Q.1) Which of the following leaf modifications occur(s) in the desert areas to inhibit water loss?

1. Hard and waxy leaves
2. Tiny leaves
3. Thorns instead of leaves

Select the correct answer using the code given below:

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

Q.1) Solution (d)

Xerophytic Vegetation – Conservation of Water Modifications

- Special characteristics to withstand very high rate of evaporation.
- Long roots, thick barks, waxy leaves, thorns and little leaves.

Q.2) How is the National Green Tribunal (NGT) different from the Central Pollution Control Board (CPCB)?

1. The NGT has been established by an Act whereas the CPCB has been created by an executive order of the Government.
2. The NGT provides environmental justice and helps reduce the burden of litigation in the higher courts whereas the CPCB promotes cleanliness of streams and wells, and aims to improve the quality of air in the country.

Which of the statements given above is/are correct?

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

Q.2) Solution (b)

CPCB - Water (Prevention and Control of Pollution) Act, 1974

Functions of the CPCB, as spelt out in the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981

- To promote cleanliness of streams and wells in different areas

NGT

- Set up in 2010 under the NGT Act, 2010, for the purpose of effective and expeditious disposal of cases relating to environmental protection.
- It shall not be bound by the procedure laid down under the Code of Civil Procedure, 1908, but shall be guided by principles of natural justice.
- It is mandated to make an endeavor for disposal of applications or appeals finally within 6 months of filing

Q.3) Which of the following statements best describes "carbon fertilization"?

a) Increased plant growth due to increased concentration of carbon dioxide in the atmosphere
b) Increased temperature of Earth due to increased concentration of carbon dioxide in the atmosphere
c) Increased acidity of oceans as a result of increased concentration of carbon dioxide in the atmosphere
d) Adaptation of all living beings on Earth to the climate change brought about by the increased concentration of carbon dioxide in the atmosphere

Q.3) Solution (a)

It is the increased the rate of photosynthesis in plants that results from increased levels of carbon dioxide in the atmosphere. The effect varies depending on the plant species, the temperature, and the availability of water and nutrients. However, enhanced rates of photosynthesis in plants due to CO2 fertilization are only partially transferred to enhanced plant growth.

One related trend may be what has been termed "Arctic greening". Scientists have been finding, that as northern portions of the planet warm up even as total atmospheric carbon dioxide increases, there's been an increase in plant growth in these regions.

Q.4) With reference to the 'Global Alliance for Climate Smart Agriculture (GACSA)', which of the following statements is/are correct?

1. GACSA is an outcome of the Climate Summit held in Paris in 2015.
2. Membership of GACSA does not create any binding obligations.
3. India was instrumental in the creation of GACSA.

Select the correct answer using the code given

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

Q.4) Solution (b)

If it were associated with India, you would have read about it in newspapers/magazines.

So considering statement 3 as wrong, you get the answer as (b) 2 Only.

GACSA is an inclusive, voluntary and action-oriented multi-stakeholder platform on Climate-Smart Agriculture (CSA).

Its vision is to improve food security, nutrition and resilience in the face of climate change. GACSA aims to catalyse and help create transformational partnerships to encourage actions that reflect an integrated approach to the three pillars of CSA.

Q.5) Which of the following best defines the permaculture?

a) Permaculture is a system of agriculture and aquaculture within the ecological carrying capacity of the region.
b) Permaculture is a system of agricultural and social design principles centered on simulating or directly utilizing the patterns and features observed in natural ecosystems.
c) Permaculture is a system of agriculture and agro based industry developing side by side.
d) None

Q.5) Solution (b)

It is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious

integration of landscape and people —providing their food, energy, shelter, and other material and non-material needs in a sustainable way. The term was coined by Bill Mollison in 1978.

Q.6) Identify the incorrect pair from the below:

(Financial Mechanism) : : (Associated Convention)

a) Green Climate Fund (GCF) : : COP 16 held in Cancun
b) Global Environment Facility (GEF) Fund : : eve of the 1992 Rio Earth Summit
c) Special Climate Change Fund (SCCF) : : Kyoto Protocol in 2001
d) Adaptation Fund (AF) : : Paris Convention 2015

Q.6) Solution (d)

Adaptation Fund (AF) was established in 2001 to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change.

