BIODIVERSITY AND CONSERVATION

1. Island ecosystem is the most vulnerable due to
   a) Small size and small number of species
   b) Large size and large number of species
   c) Large size only
   d) Small size only
2. *In situ* strategies includes
   I. National parks
   II. Wildlife sanctuaries
   III. Biosphere reserves
   IV. Sacred forests/Lakes
   Choose the correct option
   a) I and II
   b) II, III and IV
   c) I, II and III
   d) I, II, III and IV
3. Wildlife conservation aims at
   I. maintaining the ecological process
   II. to enrich the wildlife diversity with exotic species
   III. preventing migration of the species
   IV. maintaining the diversity of life
   Select the correct answer using the codes given below
   a) I and II
   b) II and III
   c) III and IV
   d) I and IV
4. The total number of biodiversity hot spots in the world are
   a) 24
   b) 12
   c) 34
   d) 52
5. On the high altitude, birds become rare or extinct, the plants which may disappear along with them are
   a) Pine
   b) Oak
   c) Orchids
   d) Rhododendrons
6. Species which is in danger of extinction is
   a) Endangered
   b) Vulnerable
   c) Rare
   d) Critically endangered
7. *Pronuba* and *Yucca* exists in mutualistic relationship in nature. Which of the following term describes this situation?
   a) Pollution
   b) Coextinctions
   c) Alien species invasions
   d) Over-exploitation
8. Genetic diversity is the measure of
   a) Varieties of the species and their relative abundance present within a region
   b) Variety in the genetic information contained in the organisms
   c) Diversity of the genes at community and ecosystem levels
   d) All of the above
9. Which one of the following shows maximum genetic diversity in India?
   a) Rice
   b) Maize
   c) Mango
   d) Groundnut
10. Which of the following is a pair of endangered species?
    a) Garden lizard and Mexican poppy
    b) Rhesus monkey and sal tree
    c) Indian peacock and carrot grass
    d) Hornbill and Indian aconite
11. From high latitude to low latitude, biodiversity
    a) Decreases
    b) Increases
    c) Remains same
    d) First decreases then increases
12. Identify the odd combination of the habitat and the particular animal concerned,
    a) Dachigam national park – Snow leopard
    b) Sunderbans –Bengal tiger

c) Periyar – Elephant
d) Rann of Kutch – Wild ass

13. Plants like *Aegle marmelos*, *Ocimum sanctum* and *Ficus religiosa* are a group of plants designated as
a) Medicinal plant species
b) Lesser known food plants
c) Traditional food crops
d) Sacred species of plants

14. Estuaries are considered as nutrient rich and trap
a) River
b) Pond
c) Lake
d) Ocean

15. Which of the following is an inexhaustible resource?
a) Fossil fuel
b) Solar energy
c) Coal
d) Petroleum

16. Which of the following expanded forms of the following acronyms is correct?
a) UNEP- United Nations Environmental Policy
b) EPA – Environmental Pollution Agency
c) IUCN – International Union for Conservation of Nature and Natural Resources
d) IPCC – International Panel for Climate Change

17. One of these is not concerned with wild life conservation.
a) IVF
b) IUCN
c) WWF
d) IBWL

18. More than 70% of world's freshwater is contained in
a) Antarctica
b) Glaciers and mountains
c) Greenland
d) Polar ice

19. Minerals, metals and fossil fuels are which type of resources of energy?
a) Renewable
b) Non- renewable
c) Biodegradable
d) Degradable

20. Rajaji national park is situated in
a) Tamil Nadu
b) Karnataka
c) Uttarakhand
d) Rajasthan

21. The percentage of forest cover recommended by the national forest policy (1988) is
a) 33% for plains and 67% for hills
b) 37% for plains and 63% for hills
c) 20% for plains and 70% for hills
d) 23% for plains and 77% for hills

22. Number of endangered species of angiosperms in India is
a) 487
b) 15,000
c) 5,000
d) 3,000

23. An endemic species is the one
a) That has been introduced to a new geographic area
b) That is found in many different geographic area
c) That is found only on islands
d) That is found naturally in just one geographic area

24. Which one of the following possesses a very large number of endemic amphibian species?
a) North-East Ghats
b) Andaman Nicobar Islands
c) Western Ghats
d) North-West Ghats

25. Identify the names of two hot spots of biodiversity in India
a) Himalayan and Deccan Plateau
b) Western ghats and North Eastern Himalayas
c) Deccan and Western ghats
d) Western ghats and Gangetic plains

26. 'Van Mahotsav' was started by
a) K M Munshi
b) Sunder Lal Bahuguna
c) Vinoba Bhave
d) J L Nehru

27. A taxon, which is facing an extremely high risk of extinction in the wild in immediate future is known as
a) Rare
b) Exotic
c) Vulnerable
d) Critically endangered

28. Three levels of biodiversity are
a) Genetic diversity, species diversity and ecological diversity
b) Species diversity, ecological diversity and habitat diversity
c) Geographical diversity, genetic diversity and habitat diversity
d) Ecological diversity, species diversity and community diversity

29. Wildlife conservation aims at
I. Maintaining the ecological process.

II. To enrich the wild life diversity with exotic species.
III. Preventing migration of species.
IV. Maintaining the diversity of life.
The correct statement are
a) I, II b) II, III c) III, IV d) I, IV

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

31. Large woody vines more commonly found in
a) Mangroves b) Tropical rainforests c) Alpine forests d) Temperate forests

32. The endangered largest living lemur *Idri idri* is inhabitant of
a) Madagascar b) Mauritius c) Sri Lanka d) India

33. A historic convention on biological diversity held in Rio de Janerio in 1992 is known as
a) The earth summit b) Montreal protocol c) Geneva convention d) Janerio convention

34. Water hyacinth (*Eichhornia crassipes*) was introduced in Indian water to reduce pollution. It is an example of
a) Disturbance and degradation b) Coextinctions
c) Alien species invasions d) Over-exploitation

35. Biodiversity is affected by
a) Latitudinal gradients and species area relationship
b) Species area relationship and longitudinal gradients
c) Both (a) and (b)
d) Latitudinal and longitudinal gradients

36. Which of the following statement belongs to a stable community?
a) Productivity of community should not vary too much from year to year
b) Community should be resistant to occasional natural and man-made disturbances
c) Community should be resistant to invasions by alien species
d) All of the above

37. About 70% of total global carbon is found in
a) Grasslands b) Agro-ecosystems c) Oceans d) Forests

38. Initially ...A... biodiversity hot spots were identified but subsequently nine more have been added to the list, bringing the total number of biodiversity hot spot in the world to ...B... . These hot spots are the regions of accelerated habitat loss. Three of these hot spots-Western ghats and Sri Lanka, Indo-Burma and Himalaya, covers our country's, exceptionally high biodiversity regions
Although all the biodiversity hot spots put together covers less than ...C... % of the earth's land area, the number of species they collectively harbour is extremely high and the strict protection of these hot spots could reduce the ongoing mass extinctions by almost ...D... %. A, B, C and D in the paragraph refers to
a) A-25, B-26, C-2, D-30 b) A-25, B-34, C-2, D-30
c) A-15, B-20, C-2, D-30 d) None of these

39. How many bio-geographical regions are present in India?
a) 3 b) 4 c) 7 d) 10

40. At what height in Himalayan region of our country are Taiga forest located?
a) At the height of 1000 to 1500 m b) At the height of 2000 to 3000 m
c) At the height of 500 to 1000 m d) At the height of 1000 m to 1200 m

41. In which part of the biosphere reserves, human settlement is permissible?
a) Transition zone b) Buffer zone
c) Core zone d) Settlement not allowed

42. Which of the following is the correct estimation about the numbers of national parks, biosphere and the wildlife sanctuaries of India
a) 158,62,10 b) 58,412,10 c) 96,412,10 d) 90,14,448

43. Which one of the following is an example of *ex situ* conservation?

a) Wildlife sanctuary b) Seed bank c) Sacred groves d) National park

44. The dolphin found in Chilka lake is
a) *Delphinus* b) Irrawady c) *Sotalia* d) *Tursiops*

45. Communities with more species tend to be more stable than those with less species. This was confirmed by
a) Alexander von Humboldt b) David Tilman
c) Paul Ehrlich d) Edward Wilson

46. Some of the nutrient cycles are labelled as below
I. Sulphur cycle II. Phosphorus cycle
III. Carbon cycle IV .Nitrogen cycle
Of these, the sedimentary cycle is represented by
a) I only b) II only c) III only d) I and II

47. Wildlife is
a) Any living organism in any habitat b) Predatory animals in their natural habitat
c) Any living organisms in its natural habitat d) Economically important animals and plants

48. Tiger is not resident in which one of the following national park?
a) Ranthambhor b) Sunderbans c) Gir d) Jim Corbett

49. The number of species of birds in Columbia, located near the equator is
a) 2,400 b) 1,400 c) 2,000 d) 2,500

50. Modern *ex situ* conservation includes
a) *In vitro fertilization* b) Cryopreservation techniques
c) Plants can be propagated using tissue culture methods d) All of the above

51. Core zone, buffer zone and manipulation zone are found in
a) National park b) Sanctuary c) Tiger reserve d) Biosphere reserve

52. Silent valley is tropical evergreen forest located in
a) Kerala b) Karnataka c) Maharashtra d) Orissa

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

54. An inexhaustible, non-conventional universal source of energy is
a) Wind energy b) Solar energy c) Hydrothermal energy d) Tidal energy

55. Which one of the following is the first national park in India?
a) Kanha national park b) Periyar national park
c) Corbett national park d) Bandipur national park

56. Which one of the following contributes to social forestry?
a) *Leucaena leucocephala* b) *Mangifera indica*
c) *Jatropha* d) None of the above

57. What is true approximate percentage of the earth covered by hot spots?
a) 2.5% b) 3.5% c) 1.5% (less than 2%) d) 4.5%

58. Number of wild life is continuously decreasing. What is the main reason of this?
a) Predation b) Cutting down of forests
c) Destruction of habitats d) Hunting

59. What is/are the correct explanations about higher diversity in tropical areas in comparison to the temperate areas?
I. There are no favourable seasons in tropics
II. Less solar energy is available in tropics
III. Rate of extinction is low in tropics
IV. Resource availability is higher in tropics
Choose the correct option

a) I, III and IV b) I, II, III and IV c) I, II, III d) III and IV

60. Kaziranga is famous for
a) Wild ass b) Elephant c) Buffallow d) Rhinoceros

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

62. Loss of biodiversity is caused by
a) Over-population b) Urbanisation c) Industrialisation d) All of the above

63. The Western Ghats have a greater amphibians diversity than the Eastern Ghats. It is an example of
a) Species diversity b) Genetic diversity c) Ecological diversity d) None of these

64. Red list in India completed by
a) Botanical survey of India b) Zoological survey of India
c) Geological survey of India d) None of the above

65. Which of the following is *ex situ* conservation?
a) Banning of Akhard Sikar in Similipal b) Breeding of animals in Nandan Kanha
c) Protecting migration of birds in Chilka lake d) Protecting fishing in Bhitar Kanika

66. In the species area relationship, 'S' represents
a) Species richness b) Slope of the line c) Specific area d) Special species

67. The species listed in Red Data Book are
a) Threatened b) Endangered c) Rare d) All of these

68. Excessive accumulation of organic matter in water bodies leads to
a) Decrease in species diversity b) Increase in species diversity
c) Green house effect d) No effect on species diversity

69. The medicinal plant *Rauwolfia vomitoria* produces a chemical called
a) Opine b) Reserpine c) Vinblatin d) Resprione

70. What is the sustainable use of resources?
a) Protected strips of the land that allows organisms to migrate from one wilderness area to another
b) A law that makes it illegal to do harm to the species that are listed as endangered or threatened
c) The ability to use natural resources in a way that helps people to protect the ecosystem
d) The study of the methods to help protect biodiversity

71. −1°C to 13°C annual variations in the intensity and duration of temperature and 50 and 250 cm annual variation in precipitation, account for the formation of a major biome as
a) Temperate forest b) Coniferous forest c) Tropical forest d) Grassland

72. All the following are included under *in situ* conservation except
a) Botanical garden b) Biosphere reserve c) National park d) Sanctuary

73. Total number of all species of organisms in a given region is known as the region's
a) Biota b) Flora c) Fauna d) Diversity

74. Indian rhinoceros are protected in
a) Gir forest b) Kaziranga national park
c) Bandipur national park d) Ranthambor national park

75. Simlipal is
a) Sanctuary b) Biosphere reserve c) National park d) Zoo

76. In soil profile, human is present in
a) Horizon-O b) Horizon-A c) Horizon-B d) Horizon-C

77. The table below gives the population (in thousands) of ten species (A-J) in four areas (I-IV) consisting of the number of habitats given within brackets against each. Study the table answer the question which follows.

