

Q.1) Consider the following pairs.

Zone	Activities
1. Core	The core zone is to be kept-free from all human pressures external to the system.
2. Transition	uses and activities include restoration, demonstration sites for enhancing value addition to the resources, limited recreation, tourism, fishing and grazing.
3. Buffer	zone of cooperation where conservation, knowledge and management skills are applied

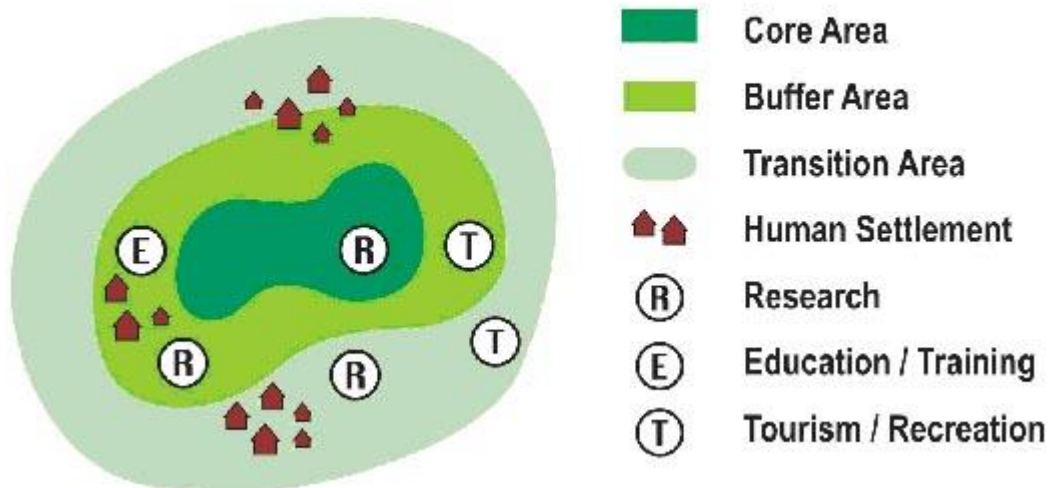
Which of the above pairs is/are correctly matched?

- a) 1 only
- b) 2 only
- c) 1 and 3 only
- d) All the above



Q.1) Solution (a)

Structure of a model biosphere reserve.



The core zone is kept absolutely undisturbed. It must contain suitable habitat for numerous plant and animal species, including higher order predators and may contain centres of endemism. Core areas often conserve the wild relatives of economic species and also represent important genetic reservoirs. The core zones also contain places of exceptional scientific interest. A core zone secures legal protection and management and research activities that do not affect natural processes and wildlife are allowed. Strict nature reserves

and wilderness portions of the area are designated as core areas of BR. **The core zone is to be kept free from all human pressures external to the system.**

In the Buffer Zone, which adjoins or surrounds core zone, uses and activities are managed in ways that protect the core zone. **These uses and activities include restoration, demonstration sites for enhancing value addition to the resources, limited recreation, tourism, fishing and grazing, which are permitted to reduce its effect on core zone.** Research and educational activities are to be encouraged. Human activities, if natural within BR, are likely to be permitted to continue if these do not adversely affect the ecological diversity.

The Transition Zone is the outermost part of a Biosphere Reserve. **This is usually not delimited one and is a zone of cooperation where conservation, knowledge and management skills are applied and uses are managed in harmony with the purpose of the Biosphere Reserve.** This includes settlements, crop lands, managed forests and area for intensive recreation, and other economic uses characteristic of the region.

Do you know?

- Biosphere Reserves in India, categories roughly corresponding to IUCN Category V Protected areas.

THINK!

- World Network of Biosphere Reserve.

Q.2) Consider the following statement about Red Data Book.

1. Increase in the number of red pages indicates increase in number of critically endangered species.
2. Increase in number of green page indicates the increase in conservation efforts.

Which of the above statements is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None

Q.2) Solution (b)

The Red Data Book, information for endangered mammals and birds are more extensive than for other groups of animals and plants, coverage is also given to less prominent organisms facing extinction.

The pink pages in this publication include the critically endangered species. With passing time, the number of pink pages continues to increase which indicates increasing number of critically endangered species.

Green pages are used for those species that were formerly endangered but have now recovered to a point where they are no longer threatened. So, increase in green pages indicates the increase in conservation efforts.

Do you know?

- A taxon is **Extinct in the Wild** when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.

THINK!

- Critically Endangered(CR)
- Endangered(EN)
- Vulnerable(VU)

Q.3) Which of the following are examples of in-situ conservation?

1. National Parks
2. Sanctuaries
3. Biosphere reserves
4. Recreational gardens

Select the correct answer using the codes given below.

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) All the above

Q.3) Solution (a)

In-situ conservation: Conserving the animals and plants in their natural habitats is known as in-situ conservation. The established natural habitats are:

- National parks
- Sanctuaries
- Biosphere reserves and
- Reserved forests
- Protected forests
- Nature reserves

Ex-situ conservation: Conserving biodiversity outside the areas where they naturally occur is known as ex-situ conservation.