The Adaptation Fund is financed with a share of proceeds from the clean development mechanism (CDM) project activities and other sources of funding. The share of proceeds amounts to 2 per cent of certified emission reductions (CERs) issued for a CDM project activity.

The Adaptation Fund is supervised and managed by the Adaptation Fund Board (AFB). The AFB is composed of 16 members and 16 alternates and meets at least twice a year.

Q.7) Consider the following statements and select the correct one:

a) Decreasing levels of ozone in the stratosphere will lead to reduction in the levels of smog in major cities.
b) Decreasing levels of ozone in the stratosphere will lead to increase in the occurrence of skin cancer in humans.
c) Decreasing levels of ozone in the stratosphere will lead to reduction in rate of global warming.
d) Decreasing levels of ozone in the stratosphere will lead to increase in photosynthetic activity of phytoplankton.

Q.7) Solution (b)

Ground-level ozone is involved with smog formation, not ozone in the stratosphere.

While tropospheric ozone is considered a greenhouse gas, stratospheric ozone is not thought to have a significant effect on global warming.

Decreasing levels of stratospheric ozone result in increased levels of ultraviolet radiation reaching the ocean, which may inhibit phytoplankton photosynthetic activity in surface waters. The increased levels of ultraviolet radiation can also negatively affect human health.

Q.8) Consider the following statements regarding Bio indicators:

1. A bio indicator is a living organism that gives us an idea of the health of an ecosystem.
2. Only microorganisms act as bio indicators.

Which of the above statements are correct?

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

Q.8) Solution (a)

A bio indicator is a living organism that gives us an idea of the health of an ecosystem. Some organisms are very sensitive to pollution in their environment, so if pollutants are present, the organism may change its morphology-physiology or behaviour, or it could even die.

The information can be deduced through the study of:

1. their content of certain elements or compounds
2. their morphological or cellular structure
3. metabolic biochemical processes
4. behaviour
5. population structure(s)

Bio indicators can be plants, animals or microorganisms

There are several types of plant and fungi bio monitors, including mosses, lichens, tree bark, bark pockets, tree rings, leaves, and fungi. Amphibians, particularly anurans which consist of frogs and toads, are increasingly used as bio indicators of contaminant accumulation in pollution studies.

Q.9) Bay of Bengal hosts a 'dead zone' of around 60,000 square kilometres. Which of the following statements correctly defines a dead zone?

a) It is a region which is almost devoid of dissolved oxygen.
b) It is a region where population of fish has become almost nil because of over fishing.
c) It is a region where the population of predator exceeds the prey.
d) It is a zone of dying coral reefs.

Q.9) Solution (a)

'Dead Zone'

- Less oxygen dissolved in the water is often referred to as a "dead zone" because most marine life either dies, or, if they are mobile such as fish, leave the area.
- There are many physical, chemical, and biological factors that combine to create dead zones, but nutrient pollution is the primary cause of those zones created by humans.
- Excess nutrients that run off land or are piped as wastewater into rivers and coasts can stimulate an overgrowth of algae, which then sinks and decomposes in the water.
- The decomposition process consumes oxygen and depletes the supply available to healthy marine life.
- Dead zones occur in many areas of the country, particularly along the East Coast, the Gulf of Mexico, and the Great Lakes, but there is no part of the country or the world that is immune. The second largest dead zone in the world is located in the U.S., in the northern Gulf of Mexico.
- Until now, there have been only three major identified dead zones – two in the eastern tropical Pacific (off Peru/Chile and Mexico) and one in the Arabian Sea. Bay of Bengal is the new in the list.

Q.10) Western Ghats has very rich biodiversity as compared to Eastern Ghats, because -

1. Western Ghats are continuous mountains.
2. Western Ghats is area of high orographic precipitation.
3. Many major rivers have its source at Western Ghats.

Select the correct answer using the codes given below:

a) 2 only
b) 2 and 3 only
c) 1 and 3 only

d) 1, 2 and 3

Q.10) Solution (d)

Western Ghats are continuous mountains from south Kerala to Maharashtra. Its average height is also very high at more than 1000m. But Eastern Ghats is not that much continuous being split by many major rivers. Its average height is around 600m.

Usually more biodiversity is found in tropical rainforests which receives very heavy annual rainfall. During southwest monsoon Western Ghats acts as a barrier for the moisture winds from Arabian Sea causing very heavy rainfall. Hence Western Ghats is full of rainforests.