Area and Number	Species and their Population (in thousands) in the Area

of Habitats	A	B	C	D	E	F	G	H	I	J
I (11)	23	1.2	0.52	6.0	-	3.1	1.1	9.0	-	10.3
II (11)	10.2	-	0.62	-	1.5	3.0	-	8.2	1.1	11.2
III (13)	11.3	0.9	0.48	2.4	1.4	4.2	0.8	8.4	2.2	4.1
IV (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 I to IV shows maximum species diversity?

a) II b) III c) IV d) I

78. A species becomes prone to extinction due to
    a) Drastic environmental changes and population characteristics
    b) Large body size and large population size
    c) Drastic environmental changes and mass extinction
    d) Population characteristics and pollution
79. One of the most important functions of botanical gardens is that
    a) One can observe tropical plants there
    b) They allow *ex situ* conservation of germplasm
    c) They provide the natural habitat for wild life
    d) They provide a beautiful area for recreation
80. Consider the following statements.
    V. By the end of twentieth century, the forest cover in India was reduced to 19.4%.
    VI. National Forest Policy was implemented in the year 1988.
    VII. The average annual production of dry grass or hay in India is about 250 million tonnes.
    VIII. About 10% of the world's population lives in arid or semi-arid regions.
    a) I and II are true
    b) I, III and IV are not true
    c) I, II and III are true
    d) III is not true
81. ..... is the taxon, which is likely to move into endangered category in near future, if conditions prevail as it is.
    a) Vulnerable b) Endanger c) Rare d) Extinct
82. The diversity of the habitats over the total geographical area is called
    a) Alpha diversity b) Beta diversity c) Gamma diversity d) Delta diversity
83. The largest endangered bird in India is
    a) Vulture
    b) Flamingo
    c) Great Indian bustard
    d) Great Indian hornbill
84. Which of the following is exotic species?
    a) *Parthenium* b) *Lantana* c) *Eichhornia* d) All of these
85. Which of the following pairs of geographical areas shows maximum biodiversity in our country?
    a) Sunderbans and Rann of Kutch
    b) Eastern ghats and West Bengal
    c) Eastern Himalaya and Western ghats
    d) Kerala and Punjab
86. Extinction abetted by human activities is called
    a) Natural extinction
    b) Mass extinction
    c) Background extinction
    d) Anthropogenic extinction
87. Prolonged liberal irrigation of agricultural fields is likely to create the problem of
    a) Acidity b) Aridity c) Metal toxicity d) Salinity
88. The relationship between the species richness and the area for a wide variety of taxa appears as
    a) Straight line
    b) Sigmoid curve
    c) Rectangular hyperbola
    d) None of these
89. IUCN maintains
    a) Habitat loss
    b) Competition from introduced species

c) A red data book
d) Over-exploitation

90. Susceptibility to extinction is due to
a) Large body size
b) Small population
c) High trophic level
d) All of these

91. One of endangered species of Indian medicinal plants is that of
a) *Podophyllum*
b) *Ocimum*
c) Garlic
d) *Nepenthes*

92. Soil formed after leaching and rich in Al and Fe is
a) Alluvial
b) Podsol
c) Laterite
d) None of these

93. On behalf of endangered species and habitats, why conservationists are calling for an immediate and often expensive action?
a) Man has brought on climate change
b) Extinction is an unnatural process
c) It would be more costly financially if, we did not act
d) Biodiversity is beneficial to humans

94. How many countries pledged their commitment to achieve reduced rate of biodiversity loss by 2010 in the world summit on sustainable development held in 2002 in Johannesberg, South Africa?
a) 180
b) 200
c) 190
d) 210

95. The presence of diversity at the junction of territories of two different habitats is known as
a) Bottle neck effect
b) Edge effect
c) Junction effect
d) Pasteur effect

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

97. The wildlife Protection Act was introduced in
a) 1972
b) 1981
c) 1986
d) 1991

98. Which of the following is not an objective of convention on biodiversity?
a) Sustainable use of biodiversity
b) Conservation of biodiversity
c) Selective hunting of dangerous and threatening species
d) Fair and equitable sharing of profits arising out of the genetic resources

99. In this soil conservation method, several grasses are left out in soil after the crop is harvested.
a) Contour farming
b) Terrace farming
c) Tillage
d) Crop rotation

100. Largest tiger population is found in
a) Sunderban national park
b) Corbett national park
c) Ranthambhor national park
d) Kanha national park

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

102. The Indian wild ass is in the category of ..... by Wildlife Protection Act of government of India.
a) Rare species
b) Endangered species
c) Endemic species
d) Vulnerable species

103. As estimated by Robert May, what is total number of species present on earth?
a) 3 million
b) 5 million
c) 7 million
d) 9 million

104. The species area relationship is a straight line described by the equation
a) $\text{Log } S = \frac{\log C}{\log A}$
b) $Z \text{ Log } A = \frac{\log C}{\log S}$
c) $\text{Log } S = \log C + Z \log A$
d) $\log S = \log C - Z \log A$

105. In India, hot spot area is found in
a) Eastern Himalaya
b) Tropical Andes
c) Madagascar
d) Meso –America

106. Hangul Project was started by government to save hangul (*Cernus hanglu*) in 1970. The sanctuary where it is started is
a) National Chambal sanctuary
b) Dachigam sanctuary
c) Corbett national park
d) Bandipur national park

107. Rivet Popper hypothesis explains the importance of
a) Species in an ecosystem
b) Birds in an ecosystem
c) Fishes in a pond ecosystem
d) None of the above

108. The term 'Alpha diversity' refers to
a) Genetic diversity
b) Community diversity
c) Species diversity
d) Diversity among the plants

109. Which endangered animal is the source of the world's finest, lightest, warmest, and most expensive wool- the Shahtoosh?
a) Kashmiri goat
b) Chiru
c) Nilgai
d) Cheetal

110. Which one is an endangered species?
a) *Cuscuta*
b) *Acacia nilotica*
c) *Nepenthes*
d) Both (b) and (c)

111. Land mass occupied by forest is
a) 40%
b) 22%
c) 30%
d) 17%

112. The greatest threat to genetic diversity in agricultural crops is
a) Extensive use of insecticides and pesticides
b) Extensive mixed cropping
c) Introduction of high yielding varieties
d) Extensive use of fertilizers

113. Which of the following species are restricted to an area?
a) Sibling species
b) Endemic species
c) Allopatric species
d) Sympatric species

114. More than 25% of the drugs are derived from the plants. What benefits does this described?
a) Aesthetic value
b) Ethical value
c) Indirect economic value
d) Direct economic value

115. Which of the following is conserved by *ex situ* conservation method?
a) All animals
b) All plants
c) Threatened animals and plants
d) None of the above

116. Soil erosion is prevented by
a) Deforestation
b) Afforestation
c) Reduction of CFCs production
d) Use of CNG in all transports

117. Many species like steller's sea cow passenger pigeon have been driven to the brink of extinction. Which of the following describes this situation?
a) Over-exploitation by humans
b) Pollution
c) Habitat loss
d) Competition from introduced species

118. The number of species facing the threat of extinction worldwide is
a) 14,500
b) 14,000
c) 15,000
d) 15,500

119. 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

120. Habitat loss and fragmentation, over exploitation, alien species invasion and co-extinction are causes for
a) Population explosion
b) Migration
c) Biodiversity loss
d) Pollution

121. The medicinal plant, *Rauwolfia vomitoria*, growing in Himalayan ranges shows variation in terms of the potency and concentration of the chemical (reserpine), that it produces. It is an example of
a) Species diversity
b) Ecological diversity
c) Genetic diversity
d) None of them

122. Conservation in natural habitat is
a) *In situ*
b) *ex situ*
c) Zoo
d) Botanic garden

123. The animal, extincted from India is
a) Lion
b) Cheetah
c) Deer
d) Peacock

124. For frugivorous birds and mammals in the tropical forests of different continents, the slope is found to have the value of
a) 1.15
b) 1.5
c) 1.05
d) 1.005

125. If $\log A = 4, Z = 0.3$ and $\log C = 0.8$, find the value of log 'S'?
a) 3.76
b) 100
c) 4.24
d) 2

126. Siberian cranes are regular visitors of
a) Bharatpur sanctuary, Rajasthan
b) Lalbagh, Bangaluru
c) Vedanthgol sanctuary, Tamil Nadu
d) Jim Corbett national park, Uttarakhand

127. *Ex situ* strategies includes
I. Zoos
II. Seed/pollen banks
III. Gene bank and tissue cultures
IV. Botanical garden
Choose the correct option
a) II, III and IV b) I, II and III c) I, II and IV d) I, II, III and IV

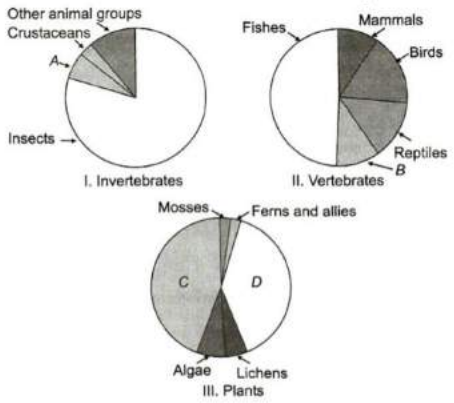
128. The Periyar sanctuary is located in
a) Kerala b) Tamil Nadu c) Karnataka d) Andhra Pradesh

129. Manas sanctuary is located at
a) Rajasthan b) Asom c) Bihar d) Gujarat

130. Which of the following supports a dense population of plankton and littoral vegetation?
a) Oligotrophic b) Eutrophic c) Lithotrophic d) Agroecotrophic

131. What is the main cause for the extinction of some species in tropical forest?
a) Deforestation b) Afforestation c) Pollution d) Soil erosion

132. Given below are pie diagrams I, II and III related to the proportionate number of species of major taxa of invertebrates, vertebrates and plants respectively. Critically study and fill in the blanks *A*, *B*, *C* and *D*



a) A-Molluscs, B-Amphibians, C-Angiosperms, D-Gymnosperms
b) A-Molluscs, B-Amphibians, C-Fungi, D-Angiosperms
c) A-Turtles, B-Amphibians, C-Fungi, D-Angiosperms
d) A-Hexapoda, B-Amphibians, C-Fungi, D-Angiosperms