Seed banks, botanical, horticultural and **recreational gardens** are important centers for ex-situ conservation.

Do you know?

- Biodiversity is measured by two major components **species richness, and species evenness.**

THINK!

- Levels of Biodiversity.

Q.4) Which of the following are the Biodiversity Conservation initiatives in India?

1. Schedule list of Wild Life Protection Act 1972
2. Captive Breeding
3. Project Tiger
4. Sea Turtle Project

Select the correct answer using the codes given below.

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 1, 3 and 4 only
- d) All the above

Q.4) Solution (d)

WPA 1972 consists of 6 schedule lists, which give varying degrees of protection.

Poaching, smuggling and illegal trade of **animals listed Schedule 1 to schedule 4** are prohibited. **Animals listed in schedule 1 and part II of schedule 2 have absolute protection** – offences under these are prescribed the highest penalties. Examples of animals listed in schedule 1 are lion tailed macaque, rhinoceros, great Indian bustard, narcondam hornbill,

nicobar megapode, black buck, etc. Examples of animals listed in schedule 2 are rhesus macaque, dhole, Bengal porcupine, king cobra, flying squirrel, Himalayan brown bear, etc.

Captive breeding means that members of a wild species are captured, then bred and raised in a special facility under the care of wildlife biologists and other expert.

Bringing an animal into captivity may represent the last chance to preserve a species in the wild in these situations.

When a population drops dangerously, captive breeding can boost numbers. Captive-produced young can sometimes be released into the wild where populations have diminished or disappeared, yet where suitable habitat remain to support them.

Project Tiger centrally sponsored scheme was launched in 1973 with the following objectives.

To ensure maintenance of available population of Tigers in India for scientific, economic, aesthetic, cultural and ecological value.

To preserve, for all times, the areas of such biological importance as a national heritage for the benefit, education and enjoyment of the people.

With the objective of conservation of olive ridley turtles and other endangered marine turtles, Ministry of Environment & Forests initiated the **Sea Turtle Conservation Project** in collaboration of UNDP in November 1999 with Wildlife Institute of India, Dehradun as the Implementing Agency.

The project is being implemented in 10 coastal States of the country **with special emphasis in State of Orissa.**

Do you know?

- Animals listed in schedule 5 are called “vermin” which can be hunted. Mice, rat, common crow and flying fox (fruit eating bats are the list of animals (only 4 nos) in schedule 5 [i.e. vermin].

THINK!

- Vulture Safety Zones.

Q.5) Consider the following statements about Aichi Target.

1. The ‘Aichi Target’ is adopted by the United Nations Framework Convention on Climate Change at its Nagoya conference.

2. They are a series of goals that were set for protection and conservation of biodiversity.

Which of the above statements is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None

Q.5) Solution (b)

Aichi Target

The 'Aichi Target' adopted by the Convention on Biological Diversity (CBD) at its Nagoya conference. In the COP-10 meeting, the parties agreed that previous biodiversity protection targets are not achieved, so we need to do come up with new plans and targets

The short-term plan provides a set of 20 ambitious yet achievable targets, collectively known as the Aichi Targets.

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.

Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.

Do you know?

- **Target 11:** By 2020, at least 17% of terrestrial & inland water, and 10% of coastal & marine areas, are conserved through systems of protected areas and other effective area-based conservation measures.
- India's network of protected areas is far below the "Aichi Target".

THINK!

- Monitoring of illegal Killing of Elephants (MIKE) Programme.

Q.6) Recently Red Sanders was in news. Consider the following statements about it.

1. Red Sanders is an endemic tree of South India.
2. They are found in Tropical Moist Deciduous forest.
3. Red Sanders usually grow in the rocky, degraded and fallow lands with Red Soil and hot and humid climate.
4. IUCN has put it under the category of endangered species.

Which of the statements is/are correct?

- a) 1, 2 and 3 only
- b) 1 and 3 only
- c) 1 and 4 only
- d) All the above

Q.6) Solution (c)

Pterocarpus santalinus or Red Sanders is an **endemic tree of South India**.

They are found in **Tropical Dry Deciduous forest** of the Palakonda and Seshachalam hill ranges of Andhra Pradesh and also found in Tamil Nadu and Karnataka.

Red Sanders usually grow in the rocky, degraded and fallow lands with Red Soil **and hot and dry climate**.

IUCN has put it under the category of **endangered species in the Red List** due to the dwindling population because of illegal felling and smuggling.

Do you know?

- Its export is banned in India in accordance with the CITES and Wildlife Protection Act 1972.
- It is used for various purposes such as immunity medicine, furniture, radiation absorbent, musical instrument, food dyes and spices, Ayurveda and Siddha medicine, decorative and ornamental purposes etc.

THINK!