But Eastern Ghats is parallel to the north east monsoon winds. So rainfall is low compared to Western Ghats.

Southwest monsoon rainfall acts as source for many major rivers which makes it very fertile forming rainforests. These rainforests in Western Ghats acts as a home for more flora and fauna. This is the reason for more biodiversity in Western Ghats

Q.11) Consider the following statements about Animal Welfare Board of India.

1. The Animal Welfare Board of India is a statutory advisory body.
2. The Animal Welfare Board of India set up in 1962, in accordance with Wildlife (Protection) Act 1972.

Which of the above statements is/are correct?

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

Q.11) Solution (a)

The Animal Welfare Board of India is a statutory advisory body on Animal Welfare Laws and promotes animal welfare in the country.

The Animal Welfare Board of India, the first of its kind to be established by any Government in the world, was set up in 1962, in accordance with Section 4 of the Prevention of Cruelty to Animals Acts 1960.

Shrimati Rukminl Devi Arundale pioneered the setting up of the Board, with its Headquarters at Chennai. She guided the activities of the Board for nearly twenty years till her demise in 1986.

Q.12) The Earth Summit resulted in which of the following documents

1. Rio Declaration on Environment and Development
2. Agenda21
3. Forest Principles

Select the correct answer using the codes given below.

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

Q.12) Solution (d)

United Nations Conference on Environment and Development (UNCED) Also known as the Rio Summit, Rio Conference, Earth Summit held in Rio de Janeiro in June 1992.

The Earth Summit resulted in the following documents:

- Rio Declaration on Environment and Development
- Agenda21
- Forest Principles

The Earth Summit resulted two important legally binding agreements

- Convention on Biological Diversity
- Framework Convention on Climate Change (UNFCCC)

Q.13) Megadiverse Nation status is conferred by Conservation International. Which of the following statements are correct regarding Megadiverse countries?

1. They should have 0.5% of the total species of vascular plants or 1000 endemic vascular plant species.
2. They should have a marine ecosystem.
3. India is a Megadiverse country.

Select the code from following:

a) 1 and 2
b) 2 and 3
c) 3 only
d) None of the above

Q.13) Solution (b)

Megadiversity Country

The term megadiverse country refers to any one of a group of nations that harbour the majority of Earth's species and high numbers of endemic species. Conservation International identified 17 megadiverse countries in 1998. Many of them are located in, or partially in, tropical or subtropical regions.

Mega diversity means exhibiting great diversity. The main criteria for megadiverse countries is endemism at the level of species, genera and families. A megadiverse country must have at least 5,000 species of endemic plants and must border marine ecosystems.

In alphabetical order, the 17 megadiverse countries are:

- Australia
- Brazil
- China
- Colombia
- Democratic Republic of the Congo
- Ecuador
- India
- Indonesia
- Madagascar
- Malaysia
- Mexico
- Papua New Guinea
- Peru
- Philippines
- South Africa
- United States of America
- Venezuela

Q.14) With reference to 'Algal Blooms', which of the following statements is/are correct?

1. They are always harmful for aquatic ecosystem.
2. They are called 'Red Tides'.
3. Algal blooms can occur in freshwater as well as marine environments.

Select the correct answer using the code given below.

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

Q.14) Solution (c)

Not all algal blooms are harmful, some can actually be beneficial. Phytoplankton (Algae) are found at the base of the marine food chain therefore all other life in the ocean relies on phytoplankton. Blooms can also be a good indicator of environmental change not only in the water, but also on land. Algal blooms may occur in freshwater as well as marine environments.

Algal blooms are commonly called as red tides because many times, they turn water red. However, algal blooms could be of other colours as well like green, blue, red or brown. Thus, scientists prefer the term - harmful algal bloom.

Q.15) Which of the following statements correctly explains the term 'Saprotroph'?

a) This is the name given to the organisms which produce their own food without sunlight.
b) It is an organism which feeds on decaying organic matter.
c) This is the name given to highest consumer in a food chain.
d) It is a primary food producer in marine food chain.

Q.15) Solution (b)

The detritus food chain (DFC) begins with dead organic matter. It is made up of decomposers which are heterotrophic organisms, mainly fungi and bacteria. They meet their energy and nutrient requirements by degrading dead organic matter or detritus.