133. The soil which is transported by wind is known as
a) Colluvial soil b) Eolian soil c) Alluvial soil d) Glacial soil

134. Ranthambor national park is situated in
a) Asom b) Jharkhand c) Uttarakhand d) Rajasthan

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

136. In which year, convention on the biodiversity came into force?
a) 1993 b) 1992 c) 1994 d) 1995

137. The narrowly utilitarian arguments for conserving biodiversity includes the following from the given list
I. Ecosystem services like photosynthesis
II. Industrial products like dyes and lubricants
III. Watching spring flowers in full bloom
IV. The aesthetic pleasure of walking through thick
V. Fibre, firewood and construction material
VI. Products of medicinal importance
Choose the correct option
a) I, II, III b) II, III, VI c) IV, V, VI d) I, III, VI

138. The measure of the variety of species and their relative abundance present within a region is referred to as
a) Biodiversity b) Genetic diversity c) Species diversity d) Ecological diversity
139. Chipko movement was launched for the protection of
a) Grasslands b) Forests c) Livestock d) Wet lands
140. Chipko movement is related to
a) Swaminathan b) Bahuhuna c) Odum d) Misra
141. The shifting cultivation method called jhum belongs to the category of
a) Industrial forestry b) Agroforestry c) Commercial forestry d) Social forestry
142. Which of the following is exhaustible but limited source of energy?
a) Nuclear fuel b) Water energy c) Fossil fuel d) Solar energy
143. Sanjay Gandhi Biological Park is situated in
a) Patna b) Kanpur c) Delhi d) Bangaluru
144. The country whose tropical rain forests possess the greatest biodiversity on earth is
a) New York b) South America c) India d) England
145. The number of species per unit area is called
a) Species richness b) Species evenness c) Species equitability d) Species diversity
146. Which of the following is correctly matched?
I. Alpha diversity – Number of species in a given habitat
II. Genetic diversity – Variation of the genes within species
III. Beta diversity – Diversity of the habitat in the whole region
IV. Species diversity – Product of the species richness and evenness
a) I, II and III b) I and II c) I, II, III and IV d) I, II and IV
147. According to IUCN red list, what is the status of red Panda (*Athurus fulgens*)?
a) Vulnerable species b) Critically endangered species
c) Extinct species d) Endangered species
148. Most of the endangered species are the victims of
a) Competition with introduced species b) Habitat destruction
c) Over-hunting d) Acid rain
149. The part of earth in which life exists, is known as
a) Lithosphere b) Biosphere c) Atmosphere d) Hydrosphere
150. According to the IUCN 2004, the total number of plant and animal species described so far is over
a) 2.5 million b) 2 million c) 1.5 million d) 1 million
151. Which of these is an *in situ* method of conservation?
a) National park b) Botanical garden c) Tissue culture d) Genetic engineering
152. Identify the correct matched pair.
a) Gir forest – Rhino b) Kaziranga – Elephant
c) Corbett park – Aves d) Rann of Kutch- Wild ass
153. Biosphere reserves are different from national park as
a) Plants and animals are protected in biosphere reserves b) Human are integral part of biosphere reserves
c) Humans are not involved in biosphere reserves d) None of above
154. Biosphere reserve programme started in India in
a) 1986 b) 1984 c) 1982 d) 1988
155. Deforestation causes
a) Thermal pollution b) Noise pollution c) Soil erosion d) None of these
156. Lime is added to the soil which is too
a) Sandy b) Salty c) Alkaline d) Acidic
157. Rivet popper hypothesis assumes the ...A... to be an aeroplane and the ...B... to be the rivets, joining all parts together. Here *A* and *B* refers to
a) A-species; B-ecosystem b) A-ecosystem; B-species

c) A-species; B-community d) A-community; B-species

158. The total number of hot spots present in the world are
a) 29 b) 25 c) 39 d) 34

159. Which of the following statements are correct about Amazon rainforest?
I. They called lungs of the planet
II. They harbours probably millions of the species
III. They are largest trophical rainforest in south America and has highest biodiversity on earth
IV. They are beings cut and cleared for cultivating soya-beans or for the conversion to grasslands for raising beef cattle
Choose the correct option
a) II, III and IV b) I, II and III c) I and II d) I, II, III and IV

160. Disappearance of dionosaurs and a number of other organism is called
a) Natural extinction b) Anthropogenic extinction
c) K-T boundary d) Extinction vertex

161. Nehru Zoological Park is situated in
a) Vishakhapattnam b) Hyderabad c) Chennai d) Mysore

162. Which of the following is not done in a wildlife sanctuary?
a) Fauna is conserved b) Flora is conserved
c) Soil and flora is utilized d) Hunting is prohibited

163. A keystone species is the one that
a) Causes other species to become extinct
b) Exerts a strong influence on an ecosystem
c) Has a weak influence on an ecosystem
d) Has a higher likelihood of extinction than a non-keystone species

164. The reasons behind conserving biodiversity can be grouped into categories, which includes?
I. Broadly utilitarian II. Narrowly utilitarian
III. No utilitarian IV. Ethical utilitarian
Choose the correct option
a) I, II, III and IV b) II, III and IV c) I, II and IV d) I, III and IV

165. Which one is not the renewable energy of natural resources?
a) Tidal energy b) Wind energy c) Fossil fuel d) Solar energy

166. Hoolock gibbon (India's only ape) is found in
a) Kaziranga bird sanctuary b) Hazaribagh national park
c) Corbett national park d) Gir national park

167. The government of India in 1980s has introduced a concept to work closely with the local communities for protecting and managing forests. The concept is
a) Forest research institutes b) Panel of local communities for forest management
c) Joint forest management d) Jhum cultivation

168. If we remove half of the forest cover of earth, the crisis that will occur
a) Many species would become extinct
b) Population, pollution and ecological imbalance will rise
c) Energy crisis will commence
d) The remaining forest will correct the imbalance

169. Sacred grooves in India are related with
a) Cultural tradition
b) It is the place where threatened species are protected
c) It is the place where only artificial animal breeding is allowed
d) Forest patches around the places of worship

170. Which of the following shows maximum, greater and minimum diversity?
A

Animals	Species	Members
Bird	I	1
Bird	II	1
Bird	III	4

B

Animals	Species	Members
Bird	I	2
Bird	II	2
Mammal	III	2

C

Animals	Species	Members
Bird	I	2
Mammal	II	2
Insect	III	2

a) A-Minimum diversity, B-Greater diversity, C-Maximum diversity
b) A-Maximum diversity, B-Greater diversity, C-Minimum diversity
c) A-Maximum diversity, B-Maximum diversity, C-Greater diversity
d) A-Minimum diversity, B-Maximum diversity, C-Greater diversity

171. One of the *ex situ* conservation method for endangered species is
a) Wildlife sanctuaries b) Biosphere reserves c) Cryopreservation d) National parks

172. Conservation of hot spots are best described as
a) Islands that are experiencing high rates of extinction
b) Areas where native species are being replaced with introduced species
c) Areas where the people are active supporters of the biological diversity
d) Areas with the large members of endemic species that are disappearing rapidly

173. If the Bengal tiger becomes extinct
a) Hyenas and wolves will become scarce
b) The wild areas will be safe for man and domestic animals
c) Its gene pool will be lost forever
d) The populations of beautiful animals like deers will get stabilized

174. In tropics, rate of extinction is
a) High b) Moderate c) Low d) Negligible

175. The least porous soil among the following is a
a) Loamy soil b) Silty soil c) Clayey soil d) Peaty soil

176. Soil conservation is a practice, in which soil
a) Is protected from being carried away by wind and water.
b) Is well aerated
c) Fertility is enhanced
d) Erosion is allowed

177. The diversity of organisms sharing the same habitat or community is termed as
a) Gamma b) Delta c) Beta d) Alpha

178. The world biodiversity day is celebrated annually on
a) 5th June b) 29th December c) 22nd April d) 16th September

179. Which of the following is not properly matched?
a) Formaldehyde – Carcinogenic b) Sulphur dioxide – Respiratory problems
c) Nitrogen oxide – Brown air d) Mean annual temperature of earth - 25°C

180. Contour farming is usually employed in
a) Hilly areas b) Sandy areas c) Sea beaches d) All of these

181. A renewable exhaustible natural resource is

a) Coal b) Petroleum c) Minerals d) Forest

182. Which of the following rain forest is home to more than 40,000 species of plants, 3,000 of fishes, 1,300 of birds, 427 of mammals, 427 of amphibians, 378 of reptiles and more than 125,000 invertebrates?
a) Amazonian b) Tropical c) Arctic tundra d) Temperate

183. India has nearly ..... varieties of plants
a) 25,000 b) 54,000 c) 45,000 d) 35,000

184. India comprises of ..... global species diversity
a) 22% b) 8.1% c) 70% d) 5.1%

185. Which of the following statement are true?
I. Species diversity provides stability to the ecosystem
II. Communities with more species tends to be more stable than those with less species
III. Ecosystem with higher biodiversity are more productive than the ecosystem with lower biodiversity
IV. Biodiversity is not essential for the maintenance and health of ecosystem
Choose the correct option
a) I, II and III b) I, II and IV c) II, III and IV d) I, II, III and IV

186. Biosphere reserves differ from national parks and wild life sanctuaries because in the former
a) Human beings are not allowed to enter
b) People are an integral part of the system
c) Plants are paid greater attention than the animals
d) Living organisms are brought from all over the world and preserved for posterity

187. India has more than ..... genetically different strains of rice.
Complete the given statement with reference to NCERT textbook
a) 1000 b) 50000 c) 20000 d) 25000

188. Plant for which India is secondary centre for domestication is
a) Tobacco b) Rice c) Potato d) Maize

189. The first biosphere reserve established in India for conserving the gene pool of flora and fauna and the life style of tribals is
a) Nilgiri biosphere reserve b) Nands Devi biosphere reserve
c) Uttarakhand biosphere reserve d) Great Nicobar biosphere reserve

190. Which of the following species is restricted to a specific area?
a) Sibling species b) Allopatric species c) Sympatric species d) Endemic species

191. Which of the following is now called World Conservation Union (WCU)?
a) IUCN b) IPCC c) EPA d) UNEP

192. Which animal is the symbol of WWF?
a) Tiger b) Hornbill c) Giant panda d) White bear

193. If any extinction of a mutualistic pollinator takes place, what would be its effect on the plants where it pollinates?
a) Decreased pollination b) No effect because substitute pollinator is available
c) The plant would not be pollinated d) None of the above

194. The species diversity of animals on earth is
a) 70% b) 8.1% c) 22% d) 55%

195. ...A... diversity is a species diversity in a given community and ...B... diversity is present in ranges of communities over a total geographical area
Here A and B refers to
a) A-alpha; B-gamma b) A-gamma; B-alpha c) A-alpha; B-delta d) A-delta; B-beta

196. Which one of the following is non-renewable exhaustible natural resource?
a) Water b) Wildlife c) Soil fertility d) Minerals

197. The term 'biodiversity' was given by
a) Alexander von Humboldt b) Edward Wilson
c) David Tilman d) Paul Ehrlich

198. The species, which is going to become extinct due to lack of proper care would be called
a) Rare b) Endangered c) Vulnerable d) Extinct

199. Diversity index commonly used in ecological studies is
a) γ-index diversity b) Shannon index c) α- index diversity d) β- index diversity

200. Extinction vertex includes
a) Genetic factors
b) Demographic factors
c) Both (a) and (b)
d) None of these

201. Which of the following is responsible for biodiversity loss?
a) Habitat loss and fragmentation
b) Alien species invasions
c) Coextinctions
d) All of the above