- Convention on International Trade in Endangered Species (CITES).

Q.7) Consider the following statements about Talle Wildlife Sanctuary:

1. Talle Wildlife Sanctuary in Andhra Pradesh.
2. It is one of the homes for clouded leopard.

Which of the statements is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None

Q.7) Solution (b)

Why in News?

Recently, **new Moth species** has been discovered in Talle Wildlife Sanctuary in Arunachal Pradesh. It is the first record of this moth species (*Elcysma*) in Arunachal Pradesh. The scientifically name of moth is *Elcysma Ziroensis*, and **commonly called Apatani Glory, named after a local tribe called Apatani.**

Talle WildLife Sanctuary

- It lies roughly in between **the Subansiri, Sipu and Pange Rivers.**
- It is one of the home for clouded leopard (Vulnerable IUCN status).
- Sub-tropical broad leafed, temperate broad leafed and temperate conifer types of vegetation are found here.

Do you know?

Other wildlife reserves in Arunachal Pradesh

- **Wildlife Sanctuary:** Itanagar, Lao, Mehao, Dibang Eagle's Nest Sanctuary, Kamlang, Kane.
- **National Park:** Namdapha, Mouling
- **Biospheric Reserve:** Dihang-Dibang Biosphere Reserve.
- **Clouded Leopard-** IUCN-Vulnerable

THINK!

- Marine Protected Areas.

Q.8) Which of the following state animals are correctly matched?

1. Clouded leopard–Arunachal Pradesh
2. Hangul - Jammu and Kashmir
3. Barahsingha- Madhya Pradesh

Select the code from following:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.8) Solution (b)

All 29 States and 7 Union Territories of the Republic of India have their own state animals. The motivation for the choice varies from state to state; species to the state are often selected.

Clouded Leopard is the state animal of Meghalaya.

- Himachal Pradesh – Snow Leopard
- Jammu and Kashmir – Kashmir Stag
- Punjab, Haryana, Andhra Pradesh – Blackbuck
- Uttarakhand – Musk Deer
- Rajasthan – Camel
- Uttar Pradesh, Madhya Pradesh – Swamp Deer
- Bihar, Goa, Nagaland – Gaur
- Sikkim – Red Panda
- Assam – One Horned Rhino
- Arunachal Pradesh, Nagaland – Gayal
- Manipur – Sangai
- Mizoram – Serow
- West Bengal – Fishing Cat
- Jharkhand, Karnataka, Kerala – Indian Elephant
- Odisha – Sambar
- Chhattisgarh – Wild Buffalo
- Gujarat – Lion
- Maharashtra: Indian Giant Squirrel
- Telangana – Deer
- Tamil Nadu – Nilgiri Tahr

Q.9) Which of the following species are critically endangered in India?

1. Malabar Civet
2. Red Panda
3. Namdhapa Flying Squirrel

4. Leather back turtle

Select the code from following:

- a) 1,2 and 3
- b) 2,3 and 4
- c) 1,3 and 4
- d) All of the above

Q.9) Solution (c)

Critically Endangered Mammals

1. Pygmy Hog (*Porcula salvania*).
2. Andaman White-toothed Shrew (*Crocidura andamanensis*)
3. Jenkin's Andaman Spiny Shrew (*Crocidura jenkinsi*)
4. Nicobar White-tailed Shrew (*Crocidura nicobarica*)
5. Kondana Rat (*Millardia kondana*)
6. Large Rock Rat or Elvira Rat (*Cremnomys elvira*)
7. Namdapha Flying Squirrel (*Biswamoyopterus biswasi*)
8. Malabar Civet (*Viverra civettina*)
9. Sumatran Rhinoceros (*Dicerorhinus sumatrensis*)
10. Javan Rhinoceros (*Rhinoceros sondaicus*)

Critically endangered birds in India

1. Migratory Wetland Species – Baer's Pochard (*Aythya baeri*), Siberian Crane (*Leucogeranus leucogeranus*), Spoon-billed Sandpiper (*Eurynorhynchus pygmeus*)
2. Non-migratory Wetland Species – White-bellied Heron (*Ardea insignis*)
3. Grassland Species – Bengal Florican (*Houbaropsis bengalensis*), Great Indian Bustard (*Ardeotis nigriceps*), Jerdon's Courser (*Rhinoptilus bitorquatus*), Sociable Lapwing (*Vanellus gregarius*)

1. Forest Species – Forest Owlet (*Heteroglaux blewitti*)
2. Scavengers – Indian Vulture (*Gyps indicus*), Red-headed Vulture (*Sarcogyps calvus*), Slender-billed Vulture (*Gyps tenuirostris*), White-backed Vulture (*Gyps bengalensis*).
3. Practically extinct – Himalayan Quail (*Ophrysia superciliosa*), Pink-headed Duck (*Rhodonessa caryophyllacea*)

