk of becoming extinct because it is either a few in number or threatened by changing environmental or predation parameters. *Podophyllum* is such an endangered species of Indian medicinal plants. They contain, podophyllotoxin and podophyllin that is used as a purgative and as a cytostatic. They are also grown as ornamental plants for their attractive foliage and flowers. Extracts of plants are used for genital warts and some skin cancers.

24. (b) : An endangered species is a living organism in danger of disappearing from the face of the earth if it is not protected and its situation is not improved. Red panda (*Ailurus fulgens*) and *Bentinckia nicobarica* are endangered organisms of India. The red panda (*Ailurus fulgens*) faces problems with human encroachment into its habitat. *Bentinckia nicobarica* is a fast-growing, slender and elegant, pinnate palm from the Nicobar Islands in the Andaman Sea, North of Sumatra.

25. (d) : According to IUCN Red list, the status of Red panda (*Ailurus fulgens*) is endangered species. Endangered species are those species that are facing a very high risk of extinction in the wild in the near future. This category is used when the species suffered a population reduction of 80% or more.

Vulnerable species have sufficient population at present but are depleting fast. *e.g.*, Golden langur, leopard cat. Extinct species no longer exist, *e.g.*, Dodo. Critically endangered species are threatened to a greater extent.

26. (a) : IUCN Red List (2004) documents the extinction of 784 species (including 338 vertebrate species, 359 invertebrate species and 87 plant species) in the last 500 years. On worldwide basis, more than 15,500 species are facing the threat of extinction. At present, 12% of the bird species, 23% of mammal species, 32% of amphibian species and 31% of gymnosperm species

are facing the threat of extinction in the world. Several endangered mammalian species are *Panthera pandus* (Leopard), *Panthera leo persica* (Lion), *Presbytis pilaetus* (capped langur), etc.

27. (d) : Chiru or the Tibetan antelope (*Pantholops hodgsoni*) is medium-sized bovid which is about 1.2 m in height. Its coat is grey to reddish brown, with a white underside. The Chiru's wool, known as the shahtoosh, is warm, soft and fine. The wool can only be obtained by killing the animal. It is listed as endangered by the world conservation union and the United States Fish and Wildlife Service due to commercial poaching for its wool.

28. (c) : Wildlife refers to all living organisms (terrestrial, aquatic and aerial) living in all possible natural habitats of their own, other than the cultivated plants and domesticated animals. Thus "wildlife" does not exist only in jungles and are hunted down but wild life includes even the migrating birds, turtles, coral reefs, microorganisms, insects, fishes, etc. Several hundred organisms are endangered or on the verge of extinction. The reasons are deforestation, pollution, killing, over exploitation, etc. The most important among them is deforestation or destruction of their natural habitat because it will affect the species (flora and fauna) of complete area and not only the few organisms. The natural habitat may be destroyed by man for his settlements, grazing grounds, agriculture, mining, industries, dam building, etc. As a consequence of this, the species must adapt to the changes, move elsewhere or may succumb to predation, starvation or disease, and eventually dies.

29. (a) : Indri-indri lemur is found in Madagascar. It is the largest of all surviving lemurs and is best known for its beautiful song which can carry for more than 2 km. Today, the Indri's number is small and dwindling due to habitat loss.

30. (b) : Occurrence of endemic species in South America and Australia is due to geographic isolation (continental separation). Animals occupy all diverse habitats. The distribution, continuous or discontinuous of a species or a group of organisms depends on many factors like evolutionary, climatic, physical or biological barriers, etc.

31. (c) **32. (d)**

33. (d) : Flamingoes are protected in Chilka lake, Odisha. Other important birds protected are water fowls, ducks, cranes, golden plovers, sandpipers, etc.

34. (d) **35. (d)**

36. (c) : 'The Earth Summit' held in Rio de Janeiro in 1992, called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilisation of its benefits.

37. (d) : Botanical garden comes under *ex-situ* method of conservation of biodiversity.

38. (a)

39. (b) : Sacred groves come under *in-situ* conservation and represent the pristine forest patches around places of worship which are held in high esteem by tribal communities. Cutting of trees and branches is prohibited due to religious reasons. Wildlife safari parks, botanical gardens and seed banks come under *ex-situ* conservation.

40. (d) : *Ex-situ* conservation is conservation of selected rare or threatened animals and plants in places outside their natural homes. It includes offsite collections like botanical gardens, zoological parks, wildlife safari parks, gene banks, etc.

41. (d) : Core zone or Natural zone area of a biosphere reserve is undisturbed and legally protected ecosystem. No human activity is allowed in this zone. Little human activity is allowed in the buffer zone whereas in transition zone, an active cooperation is present between reserve management and local people for activities like settlements, cropping, etc. Restoration region is degraded area which is selected for restoration to near natural form.

42. (c) : Biodiversity hotspots are a method to identify those regions of the world where attention is needed to address biodiversity loss and to guide investments in conservation. The idea was first developed by Norman Myers in 1988 to identify tropical forests hotspots characterised both by exceptional levels of plant endemism and serious habitat loss which he then expanded to a more global scope. Currently 34 biodiversity hotspots have been identified most of which occur in tropical forests.

43. (d) **44. (a)**

45. (c) : *In-situ* (on site) conservation is conservation and protection of the whole ecosystem and its biodiversity at all levels, in order to protect the threatened species. Two *in-situ* methods are being used to save biodiversity *viz.*, hotspots and protected areas. Protected areas include national parks, sanctuaries, biosphere reserves and sacred groves. *Ex-situ* (off site) conservation is conservation of selected rare plants/animals in places outside their natural homes. *Ex-situ* conservation includes offsite collections, seed banks, gene banks, *in vitro* fertilization, cryopreservation techniques and tissue culture.