202. Which of the following hypothesis suggests, that the ecosystems are like aeroplane wings where the flight (ecosystem functional) may or may not be compromised depending upon which species are being lost
a) Gaia hypothesis
b) Gause-exclusion hypothesis
c) Qudum's hypothesis
d) Rivet popper hypothesis

203. The greatest problem of water conservation is to reduce the amount of
a) Precipitation b) Run-off water c) Groundwater d) evaporation

204. Dudhwa national park is in
a) Orissa b) Gujarat c) Uttar Pardesh d) Himachal Pradesh

205. Which of the following is an agrostologic method of soil conservation?
a) Basin listing b) Terracing c) Dry farming d) Mulching

206. Spot out the zone of our country considered as the hot spot of biodiversity and regarded as the 'Cradle of Speciation'.
a) Western ghats b) North East c) Himalayan base d) Deccan plateau

207. The name of Smt. Thimmakka is associated with the
a) Planting and conservation of avenue trees
b) Agitations against hydroelectric projects
c) 'Appiko' movement
d) Conservation of fauna and flora of the western ghats

208. The reflectivity percentage of incident light on earth is meteorologically called as
a) Tornado b) Albedo c) Refraction d) Reradiation

209. About 1000 different varieties of ..... has been estimated in India
a) Teak b) Mango c) Wheat d) Tea

210. A species area relation is used by ecologists to
a) Examine how human population is growing
b) Estimate the number of plant species only in a given area
c) Estimate the number of species extinction resulting from the habitat destruction
d) None of the above

211. The impacts of loss of biodiversity may lead to
I. lowered resistance to environmental perturbation
II. decrease in plant production
III. increased variability in ecosystem processes like water use, pest/disease cycle, plants productivity
IV. Increase in plant production
Choose the correct option
a) I and II b) I and IV c) I and III d) I, II and III

212. Endemic plants are those, which are
a) Cosmopolitan in distribution
b) Restricted to grow over certain areas
c) Found in Arctic region
d) Gregarious in habit

213. Amongst animals, insects comprise
a) Less than 70% b) Equal to 70% c) More than 70% d) None of these

214. World summit on sustainable development was held in

a) USA b) South Africa c) South Korea d) UK

215. The state of Gujarat has river, desert, forest and lake ecosystems, thus exihibiting a diversity of life. Which measure do you use to denote total diversity in such a case?
a) α(Alpha) b) β(Beta) c) γ(Gamma) d) δ(Delta)

216. Eurythermal animals and plants are those which
a) Can tolerate only a small variation in temperature
b) Can tolerate large variation in temperature
c) Can not tolerate any change in temperature
d) Are affected by temperature

217. Biodiversity increases from
a) Poles to equator b) Equator to poles c) Both (a) and (b) d) None of these

218. Which of the following estimation is correct for the endemic biodiversity of India?
a) Flowering plants 10%, mammals 60%, reptiles 33%, amphibians 36% and fresh water fish 53%
b) Flowering plants 60%, mammals 53%, reptiles 10%, amphibians 33% and freshwater fish 36%
c) Flowering plants 36%, mammals 15%, reptiles 53%, amphibian 10% and freshwater fish 33%
d) Flowering plants 33%, mammals 10%, reptiles 36%, amphibians 60% and fresh water fish 53%

219. India has only ..... of world's land area
a) 8.1% b) 2.4% c) 5.1% d) 22%

220. The factor which is responsible for the replacement of existing species with the better adapted species due to alternate evolution, change in environmental conditions, predators and diseases is/are
a) Genetic factors b) Demographic factors
c) Both (a) and (b) d) None of these

221. The term 'The Evil Quartet' is related with the major causes of
a) Population explosion b) Forest loss c) Biodiversity loss d) Air pollution

222. The expanded form of IUCN is
a) International Union of Conservation of Nature and Natural Resources
b) International Union of Climate Conservation and Natural Resources
c) International Union for Change in Climate and Natural Resources
d) International Union of Conservation of Natural Resources

223. According to the species-area relation concept
a) Most species within any given area are endemic
b) The larger the area, the greater the extinction rate
c) Larger species requires larger habitat area than do the smaller species
d) The number of species in an area increases with the size of that area

224. What is the exact latitudinal range for tropical regions, which harbour more species than temperate or polar areas?
a) 71°N to 71°S b) 23.5°S to 71°N c) 23.5°N to 23.5°S d) 71°N to 23.5°S

225. Gir sanctuary is mainly for
a) Rhino b) Tiger c) Lion d) Elephant

226. The IUCN red list, 2004 documents the extinction of 784 species in the last 500 years including
a) 359 vertebrates, 338 invertebrates and 87 plants
b) 338 vertebrates, 359 invertebrates and 87 plants
c) 338 vertebrates, 359 invertebrates and 78 plants
d) 359 vertebrates, 338 invertebrates and 78 plants

227. I. Higher latitude (Poles) $\xrightarrow{\text{Biodiversity increases}}$ Lower latitude (Equator)

II. Higher latitude (Poles) $\xrightarrow{\text{Biodiversity decreases}}$ Lower latitude (Equator)

III. Higher latitude $\xrightarrow{\text{Biodiversity increases}}$ Lower altitude

(Mountain top) (Sea level)

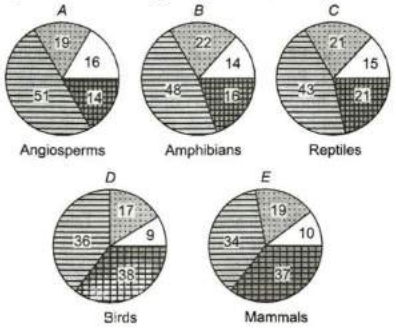
IV. Higher latitude $\xrightarrow{\text{Biodiversity decreases}}$ Lower altitude

(Mountain top) (Sea level)

Which of the match above is/are correct?

a) I and III b) I and II c) II and III d) III and IV

228. Given below are pie diagram A, B, C, D and E related to the percentage of various categories of threatened species of angiosperms, amphibians reptiles, birds and mammals respectively



Critically study and identify the following regions

a) Vulnerable, Lower risk, Endangered, Critically endangered

b) Critically endangered, Endangered, Vulnerable, Lower risk

c) Lower risk, Vulnerable, Critically endangered, Endangered

d) Endangered, Critically endangered, Lower risk, Vulnerable

229. The species diversity of plants on earth will be

a) 2.4% b) 22% c) 8.1% d) 85%

230. The alien species introduced into lake Victoria that was responsible for the extinction of cichlid fishes is

a) African catfish b) Water hyacinth c) Carrot grass d) Nile perch

231. Which one of the following is not observed in biodiversity hot spots?

a) Endenism b) Accelerated species loss

c) Lesser interspecific competition d) Species richness

BIODIVERSITY AND CONSERVATION

: ANSWER KEY :

1)	a	2)	d	3)	d	4)	c	117)	a	118)	d	119)	b	120)	c
5)	d	6)	d	7)	b	8)	b	121)	c	122)	a	123)	b	124)	a
9)	a	10)	d	11)	b	12)	a	125)	d	126)	a	127)	d	128)	a
13)	d	14)	a	15)	b	16)	c	129)	b	130)	b	131)	a	132)	b
17)	a	18)	d	19)	b	20)	c	133)	b	134)	d	135)	b	136)	b
21)	a	22)	d	23)	d	24)	c	137)	b	138)	c	139)	b	140)	b
25)	b	26)	a	27)	d	28)	a	141)	b	142)	c	143)	a	144)	b
29)	d	30)	c	31)	d	32)	a	145)	a	146)	d	147)	d	148)	b
33)	a	34)	c	35)	a	36)	d	149)	b	150)	c	151)	a	152)	d
37)	c	38)	b	39)	d	40)	a	153)	b	154)	a	155)	c	156)	d
41)	a	42)	d	43)	a	44)	b	157)	b	158)	d	159)	d	160)	c
45)	b	46)	d	47)	c	48)	c	161)	b	162)	b	163)	b	164)	c
49)	b	50)	d	51)	d	52)	a	165)	c	166)	a	167)	c	168)	b
53)	c	54)	b	55)	c	56)	a	169)	d	170)	a	171)	c	172)	d
57)	a	58)	a	59)	d	60)	d	173)	c	174)	c	175)	a	176)	a
61)	c	62)	d	63)	a	64)	a	177)	d	178)	b	179)	d	180)	a
65)	b	66)	a	67)	d	68)	a	181)	d	182)	a	183)	c	184)	b
69)	b	70)	c	71)	b	72)	a	185)	a	186)	b	187)	b	188)	c
73)	a	74)	b	75)	b	76)	b	189)	a	190)	d	191)	a	192)	c
77)	c	78)	a	79)	b	80)	c	193)	c	194)	a	195)	a	196)	d
81)	c	82)	c	83)	c	84)	d	197)	b	198)	b	199)	b	200)	c
85)	c	86)	d	87)	d	88)	c	201)	d	202)	d	203)	b	204)	c
89)	c	90)	b	91)	a	92)	c	205)	c	206)	b	207)	a	208)	b
93)	d	94)	c	95)	b	96)	b	209)	b	210)	c	211)	d	212)	b
97)	a	98)	c	99)	c	100)	a	213)	c	214)	b	215)	c	216)	b
101)	c	102)	b	103)	c	104)	c	217)	a	218)	d	219)	b	220)	c
105)	a	106)	b	107)	a	108)	b	221)	c	222)	a	223)	d	224)	c
109)	b	110)	c	111)	b	112)	c	225)	d	226)	b	227)	a	228)	b
113)	b	114)	d	115)	c	116)	b	229)	a	230)	d	231)	c		

BIODIVERSITY AND CONSERVATION

: HINTS AND SOLUTIONS :

1 **(a)**
Island ecosystem are the most vulnerable due to the small size and small number of the species

2 **(d)**
In situ strategy is the conservation and the protection of biodiversity in its natural habitat, where the population is conserved in the surroundings where they have developed their distinctive features. It includes, national parks, biosphere reserves, wildlife sanctuaries, sacred groves, etc.

3 **(d)**
Ecologically managed wildlife provides food, shelter and some commercially useful products. One step towards the wildlife conservation is to preserve the earth's genetic diversity by protecting all threatened species of the plants and animals

4 **(c)**
A biodiversity hotspot is a biogeographic region with a significant reservior of biodiversity that is threatened with destruction. Initially, 25 biodiversity hotspots were identified but subsequently nine more have been added to the list bringing the total number of biodiversity hotspots in the world to 34.

5 **(d)**
Rhododendrons are found in plenty at approximately 12000-16000 feet height on both Eastern and Western Himalayas.

6 **(d)**
A species, which is facing an extremly high risk of extinction in the wild in immediate future is called **critically endangered**.

7 **(b)**
Certain obligatory mutualistic relationships exist in nature, *e. g.*, *Pronuba* and *Yucca*. Extinction of one will automatically cause the extinction of the other. It is an example of co-extinction

8 **(b)**
Genetic diversity is the diversity in number and types of genes as well as the chromosomes present in different species, their variation in the genes and their alleles in the same species. It is mainly the variation in genetic information present in the organisms. It helps in speciation or evolution of the new species

9 **(a)**
There are an estimated 2,00,000 varieties of rice in India alone. The diversity of rice in India is one of the richest in the world. Basmati rice has 27documentes varieties grown in India.

10 **(d)**
In India, nearly 450 plant species and many animal species have been identified as endangered, threatened or rare. Hornbill and Indian aconite (*Aconitum deinorrhzum*) are in the list of Indian endangered species.

11 **(b)**
From high latitude to low latitude, biodiversity increases.
Biodiversity increases from poles to equator, *i.e.,* from high to low altitude

12 **(a)**
Dachigam National Park is situated near Dal Lake in Jammu and Kashmir. It is known for conservation of the most endangered Hangul or Kashmir stag paramount.