Critically Endangered Reptiles



1. Gharial (*Gavialis gangeticus*)
2. Hawksbill Turtle (*Eretmochelys imbricata*)
3. Leatherback Turtle (*Dermochelys coriacea*)
4. Four-toed River Terrapin or River Terrapin (*Batagur baska*)
5. Red-crowned Roofed Turtle or the Bengal Roof Turtle (*Batagur kachuga*)

Critically Endangered Fishes

1. Pondicherry Shark (*Carcharhinus hemiodon*)
2. Ganges Shark (*Glyphis gangeticus*)
3. Knife-tooth Sawfish (*Anoxypristis cuspidata*)
4. Large-tooth Sawfish (*Pristis microdon*)
5. Long-comb Sawfish or Narrow-snout Sawfish (*Pristis zijsron*)

Q.10) Which of the following statements is/are correct regarding Flagship species?

1. A flagship species is a species selected to act as an ambassador, icon or symbol for a defined habitat, issue, campaign or environmental cause.
2. Only Keystone species are selected as Flagship species so that other species are also benefitted.

Select the code from below:

- a) 1 only
- b) 2 only
- c) Both 1 and 2

d) Neither 1 nor 2

Q.10) Solution (a)

Flagship species

- A flagship species is a species selected to act as an ambassador, icon or symbol for a defined habitat, issue, campaign or environmental cause.
- By focusing on, and achieving conservation of that species, the status of many other species which share its habitat – or are vulnerable to the same threats - may also be improved.
- Flagship species are usually relatively large, and considered to be 'charismatic' in western cultures.
- Flagship species may or may not be keystone species and may or may not be good indicators of biological process.

Q.11) Consider the following statements:

1. Indicator species is an organism whose presence, absence or abundance reflects a specific environmental condition.
2. Indicator species indicates the different seral levels of succession.
3. Lichens can be used as an indicator species to check the presence of SO₂.

Which of the above statements regarding Indicator species are correct?

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.11) Solution (c)

Indicator Species

An indicator species is an organism whose presence, absence or abundance reflects a specific environmental condition. Indicator species can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem. For example, plants or lichens sensitive to heavy metals or acids in precipitation may be indicators of air pollution. Indicator species can also reflect a unique

set of environmental qualities or characteristics found in a specific place, such as a unique microclimate.

Indicator species are a useful management tool, and can help us delineate an ecoregion, indicate the status of an environmental condition, find a disease outbreak, or monitor pollution or climate change. In one sense, they can be used as an “early warning system” by biologists and conservation managers. Indicator species must also be accompanied by a thorough study of what is being indicated, what is really correlated, and how this one species fits into the rest of ecosystem.

Think

- Keystone species

Q.12) Ameenpur lake has recently received the Biodiversity Heritage Tag. Consider the following statements regarding this?

1. It is the first water body in India to receive this tag
2. Ameenpur lake lies in Karnataka.
3. The Biodiversity Heritage Tag is awarded by UNESCO

Which of the above statements are correct?

- a) 1 only
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.12) Solution (a)

Ameenpur Lake

Ameenpur lake, located in the metropolitan area limits of Hyderabad with a number of industrial units nearby, has been designated a biodiversity heritage site.

A major attraction for admirers of birds, particularly the majestic flamingos, is the first water body in the country to get such a status.

The tag is given by National Biodiversity Authority (NBA) under Biodiversity Act, 2002.

Think

- Hydroponics

Q.13) Arrange the following states in the descending order according to the population of tigers in them:

1. Uttarakhand
2. Karnataka
3. Tamil Nadu
4. Madhya Pradesh

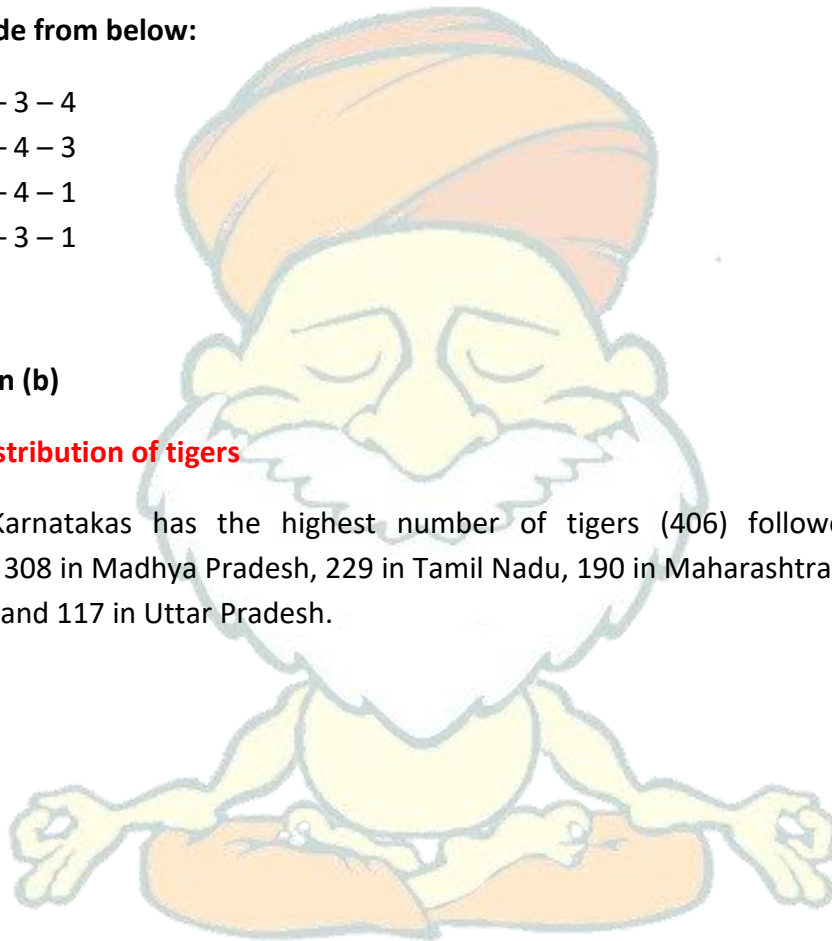
Select the code from below:

- a) 1 – 2 – 3 – 4
- b) 2 – 1 – 4 – 3
- c) 2 – 3 – 4 – 1
- d) 2 – 4 – 3 – 1

Q.13) Solution (b)

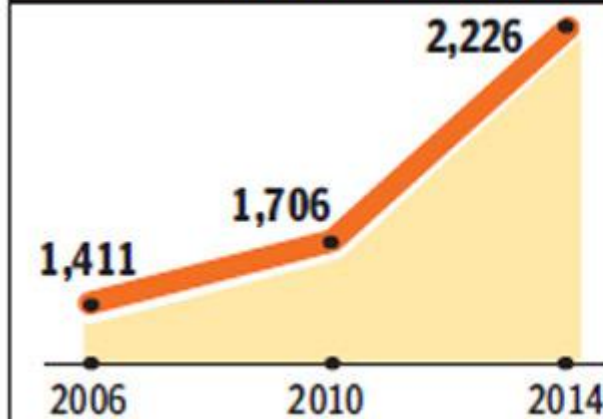
State wise distribution of tigers

State-wise, Karnataka has the highest number of tigers (406) followed by 340 in Uttarakhand, 308 in Madhya Pradesh, 229 in Tamil Nadu, 190 in Maharashtra, 167 in Assam, 136 in Kerala and 117 in Uttar Pradesh.

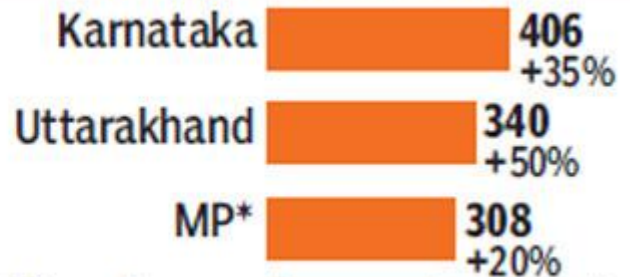


BIG BOOST FOR THE BIG CAT

30% rise in tiger population in 4 yrs



MAJOR TIGER STATES



*Sampling ongoing, may be revised

Photo: Himanshu Bagde



COUNTING CATS

TIGER POPULATION BREAK-UP

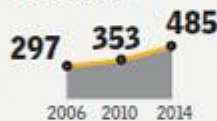
Area of forests surveyed | **3.78 lakh sq km** in 18 states

1,540 individual tigers photographed

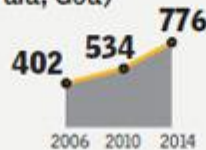
1,950 tigers estimated from camera-trap areas alone

276 tigers estimated through extrapolation, scat analysis etc

▲ 37%
Shivalik-Gangetic Plain (Uttarakhand, UP, Bihar)



▲ 45%
Western Ghats (Karnataka, TN, Kerala, Goa)



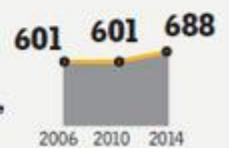
▲ 36%
NE hills & Brahmaputra floodplains (Assam, Arunachal, Mizoram, north WB, NE hills & Brahmaputra)



▲ 9%
Sundarbans



▲ 14%
Central India & Eastern Ghats (AP, C'garh, MP, Maharashtra, Odisha, Rajasthan, Jharkhand)



Q.14) Government of India in collaboration with the Norwegian Government has established a “Centre for Biodiversity Policy and Law (CEBPOL)” in the National Biodiversity Authority (NBA), Chennai. Which of the following activities will be undertaken by CEBPOL?

1. Collect, collate, analyse and disseminate information relating to biodiversity policy and law at regional, national and international levels.
2. Execute short and long-term training courses and sensitisation programmes on biodiversity policies and laws for various target groups.
3. Prepare for the Government of India, country position papers on various aspects relating to biodiversity policies and law for international meetings and negotiations.