These are also known as saprotrophs (sapro: to decompose). Decomposers secrete digestive enzymes that breakdown dead and waste materials into simple, inorganic materials, which are subsequently absorbed by them.

Q.16) Consider the following statements with reference to Wetlands:

1. Wetlands exist in every country and in every climatic zone, from the Polar Regions to the tropics, from high altitudes to dry regions.
2. Mangroves, peat lands, rice fields and even coral reefs can be considered a wetland.

Which of the statements given above is/are correct?

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

Q.16) Solution (c)

According to standard definition, "Wetlands occur where water meets land. They include mangroves, peatlands and marshes, rivers and lakes, deltas, floodplains and flooded forests, rice-fields, and even coral reefs. Wetlands exist in every country and in every climatic zone, from the polar regions to the tropics, from high altitudes to dry regions."

Q.17) Which among the following are likely to increase after large areas of tropical rain forests are cut down?

1. Erosion by rivers flowing through the areas
2. Rate of nutrient loss from the areas
3. Species diversity of the areas
4. Average surface temperature of the soil in the areas

Select the correct code:

a) 1 and 2 only
b) 1, 2 and 4
c) 1, 3 and 4
d) 1, 2, 3 and 4

Q.17) Solution (b)

If large areas of tropical rain forests are cut down, it is likely to increase the rate of nutrient loss from the areas; increase the average surface temperature of the soil in the areas and also there will be increase in soil erosion.

However, the continuing loss of the diverse habitats found in tropical rain forests will cause a decrease in species diversity, not an increase. Hence, option (b) is correct answer.

Q.18) In the context of solving pollution problems, what is/are the advantage(s) of bioremediation technique?

1. It is a technique for cleaning up pollution by enhancing the same biodegradation
2. Any contaminant with heavy metals such as cadmium and lead can be readily and completely treated by bioremediation using microorganisms.
3. Genetic engineering can be used to create microorganisms specifically designed for bioremediation.

Select the correct answer using the correct codes given below:

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

Q.18) Solution (c)

Bioremediation is the use of microorganisms (bacteria and fungi) to degrade the environmental contaminants into less toxic forms.

Statement 1:

- In-situ Bioremediation techniques: It involves treatment of the contaminated material at the site. Such as: Bioventing; Biosparging; Bioaugmentation
- Ex-situ Bioremediation techniques: It involves removal of the contaminated material to be treated elsewhere. Such as: Landfarming; Biopiles; Bioreactors; Composting.

Statement 2:

- Disadvantage of bioremediation is that it is limited to those compounds that are biodegradable.
- Not all compounds are susceptible to rapid and complete degradation.

Statement 3:

- Genetic engineering is also one of the approaches under which Phytoremediation that is using of plants to remove contaminants from soil and water.

Q.19) Biosphere reserves are demarcated into following 3 inter-related zones-Core zones, Buffer Zones and Transition Zone. A core zone being National Park or Sanctuary is regulated under which of the following acts?

a) Environmental Protection Act, 1986
b) Wildlife Protection Act, 1972
c) Biodiversity Act, 2002
d) The Forest (Conservation) Act, 1980

Q.19) Solution (b)

Biosphere reserves are demarcated into following 3 inter-related zones:

Core Zone: Core zone 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 having exceptional scientific interest.

A core zone being National Park or Sanctuary regulated under the Wildlife (Protection) Act, 1972. Whilst realizing that perturbation is an ingredient of ecosystem functioning, the core zone is to be kept free from l human pressures external to the system.

Buffer Zone: The buffer zone, adjoins or surrounds core zone, uses and activities are managed in this area in the ways that help in protection of core zone in its natural condition.

These uses and activities include restoration, demonstration sites for enhancing value addition to the resources, limited recreation, tourism, fishing, grazing, etc; 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 continue if these do not adversely affect the ecological diversity.

Transition Zone: The transition area 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 characteristics of the region.

Q.20) According to IUCN, which of the following species is not critically endangered?

a) Malabar Civet
b) Hangul
c) Pygmy Hog
d) Blackbuck

Q.20) Solution (d)

According to IUCN status, Blackbuck is least concerned specie. However, it is in Schedule I of Wildlife protection act because of its cultural and religious significance.