13 **(d)**
Aegle marmelos, *Ocimum sanctum* and *Ficus religiosa* are sacred species of plants. *Aegle marmelos* and *Ocimum sanctum* are also used as medicinal plants.

14 **(a)**

An estuary is a semi-enclosed coastal body of water, which has a free connection with the open sea, thus strongly affected by tidal action and within which sea water is mixed with freshwater from land drainage, *e.g.,* river mouths, coastal bays, tidal marshes and water bodies behind barrier beaches.

15 **(b)**
Inexhaustible resources are available in unlimited quantities on earth, thus, can not be exhausted by man's consumption, *e.g.,* solar energy, air, water, soil, etc.

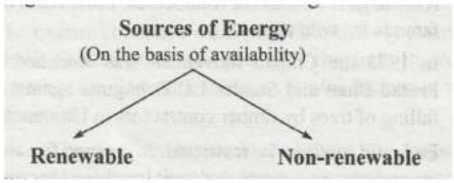
Fossil fuels, coal, petroleum, etc, are limited and exhaustible or non-renewable resources which when once depleted can not be gained or reused again.

16 **(c)**
IUCN or IUCNNR (International Union for Conservation of Nature and Natural Resources) is now known a WCU (World Conservation Union). Its headquarter is at Morges, Switzerland. It studies the threat to biodiversity in all parts of the world by gathering information about the geographical distribution, population size and population changes of various taxa. It prepares a red list or red data book.

17 **(a)**
In vitro fertilization (IVF) is also known as test tube baby technique. It involves fertilising of one or more eggs outside the female's body and then transferring the zygotes (known as pre-embryos) back into the uterus (*i.e.*, embryo transfer).

18 **(d)**
Three- fourth surface of earth (about 71% of total) is occupied by ocean, which contains 97.5% of total water. This is marine water with about 3.5% salt contents. Rest water, *i.e.,* 2.5% is fresh water, which occurs on land. Most amount of this water (about 1.97%, *i.e.*, more than 70% of world's total freshwater) occurs as frozen polar ice caps and glaciers and 0.5% freshwater occurs as source water.

19 **(b)**



Available in unlimited Quantity (Solar energy, water's Energy, wind energy, etc)

Available in limited quantity (Fossils fuels, metals, coal, natural gases, mineral, oil, etc)

20 **(c)**
Rajaji National park is situated close to Dehradun in **Uttarakhand**. Its main wildlife are elephant, tiger, panther, slothbear, nilgai, cheetal, wild bear, etc.

21 **(a)**
The **National Forest Policy** (1988) aims at increasing forest cover of the country both in plains and hills. The percentage of forest cover recommended by the National Forest Policy (1988) is 33% for plains and 67% for hills.

22 **(d)**
The number of endangered species of angiosperms in India is 3,000.

23 **(d)**
An endemic species is the one found naturally in just one geographic area

24 **(c)**
Endemic species means the species restricted to a particular area or region.
Most of the endemic occur in North-East, North-West, Western ghats, Andaman Nicobar islands Western ghats possess a very large number of endemic amphibian species

25 **(b)**
Hot spots are the areas of high endemism and high level of species richness. Three of them occurs in India-Western Ghats and Sri Lanka/Indo-Burma (North-East India) and Himalaya

26 **(a)**
Van Mahotsav was started by **K M Munshi** in 1950.

27 **(d)**

A taxon is critically endangered when it is facing an extremely high risk of extinction in the wild in the near future.

28 **(a)**
Immense diversity (heterogeneity) exists in our biosphere, not only at the species level but at all the levels of biological organization ranging from the macromolecules within to biomass
Sociobiologist Edward Wilson described the combined diversity at all the levels of biological organization
These are genetic diversity, species diversity and ecological diversity

29 **(d)**
Ecologically managed wild life provide food, shelter and some commercially useful products. One step towards the wild life conservation is to preserve the earth's genetic diversity by protecting all threatened species of plants and animals.

30 **(c)**
Biodiversity Act of India was passed by the Parliament in 2002.

31 **(d)**
Temperate forests are forests in the temperature climatic zone. Branches of evergreen tree in these forests are clotted with mosses and many woody climbers.

32 **(a)**
The lemurs are the inhabitants of Madagascar and the Comoro islands. Endangered species are whose population have been reduced to a critical level. So, they are near to extinction in near future.

33 **(a)**
The United Nations conference in environment and development is also known as the Rio Summit and Earth Summit. This was a major United Nations conference held in Rio de Janerio from June 3 to June 14, 1992. 172 governments participated, with 108 sending their heads of state or government.

34 **(c)**
Water hyacinth (*Eichhornia crassipes*) was introduced in Indian waters to reduce pollution, is an example of alien species invasions

35 **(a)**
Throughout the world, biodiversity is not uniform because it is affected by two factors- latitudinal gradients and species-area relationship

36 **(d)**
Characteristics of a stable community
(i) Productivity should not vary too much from year to year
(ii) It should be resistant to occasional, natural and man-made disturbances
(iii) It should be resistant to invasions by alien species

37 **(c)**
Oceans regulate the CO_2 content in the atmosphere and thus, play a very important role. Sea water contains 50 times more CO_2 than air, *i.e.*, about 70% of total global carbon is found in oceans.

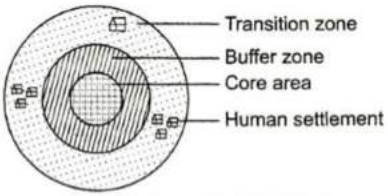
38 **(b)**
Initially 25 biodiversity hot spots were identified but subsequently nine more have been added to the list, bringing the total number of biodiversity hot spots in the world to 34. These hot spots are also the regions of accelerated habitat loss. *Three of these hot spots are* Western ghats, Sri Lanka, Indo-Burma and Himalaya-cover.
Our country is exceptionally high in biodiversity regions. Although, all the biodiversity hot spots put together covers less than 2% of the earth's land area, the number of species they collectively harbor is extremely high and the strict protection of these hot spots could reduce the ongoing man extinctions by almost 30

39 **(d)**
India occupies a dominant position in South Asia. The country is quite rich in biodiversity with sizable percentage of endemic flora and faunna. It has 10 biolgeographical regions.

Deccan peninsula is the largest biogeographical region of India (occupies 45% of land mass).

40 **(a)**
Taiga (North coniferous forests) are found above 5300 ft (1000-1500m) altitude chiefly on mountains of Himalaya and Nilgiri.

41 **(a)**
Each biosphere reserve has



Zonation in terrestrial biosphere

(i) **Core or Natural Zone** No human activity is allowed. The area is undisturbed and legally protected ecosystem

(ii) **Buffer Zone** It surrounds the core area. Limited human activity is allowed like resource use strategies, research and education

(iii) **Transition Zone** (Manipulation Zone) It is the outermost or peripheral part of biosphere reserve where an active cooperation is present between reserve management and local people for activities like settlements, cropping, recreation, forestry and other economic uses without disturbing ecology.

Transition zone has different parts like forestry, agriculture, tourism and restoration regions. Restoration region is the degraded area which is selected for restoration to near natural form

42 **(d)**
India now, has 14 biosphere reserves, 90 national parks and 448 wildlife sanctuaries

43 **(a)**
exsitu conservation means conservation outside the natural habitats by perpetuating sample population in genetic resource centres or in the form of gene pool. This form of conservation includes –zoos, botanical gardens, seed banks, pollen storage, tissue culture, genetic engineering.

44 **(b)**
The Irrawady dolphin (*Orcaella brevirotris*) is the flagship species of Chilka lake. Chilka is home to the only known population of Irrawady dolphins of India and one of only two lagoons in the world that are home to this species.

45 **(b)**
Ecologists believe that the communities with more species tend to more stable than those with less species. This was confirmed by **David Tilman**

46 **(d)**
In sedimentary cycle of matter, materials involved in circulation between biotic and abiotic components of biosphere are non-gaseous and the reservoir pool is lithosphere, *e.g.,* P, Ca, S and Mg.

47 **(c)**
The term 'wildlife' refers to any living organisms in its natural habitat. It includes all plants, animals and microorganisms except the cultivated plants and domesticated animals.

48 **(c)**
Gir National Park (Gujarat) is not concerned with tiger. The animals found in Gir national park are Asiatic lion, panther, striped hyaena, sambar, nilgai, cheetal, four-horned antelope and chinkara.

Ranthambhor National Park, Sunderbans and **Jim Corbett National Park** (Uttarakhand) are tiger reserves.

49 **(b)**
The number of species of birds in Columbia, located near the equator is 1400

50 **(d)**
In recent years, *ex situ* conservation has advanced beyond keeping threatened species in enclosures. Now, gametes of the threatened species can be preserved in viable and fertile condition for long periods using cryopreservation techniques. Eggs can be fertilized *in vitro* and plants can be propagated using tissue culture methods

51 **(d)**
Biosphere reserves are a special category of protected areas of land and/or coastal environments wherein people are an integral component of the ecosystem. It represents a specified area zonated for particular activity and consists of core zone without any human activity, buffer zone with limited human activities and manipulation zone with several manipulating human activities.

52 **(a)**
Silent valley is located in Kerala (South India). The area under this was historically explored in 1847 by the botanist **Robert Weight**.

53 **(c)**
A species of organism that is not native to a locality and having been moved there from its natural range by humans or other agents is called

exotic species, *e. g.*, water hyacinth, *Prosopis cineraria*, etc.

54 **(b)**
Energy obtained from sunlight is known as solar energy. It can be exploited as an inexhaustible, non-conventional source of energy.

55 **(c)**
India's first National Park (IUCN category-II protected area) was **Hailey National Park**, now called **Jim Corbett National Park**, established in 1935. by 1970, India had only 5 national parks, while today has 92 (as of May 2004).

56 **(a)**
The following species of plants are now widely used for social forestry: *Acacia*, *Leucaena* (subabul), *Prosopis* (jand), *Sesbania* (agastha), *Casuarina*, *Tectona* (teak), *Dalbergia* (sisham), *Moringa* (sahjan) and *Azadirachta indica* (neem).

57 **(a)**
The approximate percentage of the earth covered by the terrestrial hot spots is 1.5% (less than 2%)

58 **(a)**
Destruction of habitats due to any reason (including cutting down of forests) exposes wild life to a variety of risk factors including predation and hunting.

59 **(d)**
There are various hypothesis for higher diversity in tropical areas
(i) Speciation is a function of time. Temperate areas have undergone frequent glaciation in the past. It killed most of the species. No such disturbance occurred in tropics where species continued to flourish and evolved undisturbed for millions of years
(ii) There are no unfavourable seasons in tropics. Continued favourable environment has helped tropical organisms to gain more niche spec ialisation and increased diversity
(iii) More solar energy is available in tropics. This promotes higher productivity and increased biodiversity
(iv) Resource availability is higher in tropics
(v) There is reduced competition in tropics due to favourable environment
(vi) Rate of extinction is low in tropics

60 **(d)**
Kaziranga is famous for Rhinoceros. Little Rann of Kutchh is famous for wild ass.

61 **(c)**
Biodiversity Act of India was passed by the Parliament in the year2002.

62 **(d)**
The world is facing accelerated rate of biodiversity losses due to human interference. The causes are over population, urbanization, industrialization, coextinctions, alien species invasions, habitat loss and fragmentation, etc.