Select the code from following:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) All of the above

Q.14) Solution (d)

Government of India in collaboration with the Norwegian Government has established a “Centre for Biodiversity Policy and Law (CEBPOL)” in the National Biodiversity Authority (NBA), Chennai, to develop professional expertise in biodiversity policies and laws and develop capacity building. This Centre is focusing on biodiversity policies and laws that cater to the needs of national and international rule-making and subsequent implementation on issues of biodiversity.

Activities of CEBPOL

- Collect, collate, analyse and disseminate information relating to biodiversity policy and law at regional, national and international levels
- Execute short and long-term training courses and sensitisation programmes on biodiversity policies and laws for various target groups including natural resource managers, administrators, decision makers, civil society, media representatives, scientific community, judiciary, academicians and elected public representatives.
- Engage consultants, policy analysts, legal experts and interns on both short-term and long-term basis for providing professional inputs in the training, research, education, analysis and awareness activities of the CEBPOL.
- Prepare for the Government of India, country position papers on various aspects relating to biodiversity policies and law for international meetings and negotiations.

- Establish appropriate linkages with other similar centres / institutions, both nationally and internationally, for developing collaborative programmes and academic exchange in furtherance of the objectives of CEBPOL.

Think

- National Biodiversity Authority

Q.15) The Great Hornbill, *Buceros bicornis*, is a near threatened species, and is on the IUCN red list. Which of the following statements is NOT true about them?

- a) It's the State bird of both Arunachal Pradesh and Kerala
- b) They are unique to the Western Ghats
- c) Sound of their take off is akin to the start of the steam locomotive of the Nilgiri Mountain Railway
- d) None

Q.15) Solution (b)

Why in News?

Great Hornbill, commonly found in many parts of the Blue Mountains flying from one tree to another, may in a matter of time become extremely rare if habitat loss continues at the rate at which it has been happening for sometime now.

The magnificent birds which were also a common sight in the evergreen rain forests of the Western Ghats are now forced, due to deforestation, to adapt themselves to hollows in silver oak trees which form part of thick coffee plantations in Singara and Moyar and some tea plantations in the lower part of the hills.

Do you know?

- Its take off sound is akin to the start of the steam locomotive of the Nilgiri Mountain Railway.
- Hornbills are mostly dependent on wild berries.
- The birds which follow a unique nesting style are also being targeted by poachers for their meat and casques.

Q.16) Recent studies have shown that all citrus species available today came from the foothills of this mountain stretch? Which one are we talking about?

- a) The Andes
- b) The Appalachian mountains
- c) The Himalayas
- d) The Alps

Q.16) Solution (c)

When life gives you lemons, blame the Himalayas, as they are the birthplace of all the citrus fruits of the world.

Genomic (DNA study), phylogenetic (study of evolution) and bio-geographic (study of migration and distribution of species through time) studies have now proved that all citrus species available today came from the south-east foothills of the Himalayas, specifically the eastern area of Assam, northern Myanmar and western Yunnan in China.

An international team of over 15 scientists studied 60 diverse species of citrus, including lemons, oranges and grapefruit, and concluded that the fruit fundamentally had just three ancestors. "It is like creating an immense jigsaw puzzle that overlaps to some degree, and then assembling these pieces into larger groups, and assembling the larger groups into even larger parts of the genome," said Frederick Gmitter from the Citrus Research and Education Centre, University of Florida, in a release.

The paper, published in Nature on February 7, describes the origin, evolution and domestication of citrus fruits. They noted that a fossil specimen from Yunnan that dates back to about 8 million years ago has similar traits to modern ones.

<http://www.thehindu.com/sci-tech/energy-and-environment/on-the-origin-of-oranges/article22713163.ece>

Q.17) Scientists believe more than 75% of creatures in the ocean use this mechanism to lure, intimidate, stun, mislead, find mates and thrive. Which process are we talking about?

- a) Chemiluminescence
- b) Bioluminescence
- c) Phosphorescence
- d) Biofluorescence

Q.17) Solution (b)

Scientists find that 76% of creatures in the ocean use light to lure, intimidate, stun, mislead, find mates and thrive.

The living lights emanated from tiny fish with needle-like fangs, and gelatinous brutes with thousands of feeding tentacles. The sheer variety suggested that bioluminescence was fairly common, but no scientist came up with a measurement of the phenomenon.

Now, scientists have succeeded in gauging the actual extent of bioluminescence in the deep ocean.

During 240 research dives in the Pacific, they recorded every occurrence and kind of glowing sea creature — more than 500 types living down as deep as 3 km. The team merged the results into a comprehensive survey. The result? Most of the creatures — a stunning 76% — made their own light, vastly outnumbering the ranks of the unlit, such as dolphins.