Q.21) Consider the below statements with regard to Under2 Coalition and identify the correct statement:

a) It is a group of ambitious governments from around the world committed to combating climate change.
b) It is in relation to limiting the use of plastic which are above 2 microns.
c) It is in relation to limiting the use of plastic and plan policy on alternatives.
d) It deals with conservation of Antarctica and Antarctic

Q.21) Solution (a)

The Under2 Coalition is a group of ambitious governments from around the world committed to combating climate change. A total of 205 jurisdictions representing 43 countries and six continents have signed or endorsed the climate agreement, known as the Under2 MOU (Memorandum of Understanding)

The goal of limiting warming to below 2° Celsius, which the Intergovernmental Panel on Climate Change (IPCC) scientists say is needed to avoid dangerous consequences.

The Under2 Coalition's shared goal of limiting greenhouse gas emissions to 2 tons per capita, or 80-95% below 1990 level by 2050.

Q.22) Which of the following are classified as 'Lotic Ecosystem'?

1. Brooks
2. Springs
3. Lakes
4. Rivers

Select the correct code

a) 1 and 3
b) 1, 2 and 4
c) 3 only
d) 2 and 4

Q.22) Solution (b)

A Lotic Ecosystem has flowing waters. Examples include: creeks, streams, runs, rivers, springs, brooks and channels.

A Lentic Ecosystem has still waters. Examples include: ponds, basin marshes, ditches, reservoirs, seeps, lakes, and vernal / ephemeral pools.

Q.23) The term `Extended Producer Responsibility' is often seen in the news related to

a) Ecosystems services provided by Biodiversity
b) Waste management
c) Marine fishing
d) Mining and Metallurgy

Q.23) Solution (b)

In the field of waste management, extended producer responsibility (EPR) is a strategy designed to promote the integration of environmental costs associated with goods throughout their life cycles into the market price of the products.

Extended producer responsibility legislation is a driving force behind the adoption of remanufacturing initiatives as it "focuses on the end-of-use treatment of consumer products and has the primary aim to increase the amount and degree of product recovery and to minimize the environmental impact of waste materials".

Q.24) Consider the following statements about 'Net Present Value [NPV] Of Forest'.

1. It is defined under Forest Rights Act 2006.
2. It is calculated for a period of 50 years.
3. It is the amount paid by the project proponent for diverting land for non-forest use to compensate the loss in ecosystem services.

Which of the above statements is/are correct?

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

Q.24) Solution (b)

NET PRESENT VALUE [NPV] of FOREST

- It is defined under Forest (Conservation) Act of 1980.
- It is the amount paid by the project proponent for diverting land for non-forest use to compensate the loss in ecosystem services.
- It is calculated for a period of 50 years.
- For NPV estimation forests are categorized into six eco-classes, or forest types, and three canopy cover density classes—very dense forest, moderately dense forest and open forest

Q.25) Consider the following statements about Basel Convention:

1. It is an international treaty that was designed to reduce the movements of hazardous waste between nations.
2. It specifically focuses on to prevent transfer of hazardous waste from developed to less developed countries (LDCs).
3. It also addresses the movement of radioactive waste between different nations.

Select the correct code:

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

Q.25) Solution (a)

Basel Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations.

It specifically focuses on to prevent transfer of hazardous waste from developed to less developed countries (LDCs).

It does not, however, address the movement of radioactive waste.

Q.26) Consider the following statements regarding Cartagena Protocol:

1. The protocol seeks to protect biodiversity from environmental threats like acid rain, pollution, land degradation etc.
2. It allows member countries to ban imports of genetically modified organisms if they feel that there is not enough scientific evidence that the product is safe.

Which of the above statements is/are correct?

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

Q.26) Solution (b)

Cartagena Protocol on Biosafety

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement on biosafety as a supplement to the Convention on Biological Diversity effective since 2003. The Biosafety Protocol seeks to protect biological diversity from the potential risks posed by genetically modified organisms resulting from modern biotechnology.

The Biosafety Protocol makes clear that products from new technologies must be based on the precautionary principle and allow developing nations to balance public health against economic benefits. It will for example let countries ban imports of genetically modified organisms if they feel there is not enough scientific evidence that the product is safe and requires exporters to label shipments containing genetically altered commodities such as corn or cotton.