63 **(a)**
The diversity at the species level is measured as species diversity. It is the variety in the number and richness of the species of a region. For example, the Western Ghats have a greater amphibian species diversity than the Eastern Ghats

64 **(a)**
IUCN(International Union for the Conservation of Nature and Natural Resources) headquarter at Morgan, Switzerland, has8 Red list categories of species-extinct, extinct in wild, critically endangered, vulnerable, lower risk, data deficient and not evaluated. In India, it is completed by Botanical Survey of India (BSI).

65 **(b)**
Example of *ex situ* conservation are zoos, aquaria and captive breeding programmes just like breeding of animals in Nandan Kanha.

66 **(a)**
In the species-area relationship, S represents species richness

67 **(d)**
Those species whose population has been greatly reduced or whose natural habitats have been disturbed due to which these are near the extinction and may become extinct if the causative factors continue, are grouped under the category of **threatened species**.

IUCN (International Union Conservation of Nature and Natural Resources) is maintaining a **Red Data Book**, which contains a record of species, which are threatened. These include vulnerable, endangered and rare species.

68 **(a)**
Organic matter (organic wastes) contains a number of pathogens, secondary pollutants, pesticides, etc. Biological oxygen demand becomes high and therefore, the dissolved oxygen reduced. Hence, planktons, Mollusca and fishes will be eliminated due to reduced dissolved oxygen and presence of secondary pollutant. Some species like annelid worm *Tubifex* and some insect larvae (*Chironomus*) tolerate pollution.

69 **(b)**
Medicinal plant, *Rauwolfia vomitoria*, growing in different Himalayan ranges, shows differences in the potency and concentration of active chemical called reserpine due to genetic diversity

70 **(c)**
Conservation of biodiversity is the protection, uplift and scientific management of biodiversity so as to maintain it at its optimum level and derive sustainable benefits for the present as well as future generations. Sustainable use is the ability to use natural resources in a way that helps people and protects the ecosystem

71 **(b)**
The coniferous forest or taiga or boreal forest consists of evergreen, cone bearing trees like spruce, pine, etc. Mean annual rainfall is 50-170 cm (50-250 cm annual variation in precipitation). In winter average temperature is 6°C and night are long and chilly while summers are pleasant with average maximum temperature of 20°C and with long hours of day light (−1°C to 13°C annual variations in the intensity and duration of temperature).

72 **(a)**
In situ conservation is the conservation of living resources through their maintenance within the natural ecosystem in which they occur, *e.g.,* national parks, sanctuaries, biosphere reserves.

73 **(a)**
Biota is the total number of all species of organisms in a given region. Flora is the plant species of a region while **fauna** is the animal species in an area.

74 **(b)**
Rhino (*Rhinoceros unicornis*) are protected in Kaziranga National Park. This park is situated ar Asom.

Ranthambor and Bandipur national parks are tiger (*Panthera tigris*) reserve, while Gir forests protect lion (*Panthera leo persica*).

75 **(b)**
Simlipal is biosphere reserve located in Orissa.

76 **(b)**
Humus is the fully decomposed organic matter mixed with mineral matter. It is dark brown or black in colour and is found in the region, a, or humio or melanised region or horizon-A of soil profile.

77 **(c)**
In the given table, the area 'IV' has maximum species diversity, as there are 10 species (A-J) reside in 12 habitats, while in area 'III', the 10 species reside in 13 habitats, so exhibit less diversity than area 'IV'.

78 **(a)**
A species becomes prone to extinction due to the two categories of attributes, drastic environmental changes and population characteristics
Population traits are-small population size, large body size, higher status of trophic level, etc.

79 **(b)**
A botanical gardens is collection of various types of living plants. *Ex situ* conservation means conservation of plants or animals in the artificial habitats, which are quite similar to the normal habitats of these organisms. In this way, botanical gardens provide *ex situ* conservation of germplasm.

80 **(c)**
Approximately 20% of the world's population lives in dryland environments. Almost 75% lives in semi-arid zones, 25% in arid zones and only 1% in hyper arid zone.

81 **(c)**
A taxon is vulnerable (VU) when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium term future. Population is estimated to number less

than 1000 mature individuals, *e.g.,* Madagascar frog, *Dyscophus antongilii, etc.*

82 **(c)**
Gamma diversity refers to the diversity of the habitats over the total land scape or geographical area.

83 **(c)**
Great Indian bustard (Choriotis=Ardeotis nigriceps) is a long necked, long bared legged, ground bird. It is the largest endangered bird in India.

84 **(d)**
All these are exotic species.

85 **(c)**
In India, maximum biodiversity is found in two geographical areas, *i.e.*, eastern himalayas and western ghats. These two areas are included among the 25 hotspots of the world.

86 **(d)**
Anthropogenic extinctions are the extinctions abetted by human activities like settlements, hunting, overexploitation and habitat destruction

87 **(d)**
Prolonged liberal irrigation of agricultural fields is likely to create the problem of salinity.

88 **(c)**
The relationship between the species richness and the area for a wide variety of taxa, appears as a rectangular hyperbola

89 **(c)**
IUCN maintains a Red Data Book or red list which is a catalogue of taxa facing risk of extinction

90 **(b)**
All the option are correct.

91 **(a)**
Podophyllum is an Indian endangered flora. Its dried roots and rhizomes are used in chronic constipation and tumurous growth.

92 **(c)**
Laterite soils are formed through a process called laterisation, in which silica dissolves and leaches downwardly but iron and aluminum remain on the top soil. These soils are red acidic soils, rich in organic matter, iron and aluminium but deficient in lime, Mg, P and K, etc.

93 **(d)**
Biodiversity is important at every hierarchical level-genetic diversity (gene pool), species diversity, community and ecosystem diversity. It is being threatened by the reduction in space, smaller and fragmented habitats, over-exploitation by humans, human sponsored ecosystems, climatic changes, pollution and invasive exotic species.
However, it is important that the present human population derives economic, ecological and aesthetic benefits from biodiversity. It is equally important that the biodiversity is preserved in all its forms and in good health for the future generations. Further degradation and destruction of habitats should be prevented

94 **(c)**
A second World Summit was held in 2002 in Johannesberg, South Africa. 190 countries attending the summit pledged to significantly reduce the current rate of biodiversity loss at global, regional and local levels by 2010

95 **(b)**
Edge effect deals with the presence of diversity at the junction of territories of two different habitats.

96 **(b)**
Mango has maximum genetic diversity in India.

97 **(a)**
Wildlife Protection Act was introduced in 1972 and it was amended in 1991.

98 **(c)**
Earth Summit promoted Convention on Biological Diversity. The main objectives of convention of biodiversity were
(i) Adaption of ways and means to conserve biodiversity
(ii) Managing biodiversity for sustainable use
(iii) Ensuring equitable sharing of the benefits form biological diversity including utilisation of genetic resources. Agenda 21, a product of Earth Summit, is a blue print for encouraging sustainable development of diversity through social, economic and environmental measures in the 21st century

99 **(c)**
Tillage is a method of soil conservation. In this method, the underground parts of several grasses are left out after the crop is harvested. These parts remain underground, which improves soil fertility. This method is also used for some plants such as maize, potato, etc.

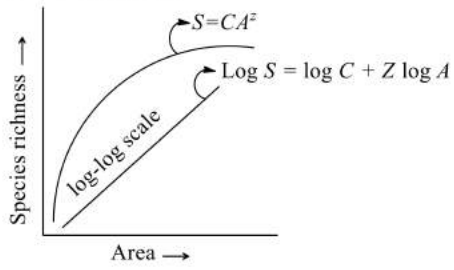
100 **(a)**
As compared to other reserves in the India Sunderban National Park has the largest tiger population. It also reserves the salt water crocodiles, Gangetic dolphins, cheetals, wild boars, rhesus macaques, etc.

101 **(c)**
Threatened species in India include about 81 species of wild mammals, 30 wild birds, 15 reptiles and amphibians and many invertebrates.

102 **(b)**
Endangered species are those species, which are on the verge of extinction because of critically reduced number of individuals due to indiscriminate killing and due to drastic reduction in their habitats. Common endangered animals are Indian wild ass, Indian one –horned rhinoceros, etc.

103 **(c)**
A more conservative and scientifically sound estimate made by Robert May, places the global species diversity at about 7 million

104 **(c)**
On a logarithmic scale, the species area relationship is a straight line described by the equation
$\log S = \text{Log } C + Z \log A$
Where, S = species richness
A = area
Z = slope of the line
C = Y-intercept



105 **(a)**
Out of the 25 hotspots of the world, two are found in India. These are Western ghats and Eastern Himalayas and these extend to the neighbouring countries also. These areas show high degree of endemism and area inhibited by a wide variety of flowering plants, swallow-tailed butterflies, amphibians, reptiles and mammals.

106 **(b)**
The Kashmir stag (*Cervus elaphus hanglu*) also called **hangul**, is a subspecies of Red Deer native to northern Pakistan and India. This deer lives in riverine forests, high valleys and mountains of the Kashmir valley and northern Chamba in Himachal Pradesh. In Kashmir, it's found in Dachigam National Park.

107 **(a)**
Rivet popper hypothesis explains the importance of biodiversity for the survival of species. It was proposed by Paul Ehrlich

108 **(b)**
Alpha diversity refers to the diversity of organisms showing the same community for habitat. A combination of richness and equitability/evenness is used to represent diversity within a community or habitat.

109 **(b)**
Chiru is the source of Shahtoosh.

110 **(c)**
Nepenthes is an endangered species of plant. *Rauwolfia*, *Rhododendron*, *Psilotum*, *Ophioglossum* are some other endangered species of plants.

111 **(b)**
In the beginning of 20th century, about 30% of land mass in India was covered with forests and at the end of 20thcentury, it is reached by 19.4%.

112 **(c)**
Genetic diversity is the diversity in the number 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. Introduction of high yielding varieties is the greatest threat to genetic diversity in agricultural crops.

113 **(b)**

Endemic species are species which are restricted geographically in a particular area in a given time.

114 **(d)**
Humans derives countless direct economic benefits from the nature like food, firewood, fibre, construction material, industrial products and products of medicinal importance.
More than 25% of the drugs currently sold in the market worldwide are derived from the plants and 25000 species of the plants contributes to the traditional medicines used by native peoples around the world

115 **(c)**
Ex situ strategy is the conservation of selected threatened plants and animal species.
Ex situ strategy is the conservation of selected threatened plant and animal species in places outside their natural habitat, where the population is conserved under stimulated conditions that closely resemble their natural habitats. It includes, botanical gardens, zoological parks, wildlife safari, gene banks, etc.

116 **(b)**
Afforestation or **reforestation**, *i.e.*, growing of forest trees is most effective in controlling soil erosion. The Government of India has introduced the festival of 'Van Mahotsav'. In this festival, planting of tress is done on open waste land.

117 **(a)**
Excessive exploitation of a species, whether a plant or animal reduces the size of its population, so that it becomes vulnerable to extinction. Many marine fishes like whales population is declining around the world because of over harvesting.
Some commercially important species are likely to become endangered

118 **(d)**
The number of species facing the threat of extinction worldwide is 15,500

119 **(b)**
Biosphere reserve is an *in situ* conservation method. Hence, it is the most effective way among the four for preserving genetic diversity by protecting wild population, traditional life style and domesticated plant genetic resource.

120 **(c)**
Loss of biodiversity occurs due to habitat loss, fragmentation over exploitation, alien species invasion and co-extinction.

121 **(c)**
Variation in the genes of a species increases with the increase in size and environmental parameters of the habitat
In results in the formation of polymorphs-ecotypes, races, varieties and sub-species. Genetic diversity is useful in adaptation to the change in environmental conditions.
Medicinal plant, *Rauwolfia vomitoria* shows variation due to the genetic diversity

122 **(a)**
In situ consevation is the conservation of living resources through their maintenance within the natural ecosystems, in which they occur. *In situ* conservation includes a comprehensive system of protected areas such as the national parks, sanctuaries, natural reserves, biosphere reserves, etc.