Q.18) Consider the following statements in regard to Aquatic Ecosystem:

1. Neustons are unattached organisms which live at the air-water interface
2. Nektons are organisms which remain attached to stems and leaves of rooted plants and substances emerging above the bottom mud
3. Planktons includes both microscopic plants like algae and animals like crustaceans and protozoans
4. Benthos or benthic organisms are those found living in the bottom of the water mass

Which of the above given statement(s) is/are correct?

- a) 3 and 4 only
- b) 1, 2 and 4 only
- c) 1, 3 and 4 only
- d) All of the above

Q.18) Solution (c)

Neustons are unattached organisms which live at the air-water interface such as floating plants

Periphytons are organisms which remain attached to stems and leaves of rooted plants and substances emerging above the bottom mud such as sessile algae and their associated group of animals

Planktons includes both microscopic plants like algae (phytoplanktons) and animals like crustaceans and protozoans (zooplanktons) found in all aquatic ecosystems, except certain swift moving waters.

Nektons are groups which contains animals which are swimmers

Benthos or benthic organisms are those found living in the bottom of the water mass

Q.19) Consider the below statements and select the correct statement from the codes given below:

1. When succession is brought about by living inhabitants of that community itself, the process is called Autotrophic succession
2. When succession is brought about by outside forces is known as Allogenic succession.

Choose the correct answer:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.19) Solution (b)

Ecological succession is the process of change in the species structure of an ecological community over time. The time scale can be decades (for example, after a wildfire), or even millions of years after a mass extinction.

Autogenic and Allogenic Succession

- When succession is brought about by living inhabitants of that community itself, the process is called autogenic succession, while change brought about by outside forces is known as allogenic succession.

Autotrophic and Heterotrophic succession

- Succession in which, initially the green plants are much greater in quantity is known as autotrophic succession; and the ones in which the heterotrophs are greater in quantity is known as heterotrophic succession.

Q.20) Consider the following about Coral Reefs:

1. Snowflake coral is posing a major threat to the coral reef colonies in the Gulf of Mannar, Gulf of Kutch and the Sunderban Islands.
2. It can destabilize the marine ecosystem because it may crowd out other species like corals, sponges, algae, ascidians that contribute to the rich marine biodiversity of the region.

Choose the correct option

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.20) Solution (b)

Since Sunderban Islands does not have corals (as they don't meet the criteria for coral survival as mentioned below), statement (1) is wrong.

Coral reefs are restricted to narrow latitudinal, horizontal, and vertical ranges along the tropical continental shelves. Their contribution to global coastal biodiversity is disproportionate to their spatial extent: Although they cover less than 1% of the world's oceans, they are inhabited by one-third of globally known marine species.

Do you know?

What Do Coral Reefs Need to Survive?

1. **Sunlight:** Corals need to grow in shallow water where sunlight can reach them. Corals depend on the zooxanthellae (algae) that grow inside of them for oxygen and other things, and since these algae needs sunlight to survive, corals also need sunlight to survive. Corals rarely develop in water deeper than 165 feet (50 meters).
2. **Clear water:** Corals need clear water that lets sunlight through; they don't thrive well when the water is opaque. Sediment and plankton can cloud water, which decreases the amount of sunlight that reaches the zooxanthellae.
3. **Warm water temperature:** Reef-building corals require warm water conditions to survive. Different corals living in different regions can withstand various temperature fluctuations. However, corals generally live in water temperatures of 68–90° F or 20–32° C.
4. **Clean water:** Corals are sensitive to pollution and sediments. Sediment can create cloudy water and be deposited on corals, blocking out the sun and harming the polyps.

Wastewater discharged into the ocean near the reef can contain too many nutrients that cause seaweeds to overgrow the reef.

5. **Saltwater:** Corals need saltwater to survive and require a certain balance in the ratio of salt to water. This is why corals don't live in areas where rivers drain fresh water into the ocean ("estuaries").

Q.21) Consider the following pairs in relation to schedules under Wildlife Protection Act, 1972:

Schedule :: Description

1. Schedule I :: includes the animals which may be hunted
2. Schedule II and III :: provides for absolute protection of species and high penalties
3. Schedule IV and V :: species are also protected, but the penalties are much lower
4. Schedule VI :: includes plants that are prohibited for cultivation and planting

Which of the pairs given above is/are incorrectly matched?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) 1, 2 and 3

Q.21) Solution (d)

The Wildlife Protection Act, 1972 is an Act of the Parliament of India enacted for protection of plants and animal species.

The Act provides for the protection of wild animals, birds and plants; and for matters connected therewith or ancillary or incidental thereto.

Among other reforms, the Act established schedules of protected plant and animal species; hunting or harvesting these species was largely outlawed.

It has six schedules which give varying degrees of protection.

- Schedule I and part II of Schedule II provide absolute protection - offences under these are prescribed the highest penalties.
- Species listed in Schedule III and Schedule IV are also protected, but the penalties are much lower.
- Schedule V includes the animals which may be hunted.