Objective

- The objective of the Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of 'living modified organisms resulting from modern biotechnology' that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements

Living Modified Organism

The protocol defines a 'living modified organism' as any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology, and 'living organism' means any biological entity capable of transferring or replicating genetic material, including sterile organisms, viruses and viroids. 'Modern biotechnology' is defined in the Protocol to mean the application of in vitro nucleic acid techniques, or fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and are not techniques used in traditional breeding and selection. 'Living modified organism (LMO) Products' are defined as processed material that are of living modified organism origin, containing detectable novel combinations of replicable

genetic material obtained through the use of modern biotechnology. Common LMOs include agricultural crops that have been genetically modified for greater productivity or for resistance to pests or diseases. Examples of modified crops include tomatoes, cassava, corn, cotton and soybeans. 'Living modified organism intended for direct use as food or feed, or for processing (LMO-FFP)' are agricultural commodities from GM crops. Overall the term 'living modified organisms' is equivalent to genetically modified organism – the Protocol did not make any distinction between these terms and did not use the term 'genetically modified organism.'

Q.27) Consider the following statements about The Partnership for Land Use Science (Forest-PLUS)

1. It is a joint programme by Ministry of Environment, Forest and Climate Change and United Nations Environment Programme (UNEP)
2. It is aimed at strengthening the capacity for REDD (Reducing Emissions from Deforestation and Forest Degradation) implementation in India

Select the correct statements

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

Q.27) Solution (b)

The Partnership for Land Use Science (Forest-Plus) is a joint programme by the United States Agency for International Development (USAID) and Ministry of Environment, Forest and Climate Change (MoEF&CC) to strengthen capacity for REDD (Reducing Emissions from Deforestation and Forest Degradation) implementation in India.

The programme brings together experts from India and the United States to develop technologies, tools and methods of forest management to meet the technical challenges of managing forests for the health of ecosystem, carbon stocks, biodiversity and livelihood.

Q.28) Consider the following statements about 'Silai/Sal Tree'

1. It is found in both the Eastern Ghats and Western Ghats
2. The dry leaves of the tree are a major source for the production of leaf plates
3. Oil extracted from the seeds of the tree is used as edible oil

Select the correct statements

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

Q.28) Solution (b)

Sal seeds and fruit are a source of lamp oil and vegetable fat. The seed oil is extracted from the seeds and used as cooking oil after refining.

Sal is one of the most important sources of hardwood timber in India, with hard, coarse-grained wood that is light in colour when freshly cut, but becomes dark brown with exposure. The wood is resinous and durable, and is sought-after for construction, although not well suited to planing and polishing. The wood is especially suitable for constructing frames for doors and windows.

The dry leaves of sal are a major source for the production of leaf plates called as patravali and leaf bowls in northern and eastern India.

This tree is native to the Indian subcontinent, ranging south of the Himalaya, from Myanmar in the east to Nepal, India and Bangladesh. In India, it extends from Assam, Bengal, Odisha and Jharkhand west to the Shivalik Hills in Haryana, east of the Yamuna. The range also extends through the Eastern Ghats and to the eastern Vindhya and Satpura ranges of central India. It is often the dominant tree in the forests where it occurs.

Q.29) Consider the following statements about 'Global Partnership on Wildlife Conservation and Crime Prevention for Sustainable Development'

1. It is funded by the Global Environment Facility (GEF)
2. It is focused on countries from Asia, South America and Africa
3. It was established during the Gaborone Convention

Select the correct statements

a) 1 Only
b) 1 and 2
c) 1 and 3
d) None of the above

Q.29) Solution (a)

Global Partnership on Wildlife Conservation and Crime Prevention for Sustainable Development" program also known as the Global Wildlife Program (GWP)

The GWP, initiated in 2015, is a World-Bank led partnership of 19 countries to promote the conservation and sustainable development by combating trafficking in wildlife.

It is funded by GEF.

In Africa, the GWP has programs in Botswana, Cameroon, Ethiopia, Gabon, Kenya, Malawi, Mali, Mozambique, the Republic of Congo, South Africa, Tanzania, Zambia, and Zimbabwe.

In Asia, programs are in Afghanistan, India, Indonesia, the Philippines, Thailand, and Vietnam.

The implementing agencies channelling the funds to the governments or other partners for the national projects are the World Bank Group, United Nations Development Programme (UNDP), United Nations Environment Programme (UN Environment), and the Asian Development Bank (ADB).

Q.30) Which of the following statements is/are correct about 'circadian rhythm'?