123 **(b)**
The cheetah (*Acinonyx jubatus*) is a member of cat family. Cheetah have been know to exist in India for a very long time. But due to hunting and other purposes, cheetah in India became extinct before the twentieth century.

124 **(a)**
For frugivorous birds and mammals in the tropical forests of different continents, the slope is found to have a value of 1.15

125 **(d)**
Given, $\log A = 4, Z = 0.3$ and $\log C = 0.8$
Putting these values in equation, *i.e.,* species area relationship equation, we will get the value of log S
$\log S = \log C + Z \log A$
$= 0.8 + 0.3 \times 4$
$= 0.8 + 1.2$
$= 2.0$

126 **(a)**
Siberian cranes are regular visitors of Bharatpur sanctuary, Rajasthan.

127 **(d)**
Ex situ strategy is the conservation of selected threatened plant and animal species in places outside their natural habitat, where the

population is conserved under stimulated conditions that closely resemble their natural habitats. It includes, botanical gardens, zoological parks, wildlife safari, gene banks, etc.

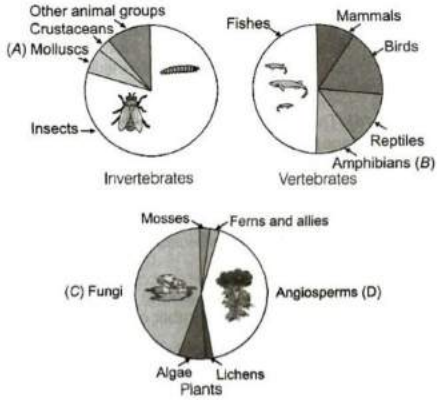
128 **(a)**
Periyar sanctuary is located in Kerala.

129 **(b)**
Manas Wildlife Sanctuary is situated at Kamrup (Asom). It covers 80 sq km area. It's key vertebrate species are tiger, wild boar, sambhar, golden langoor, one-horned rhino, swamp deer, wild dog and wild buffalo.

130 **(b)**
Eutrophication means nutrient enrichment. Rich growth of microorganisms consumes most of the dissolved oxygen, so as to deprive other organisms.

131 **(a)**
Deforestation is the depletion of forest resources. Its main cause is the explosion of human and livestock population with the increased demand of the basic needs. Ideally, one third (33%) of land of a country must be covered by forest. In India, forest cover is only 19.43% out of which only 13% are thick forests. India is losing about 1.5 million hectare of forest covers each year. The major effect of deforestation is the loss of precious wild life, rare species of flora and fauna. Directly or indirectly, deforestation caused intensified soil erosion, accentuated flood, drought and the worst pollution.

132 **(b)**



On earth, more than 70% of all the species recorded are animals, while plants (including algae, fungi, bryophytes gymnsoperms and angiosperms) comprises no more than 22% of the total. Among animals, insects are the most species-rich taxonomic group, making up more than 70% of the total. Number of fungi species in the world is more than the combined total of the species of fishes, amphibians, reptiles and mammals

133 **(b)**
Soil transportion by wind is common in dry regions where soil is chiefly sandy and the vegetation is very poor. Transported soils are those where the weathered material is taken away at other places. Depending on the nature of these transporting agents, the transported soil may be

(i)**Glacial**, transported by glaciers (large mass of snow ice)

(ii)**Eolian,** transported by wind

(iii)**Aluvial**, transported by running water

(iv) **Colluvial**, transportation by gravity.

134 **(d)**
Ranthambor national park is situated inRajasthan.

135 **(b)**
A plant *Bentinckia condapanna/nicoarica* (member of family –Arecaceae) and the animal, red panda, both are declared as endangered in India.

136 **(b)**
Earth Summit at Rio de Janerio (1992), Brazil, promoted Convention on Biological Diversity (CBD) which was signed by 152 nations

137 **(b)**
The narrowly utilitarian arguments for conserving biodiversity are
Human derives countless direct economic benefits from nature-food (pulses, cereals, fruits), firewood, fibre, construction, dyes, resins, perfumes) and the products of medicinal importance

138 **(c)**
Species diversity.
The diversity at the species level is measured as species diversity. It is the variety in the number and richness of the species of a region. For example, the Western Ghats have a greater

amphibian species diversity than the Eastern Ghats

139 **(b)**
In 1973, the Chipko movement (Chipko means to hug or stick to) was launched by **Chandi Prasad Bhatt** and **Sunder Lal bahuguna** against large scale felling of trees by timber contractors in the Uttarakhand hills. The starting point was **Chamoli** district of **Garhwal** region in Uttarakhand.

140 **(b)**
In 1973 the Chipko movement was launched by Chandi Prasad Bhatt and Sundar Lal Bahuguna against large scale falling of tress by timber contractors in Uttaranchal hills.

141 **(b)**
Agroforestry is a system of land use where woody perennials are deliberately used on the same land management units as annual agricultural crops for animals simultaneously or sequentially to obtain greater outputs. Two special methods of agroforestry are **Taungya system** in which crops are grown between trees and **Jhum system** or shifting cultivation or slash and burn agriculture.

142 **(c)**
Exhaustible resources are natural resources with finite supply, which if used indiscriminately are likely to diminish and then get exhausted. Fossil fuel is a non-renewable (limited) exhaustible source of energy.

143 **(a)**
Sanjay Gandhi Biological Park is situated in Patna (Bihar).

144 **(b)**
Tropical rain forests to **Amazon** in South America possess the greatest biodiversity on earth with more than 40000 species of plants, 3000 of fishes, 1300 birds, 427 of mammals, 427 of amphibians, 378 of reptiles and more than 125000 invertebrates

145 **(a)**
Species diversity is the variety in number and richness of the species of a region.
The number of species per unit area is called species richness

146 **(d)**
(i) Alpha diversity is the species diversity in a given community and habitat
(ii) Genetic diversity is the diversity in number 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
(iii) Beta diversity is the biodiversity which appears in a range of communities due to replacement of species with the change in community/habitat
(iv) Species diversity is the variety in the number and richness of the species of a region. It is a product of species richness and evenness

147 **(d)**
Red Panda is an endangered species according to IUCN.

148 **(b)**
Habitat loss and fragmentation is the most important cause driving animals and plants to extinction. Due to various human activities when large habitats are destructed, various animals are badly affected leading to population declines.

149 **(b)**
Biosphere is the part of earth in which life exists.

150 **(c)**
According to the IUCN (2004), the total number of plants and animals species described, so far is slightly more than 1.5 million but there is no clear idea of how many species are yet to be discovered and described

151 **(a)**
***In situ* (on-site) conservation** refers to the protection and maintenance of biological diversity through a network of protected areas. Here, the selected flora/fauna are naturally conserved in their natural homes. It includes, national parks, sanctuaries, biosphere reserves, etc.

152 **(d)**

Biosphere Reserve	Animal
Gir forest	Asiatic lion, panther, striped hyena
Kaziranga	Rhinoceros , wild buffalo, gaur
Corbett National Park	Elephant , tiger, panther, sloth bear, etc
Rann of Kutch	Wild ass

153 **(b)**

Biosphere reserves are multipurpose protected areas, which are meant for preserving genetic diversity in representative ecosystems of various natural biomes and unique biological communities by protecting wild populations, traditional life style of tribals and domesticated plant and animal genetic resources. Humans are integral part of biosphere reserves but not of the National Parks.

154 **(a)**
Biosphere Reserve Programme was launched by UNESCO in 1971 under its "Man and Biosphere Programme" (MAB). But in India, it was launched in 1986.

155 **(c)**
The term 'deforestation' means cutting of trees. Due to cutting of trees, the erosion of soil may occur.

156 **(d)**
Lime is used as a chemical fertilizer. It is quite alkaline hence, can be added to the soil which is too acidic.

157 **(b)**
Rivet popper hypothesis assumes the ecosystem to be an aeroplane and the species to be the rivets, joining as parts together

158 **(d)**
Initially 25 biodiversity hotspots were identified but subsequently (nine) more have been added to the list, bringing the total number of biodiversity hot spots in the world to 34. They are the areas of high endemism and high level of species richness

159 **(d)**
All statements are true about Amazon rainforest. Amazon rainforest (it is so, huge that it is called the 'lungs of the planet') harbouring probably millions of the species are being cut and cleared for cultivating soyabeans or for the conversion to grasslands for raising beef cattle

160 **(c)**
Mass extinction occurred between cretaceous and tertiary over 60 million years ago when dionosaurs and a number of other organisms disappeared. It is also called K-T boundary

161 **(b)**
Nehru Zoological Park is situated in Hyderabad.

162 **(b)**
In accordance with wild life (protection) Act, 1972, passed by Indian government, national parks and sanctuaries could be created for the protection, preservation and propagation of wild animals. In wildlife sanctuaries, protection is given to animal life, while in national parks both flora and fauna are conserved.

163 **(b)**
A keystone species is the one that exerts a strong influence on an ecosystem

164 **(c)**
There are many reasons, some are obvious and others are not so obvious, but all are equally important behind conserving biodiversity. *They can be grouped into three categories* narrowly utilitarian, broadly utilitarian and ethical utilitarian

165 **(c)**
Fossil fuel, coal, petroleum, natural gas, etc, are non-renewable energy sources. These are available only in a limited quantity and are not able to reproduce or replace themselves or to increase. Once, the non-renewable resources are consumed, they are forever. Hence, it is believed that these will be exhausted in near future.

166 **(a)**
Hoolock gibbon, rhinoceros, *Python*, etc, are protected in the Kaziranga National Park, Sibsagar (Asom).

167 **(c)**
Joint Forest Management (JFM) was introduced so as to work closely with the local communities for protecting and managing forests.

168 **(b)**
Forests are very important to us, they cover about 23.68% of our earth and help in population control. They also help us by providing useful food and thus play an important role in ecological balance.

169 **(d)**
Sacred grooves are the forest patches around the places of worship, which are held in high esteem by tribal communities. They are found in several parts of India, *e. g.*, Karnataka, Maharashtra, Rajasthan (Aravalli), Madhya Pradesh (Sarguja, Chanda and Bastan), Kerala, Meghalaya. In

Meghalaya, sacred groves are found in Jaintia and Khasi hills

170 **(a)**
The number of species in a community really matters to the functioning of the ecosystem. Ecologists believe that communities with more species, generally, tend to be more stable than those with less species

171 **(c)**
Ex situ conservation is the preservation of components of biological diversity outside their natural habitat. It includes cryopreservation, off site collections, gene banks and tissue culture.

In situ conservation is the preservation of biological diversity in their natural wild conditions, usually in the form of biosphere reserves, national parks and wild life sanctuaries.

172 **(d)**
Eminent conservationists identified areas (regions) with very high level of species richness and high degree of endemism (*i.e.,* species confined to that region and not found anywhere else) for maximum protection. Initially the number of biodiversity hot spots were 25 but now it increased up to 34

173 **(c)**
Gene pool is the total aggregate of genes in a population at any one time. If any species (*e.g.,* Bengal tiger) become extinct, its gene pool will be lost forever.

174 **(c)**
There are various hypothesis for higher diversity in tropical areas. One of them is, rate of extinction is low in tropics

175 **(a)**
Clayey soils consist of hydrated silicates of aluminium and the size of the soil particles is less than 0.002 mm. Clayey soils are the least porous, compact soils with good hydration but little aeration.