46. (d) : Cryopreservation is an advanced method of *ex-situ* conservation. It involves preservation at –196°C in liquid nitrogen. It can maintain tissue culture, embryos, animal cells/tissues, spermatozoa indefinitely. The cryopreserved material is revived through special technique, when required.

47. (b) : *Ex-situ* (off site) conservation is conservation of selected rare plants/animals in places outside their natural homes. *Ex-situ* conservation includes offsite collections, seed banks, gene banks, *in vitro* fertilization, cryopreservation techniques and tissue culture.

48. (a) : *Ex-situ* conservation is conservation of selected rare plants/animals in places outside their natural homes. It includes botanical gardens or zoological parks, seed

banks, cryopreservation, field gene banks and sacred plants. Many wild and domesticated species are well managed and collected in botanical gardens, zoological parks, wildlife safari parks, arboreta, etc. Most of these have capture breeding programmes to restore the decreasing number of animals and helping the survival of existing individuals of the species. Gene banks are institutes that maintain stocks of viable seeds (seed banks), live plants (orchards), tissue culture and frozen germplasm with the whole range of genetic viability.

49. (b) : Nagarjunasagar - Srisailam Tiger Reserve is the largest tiger reserve in India. It is present in Andhra Pradesh with a total area of 3568 km^2. The core area of this reserve is 1200 km^2.

50. (d) : Hotspots are areas with high density of biodiversity or megadiversity which are also the most threatened ones. Ecologically hotspots are determined by four factors – number of species/species diversity, degree of endemism, degree of threat to habitat due to its degradation and fragmentation, and degree of exploitation. India has three hotspots : Indo-Burma, Himalayas and Western Ghats - Sri Lanka.

51. (c)

52. (d) : Sacred grove is an example of *in situ* conservation of forests and wildlife especially rare and threatened species. These forest patches are found around places of worship which are held in high esteem by tribal communities. They are the most undisturbed forest patches which are often surrounded by highly degraded landscapes. Not a single branch is allowed to be cut from these forests. As a result many endemic species which are rare or have become extinct elsewhere can be seen to flourish here. Such sacred groves are found in Khasi and Jaintia hills of Meghalaya, Aravalli hills of Rajasthan, Western ghat regions of Karnataka, Maharashtra, Sarguja, Chanda and Bastar areas of Madhya Pradesh.

53. (d)

54. (b) : Seed bank is an example of *ex-situ* conservation, while wildlife sanctuary, sacred grove and national parks are examples of *in-situ* conservation.

55. (b) : Gir National Park is situated in district Junagarh of Gujarat. This national park is famous for Asiatic lion. Beside lion, panther, striped hyaena, sambhar, nilgai, cheetal are also conserved.

56. (a)

57. (b) : Conservation of biodiversity is a collective responsibility of all nations. The historic Convention on Biological Diversity ('The Earth Summit') held in Rio de Janeiro in 1992, called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilisation of its benefits. In a follow-up, the World Summit on Sustainable Development held in 2002 in Johannesburg, South Africa, 190 countries pledged their commitment to achieve by 2010, a significant reduction in the current rate of biodiversity loss at global, regional and local levels.

58. (d) : Dachigam National Park is located only 22 kilometers from Srinagar, the capital city of the northern state of Jammu and Kashmir. Dachigam is considered home to some of the unique Himalayan range of flora and fauna. Primary amongst them is the hangul or Kashmiri stag, the most endangered species of red deer in the world. It was finally upgraded and declared a National Park in the year 1981.

59. (b)

60. (c) : *In-situ* conservation means "on-site conservation". *In-situ* conservation is the protection and management of important components of biological diversity through a network of protected areas *e.g.*, National Park, sanctuary, biosphere reserve, etc. Botanical gardens come under *ex-situ* conservation.

61. (c) : Kaziranga National Park of Assam is known for the conservation of rhinoceros.

62. (d) : Biodiversity Act of India provides for conservation of biological diversity, substainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto. The biodiversity act of India was passed in 2002.

63. (b) : Biosphere reserves are multipurpose protected areas of different representative ecosystems which are meant for conservation of biodiversity or wildlife, traditional life style of tribals and their domesticated animals and also plant resources. Each biosphere reserve has a core zone (where no human activity is allowed), a buffer zone (with limited human activity) and manipulation zone (where human activity is allowed without degradation of ecology. Thus, the biosphere reserves protect not just wild varieties but also domesticated varieties of plants of an area.

64. (a) : Viable material of endangered species can be preserved by gene bank. Gene bank is an institute that maintains stocks of viable seeds (seed banks), live growing plants (orchards), tissue culture and frozen germplasm with the whole range of genetic variability.

65. (d) : Man and biosphere programme is an international biological programme of UNESCO (United Nations Educational Scientific and Cultural Organisation) which was started in 1971 but was introduced in India in 1986. MAB has studied human environment, impact of human interference and pollution on biotic and abiotic environment and conservation strategies for the present as well as future.

66. (a) : Manas biosphere reserve is located in Assam. Corbett National Park is located in district Nainital of Uttaranchal. Bandipur National Park is located in district Mysore of Karnataka. Palamu is located in Chhotanagpur, Jharkhand.

67. (b)

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