- The plants in Schedule VI are prohibited from cultivation and planting.

Q.22) Consider the following statements about 'FoSCoRIS'

1. It is launched by the Ministry of Food Processing Industries
2. It ensures that Indian food businesses comply with food safety and hygiene standards

Select the correct statements

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.22) Solution (b)

In a bid to ensure that Indian food businesses comply with food safety and hygiene standards in an effective and transparent manner, the Food Safety and Standards Authority of India (FSSAI) has directed states to implement a web-based real-time inspection platform for food safety officers (FSOs).

'Food Safety Compliance through Regular Inspections and Sampling' (FoSCoRIS)

Basic objectives of the FoSCoRIS Application are:

- To create a district wise and state wise food safety Compliance matrix of the country.
- Create a Food safety compliance verification platform.
- To reduce the time of Inspection process and action initiated.
- To build a transparent system within the inspections framework.
- Create a platform to authenticate and validate the inspection reports.
- To ensure that the inspections are actually done and without any deviations.
- The process shall initiate Quick Response during Food Safety Emergencies.

It uses instant geo-tagging, time stamping, real-time data collection and multiple levels of verification and can be used via hand-held devices like mobile phones and tablets.

Source: <https://www.livemint.com/Home-Page/M1XMzWJtkQwGqDYGXjqGHN/Use-webbased-inspection-platform-FSSAI-tells-states.html>

Q.23) The Trade and Development Report (TDR) is released by

- a) World Economic Forum
- b) World Bank
- c) UNCTAD
- d) World Trade Organisation

Q.23) Solution (c)

The Trade and Development Report (TDR), launched in 1981, is issued every year for the annual session of the Trade and Development Board.

The Report analyses current economic trends and major policy issues of international concern, and makes suggestions for addressing these issues at various levels.

The 2017 report was titled 'Beyond austerity — towards a global new deal'

Source: <https://www.thehindubusinessline.com/economy/policy/india-china-unlikely-to-be-growth-poles-for-global-economy-unctad-report/article9860055.ece>

Q.24) Parali I island, one of biodiversity-rich uninhabited islands has disappeared due to coastal erosion. Where is it located?

- a) Andaman
- b) Lakshadweep
- c) Odisha Coast
- d) Gulf of Khambhat

Q.24) Solution (b)

Parali I island, part of Bangaram atoll, which had an area of 0.032 sq.km in 1968 has been completely eroded, resulting in its inundation.

Source: <http://www.thehindu.com/todays-paper/tp-life/lakshadweep-island-parali-i-has-vanished/article19633348.ece>

Q.25) Consider the following statements about Interconnection Usage Charge (IUC)

1. It is a charge payable by a service provider, whose subscriber originates the call, to the service provider in whose network the call terminates

2. Only calls made via wireless to wireless devices attract IUC in India
3. IUC is regulated by Telecom Regulatory Authority of India

Select the correct statements

- a) 1 Only
- b) 1 and 3
- c) 1, 2 and 3
- d) 1 and 2

Q.25) Solution (c)

Currently only calls made via wireless to wireless devices attract IUC in India.

The term 'interconnection' refers to an arrangement under which telecom players connect their equipment, networks and services with other Telecom Services Providers. The regulator, TRAI, addresses the various issues related to interconnection arrangements. It also regulates the IUC.

This is a charge payable by a service provider, whose subscriber originates the call, to the service provider in whose network the call terminates. In a calling-party pays regime (CPP), if you originate a call, you pay your access provider, who in turn pays termination charges to the network you placed the call. This is paid to cover the network usage costs as the operator, on whose network the call terminates, carries the call on its network to the customers. This requires infrastructure investment. Thus, IUC ensures operators make appropriate investments to carry voice calls without terminations.

Source: <https://www.thehindubusinessline.com/opinion/columns/slate/all-you-wanted-to-know-aboutinterconnection-usage-charge/article9833749.ece>

Q.26) Consider the following statements about Central Adoption Resource Authority (CARA)

1. It is a statutory body
2. It is under the aegis of Ministry of Women & Child Development
3. It deals with inter-country adoptions according to Hague Convention on Inter-country Adoption

Select the correct statements

- a) 1 and 2
- b) 2 and 3

- c) 1 and 3
- d) All of the above

Q.26) Solution (d)

Central Adoption Resource Authority (CARA) is a statutory body of Ministry of Women & Child Development, Government of India. It functions as the nodal body for adoption of Indian children and is mandated to monitor and regulate in-country and inter-country adoptions. CARA is designated as the Central Authority to deal with inter-country adoptions in accordance with the provisions of the Hague Convention on Inter-country Adoption, 1993, ratified by Government of India in 2003.

CARA primarily deals with adoption of orphan, abandoned and surrendered children through its associated /recognised adoption agencies

CARA has started a monthly “Jan Sampark” program to enable the public to have interaction with its officials and staff for seeking information related to Adoption as well as flagging their concerns.

Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=171184>