176 **(a)**
The main goals of soil conservation are prudent fertilization, thoughtful irrigation and prevention of soil erosion (*i. e.*, protection of top fertile soil from being carried away by wind and water).

177 **(d)**
Alpha diversity is one of the three types of ecological diversity. It is the species diversity in a given community or habitat. α- diversity is dependent upon species richness and evenness/equitability

178 **(b)**
5th June- World environment day

29th December- World biodiversity day

16th September- Ozone layer conservation day

179 **(d)**
The temperature of earth in winter season is 1 – 10°C while in summer it is 25 – 40°C.

180 **(a)**
Contour farming method is usually employed in hilly regions. In this method, the land is ploughed against the slope instead of down the slope for seeding and harvesting operations.

181 **(d)**
Forest is a renewable, exhaustible natural resource. Renewable resource are living, able to reproduce or replace themselves and to increase. The renewable resources get replenished, recycled or reproduced and they are not used beyond their renewability. Exhaustible resources are the natural resources with finite stock or supply, they are vulnerable to both qualitative and quantitative degradation.

182 **(a)**
The Amazon rain forest is a moist brodleaf forest that covers most of the Amazon basin of South America. This region includes territory belonging to nine nations. The majority of the forest is contained within Brazil, with 60% of the rain forest, followed by Peru with 13% and with minor amounts in Columbia, Venezuela, Ecuador, Bolivia, Guyana, Surinam and French Guyana. States or departments in four nations bear the name Amazonas after it. The Amazon represents over half of the planet's remaining rain forests and comprises the largest and most species rich tract of tropical rain forest in the world.

183 **(c)**
India has nearly 45000 plants and twice as many animals

184 **(b)**

Although India has only 2.4% of the world's land area, its share of the global species diversity is 8.1%. That is why, our country is one of the 12 megadiversity countries of the world

185 **(a)**
All are true except the (iv)
It is species diversity and not biodiversity, which is important for maintaining higher levels of productivity and ecosystem health

186 **(b)**
In the biosphere reserve, people are an integral part, but not in National Parks and wild life sanctuaries.

187 **(b)**
India has more than 50,000 genetically different strains of rice.
The diversity of rice in India is heighest in the world. More than 50,000 genetically different strains of rice has been estimated in India, alone. Basmati rice has 27 documented varieties grown in India

188 **(c)**
India is secondary centre for domestication of potato

189 **(a)**
In India, the first biosphere reserve is Nilgiri Biosphere Reserve (NBR). It includes two well known national parks, *viz*, Bandipur National Park and Nagarhole Park.

190 **(d)**
Endemic species restricted to a specific area.
Sibling species are species which do not interbreed but are otherwise difficult to separate on the basis of morphological characters alone.

Sympatric species are having overlapping are of geographical distribution.

191 **(a)**
IUCN (International Union of Conservation of Nature and Natural Resources) is now called World Conservation Union (WCU). Its headquarter is at Morges, Switzerland

192 **(c)**
The **World Wide Fund for Nature** (WWF) is an international non-governmental organisation working on issues regarding the conservation, research and restoration of the environment.

193 **(c)**
When a species become extinct, the plants and animals species associated with it in an obligatory way also become extinct
In the case of coevolved plant-pollinator mutualism, extinction of one invariably leads to the extinction of the other

194 **(a)**
70%.
When we discuss about earth's biodiversity, more than 70% of all the species recorded are animals, while plants (including algae, fungi, bryophytes, gymnosperms and angiosperms) comprises not more than 22% of the total

195 **(a)**
Alpha diversity is the species diversity in a given community and gamma diversity is present in ranges of communities over a total geographical area

196 **(d)**
Minerals and fossil fuels are the non-renewable (can not be regenerated after being used up) and exhaustible (limited) resources, while water, wildlife, soil fertility and aquatic plants and animals all are renewable resources.

197 **(b)**
The term biodiversity was given by Edward Wilson.
Immense diversity (heterogeneity) exists in our biosphere, not only at the species level but at all the levels of biological organization ranging from the macromolecules within to biomass
Sociobiologist Edward Wilson described the combined diversity at all the levels of biological organization
These are genetic diversity, species diversity and ecological diversity

198 **(b)**
Taxa whose numbers have been reduced to a critical level or whose habitats have been so, drastically reduced that they are deemed to be in immediate danger of extinction are called endangered animals, *e.g.*, lion-tailed macaque, crocodile, musk deer, rhino, etc.

199 **(b)**
Species diversity is a product of both species richness and evenness or equitability, *i.e.*, species richness weighed by species evenness. Odum *et. al* (1960) calculated species diversity (d) as the number of species in relation to the square root of

the total number of individuals. In ecological studies, diversity index commonly used is Shannon index

200 **(c)**
Extinction vertex is a combination of genetic and demographic factors

201 **(d)**
The causes of biodiversity losses are alien species invasions, habitat loss, fragmentation and coextinctions etc.
The world is facing accelerated rate of biodiversity losses due to human interference. The causes are over population, urbanization, industrialization, coextinctions, alien species invasions, habitat loss and fragmentation, etc.

202 **(d)**
Rivet popper hypothesis suggests the ecosystem are like aeroplane wings where the flight ecosystem functioning may or may not be compromised
This hypothesis assumes the ecosystem to be an aeroplane and the species to be the rivets joining all parts together
If every passenger pops a rivet to take home (resulting in species extinction), it may not affect the flight safety initially (proper ecosystem functioning) but with time as more rivets are removed, the plane will become dangerously weak

203 **(b)**
Run-off water refers to the water falls during rainfall (precipitation) and goes back to the source, *e. g.*, sea, ocean, etc. In this way, a large amount of fresh water gets wasted. So, the greater problem of water conservation is to reduce the amount of run-off water.

204 **(c)**
Dudhwa National Park is in Uttar Pradesh. It was originally meant for protecting swamp deer. Later, tiger and leopard have been re-introduced. The rhino has been recently introduced.

205 **(c)**
In agrostological methods of soil conservation, grasses such as *Cynodon dactylon* are utilizing as erosion resisting plants. The grasses are grown in strips between the crops. This method practised in dry arid regions; is called dry farming and helps to maintain moisture content in the soil.

206 **(b)**
The Eastern Himalaya's hotspot of our country extends to the North Eastern India and Bhutan. The Indo-Burma region covering the Eastern Himalayas is also known as cradle of speciation.

207 **(a)**
The name of Smt. Thimmakka is associated with the planting and conservation of avenue trees.

208 **(b)**
The reflectivity percentage of incident light on earth is meteorologically called albedo.

209 **(b)**
Mango has the maximum genetic diversity in India. India has approximately 1000 varieties of mango

210 **(c)**
Species area relation is used by ecologists to estimate the number of species extinction resulting from the habitat destruction

211 **(d)**
All are true except IV

212 **(b)**
Endemic plants are restricted to grow in limited or confined areas, *i.e.,* these grow in geographically limited areas. These are adapted to grow in particular regions only.

213 **(c)**
On earth, 70% of all the species recorded are animals, while plants comprises no more than 22% of the total
Among animals, insects are the most species rich taxonomic group, making up more than 70% of the total. That means, out of every 10 animals on this planet, atleast 7 are insects

214 **(b)**
The world Summit on sustainable Development was held in South Africa.
The World Summit on Sustainable Development was held in Johannesburg, South Africa in 2002 in which 190 countries pledged to reduce the current rate of biodiversity loss at global, regional and local levels by 2010. Regarding the same the Biodiversity ACt was passed in India in the year 2002

215 **(c)**

Gamma diversity represents the total richness of species in all the habitats found within a region, geographical area or landscape.

216 **(b)**
Eurythermal are those animals, which can tolerate large variations of temperatures, *e.g.,* man. Stenothermal are animals, which can tolerate only small variations in temperature, *e.g.,* frog and all other cold-blooded animals.

217 **(a)**
Biodiversity increases from poles to equator, *i.e.,* from high to low altitude

218 **(d)**
33% of flowering plants, 10% of mammals, 36% reptiles, 60% amphibians and 53% freshwater fishes are endemic (restricted to a particular area or region)

219 **(b)**
India has only 2.4% of world's land area

220 **(c)**
Natural or background extinction is a slow process of replacement of existing species with the better adapted species due to alternate evolution, change in environmental conditions, predators and diseases

221 **(c)**
The world is facing accelerated rates of species extinctions, largely due to human interference. There are four major causes of biodiversity loss called the evil quartet, *i.e.,* habitat loss, over exploitation, Alien species invasion and coextinetion

222 **(a)**
The expanded form of IUCN of IUCNNR is international Union for Conservation of Nature and Natural Resources

223 **(d)**
According to the species area relations concept, the number of species in an area increases with the size of that area

224 **(c)**
In general species diversity decreases as we move away from the equator towards the poles. With very few exceptions, tropics harbour more species than temperate or polar areas. Latitudinal range for tropics is 23.5°N to 23.5°S

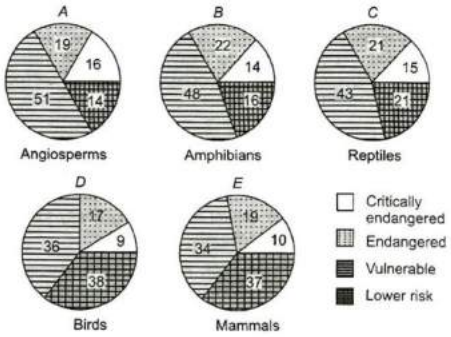
225 **(d)**

Column I	Column II
Rhinoceros	Kaziranga
Tiger project in Karnataka	Bandipur
Assemblage protection	Bharatpur
Silent valley	Tropical evergreen forest

226 **(b)**
The IUCN red list (2004) documents the extinction of 784 species (including 338 vertebrates 359 invertebrates and 87 plants) in the last 500 years

227 **(a)**
Biodiversity in not uniform throughout the world because it is affected by many factors
Barring arid/semiarid and aquatic habitats, biodiversity shows latitudinal and altitudinal gradients. Biodiversity is low at the poles. It increases in temperate areas but reaches the maximum in tropics. Biodiversity increases from poles to equator, *i.e.,* from high to low latitude and *vice-versa*
Biodiversity increases from higher altitude to lower altitude that is from mountain top to sea level and *vice-versa*
A decrease in species diversity occurs as we ascend a high mountain due to drop in temperature (lapse temperature being 6.5°C for 1 km or 1000 m) and greater seasonal variability

228 **(b)**
The 2000 Red List contains assessments of more than 18,000 species, 11,000 of which are threatened
The Red List also provides information to international agreements such as the convention on Biological diversity and the convention on International Trade in Endangered Species of Wild Fauna and Flora
According to the Red List, in India
44 plant species – critically endangered
113 plant species – endangered
87 plant species – vulnerable
18 animal species – critically endangered
54 animal species – endangered
143 animal species – vulnerable



According to Red List

10% mammals, 9%, 15% reptiles, 16% amphibians and 16% angiosperms are facing very high list of extinction in the wild and can become extinct any moment in the immediate future.

The percentage number of endangered species in the list of threatened species is 19% mammals, 17% birds, 21% reptiles, 22% amphibians and 19% angiosperms.

Percentage of depleted (vulnerable) species out of the total threatened species is 34% mammals, 36% birds, 43% reptiles, 48% amphibians and 51% angiosperms.

The given data shows the maximum percentage of endangered species belongs to the group of angiosperms

229 **(a)**

The species diversity of plant on earth will be about 22%.

230 **(d)**

The Nile perch, a voracious predator introduced to lake Victoria as a food fish, has already extinguished over one hundred species of native cichlid fish there.

231 **(c)**

In biodiversity hotspots, interspecific competition is high.