1. It is a biological rhythm with a twelve hour cycle
2. It can be found in plants and animals only
3. It can be synchronized by environmental cycles

Select the correct statements

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

Q.30) Solution (c)

A circadian clock, or circadian oscillator, is a biochemical oscillator that cycles with a stable phase and is synchronized with solar time.

Such a clock's in vivo period, is necessarily almost exactly 24 hours (the earth's current solar day). In most living things, internally synchronized circadian clocks make it possible for the organism to anticipate daily environmental changes corresponding with the day–night cycle and adjust its biology and behaviour accordingly.

The term circadian derives from the Latin circa (about) diem (a day), since when taken away from external cues (such as environmental light), they do not run to exactly 24 hours. Clocks in humans in a lab in constant low light, for example, will average about 24.2 hours per day, rather than 24 hours exactly.

The normal body clock oscillates with an endogenous period of exactly 24 hours, it entrains, when it receives sufficient daily corrective signals from the environment, primarily daylight and darkness. Circadian clocks are the central mechanisms that drive circadian rhythms.

It can be disrupted by prolonged exposure to constant darkness.

These 24-hour rhythms are driven by a circadian clock, and they have been widely observed in plants, animals, fungi, and cyanobacteria.

Q.31) Common Risk Mitigating Mechanism (CRMM), an insurance scheme is associated with which of the following groupings

a) BRICS
b) Climate Vulnerable Forum
c) United Nations Environment Programme
d) International Solar Alliance

Q.31) Solution (d)

Common Risk Mitigating Mechanism (CRMM)

- International Solar Alliance (ISA), which became a treaty-based global entity, will develop an insurance scheme - Common Risk Mitigating Mechanism –
- To protect investors' interests so that more and more investment can be attracted to the growing solar energy sector.
- It has set up an international expert group to work on blue print of the mechanism
- There is a task force headed by the Terrawatt Initiative (TWI) with members from the World Bank Group, The Currency Exchange Fund (TCX), the Council on Energy, Environment and Water (CEEW), and also the Confederation of Indian Industries (CII)
- CRMM will act as a pooled insurance with limited liability. Banks and multi-lateral institutions can contribute to the fund for a marginal premium. This will lower the cost of capital for developing renewable energy projects

Funds

- CRMM fund already has channelled $250 million through the India-UK Fund.

- The body aims to raise another $350 million through the Green Climate Fund and around $250 million from private investors.
- A $300-million India-French fund, similar to the India-UK Fund, is also being assessed.

Q.32) Consider the following statements about 'Biofuture Platform'

1. It aims to accelerate development and scale-up the deployment of modern sustainable low-carbon alternatives to fossil based solutions in transport fuels, industrial processes, chemicals, plastics and other sectors
2. It was launched at the twenty-third Conference of the Parties (COP23), Bonn

Select the correct statements

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

Q.32) Solution (a)

Biofuture Platform, a coalition of 20 leading countries in the clean energy and the bio economy fields was launched 16 November 2016 at COP22, Marrakech.

It aims to be an action-oriented, country-led, multistakeholder mechanism for policy dialogue and collaboration among leading countries, organizations, academia and the private sector conscious of the need to accelerate development and scale up deployment of modern sustainable low carbon alternatives to fossil based solutions in transport, chemicals, plastics and other sectors.

It has been proposed by the government of Brazil to several leading countries in all five continents.

Twenty countries are the founding and current Member States of the Biofuture Platform: Argentina, Brazil, Canada, China, Denmark, Egypt, Finland, France, India, Indonesia, Italy, Morocco, Mozambique, the Netherlands, Paraguay, the Philippines, Sweden, United Kingdom, United States and Uruguay.

A number of international organisations, such as IRENA, UNCTAD, IEA, FAO, and SE4ALL, as well as private sector associations and initiatives such as the WBCSD, ABBI, UNICA, and below50, are supporting this initiative.

Brazil is serving as the interim secretariat/facilitator of the Biofuture Platform since its launch in November 16, 2016.

Q.33) Consider the following statements with respect to 'Global Energy Interconnection Development and Cooperation Organisation (GEIDCO)'

1. It is an international organization among willing firms, associations, institutions and individuals who are dedicated to promoting the sustainable development of energy worldwide.
2. It is the brainchild of European Union

Select the correct code:

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

Q.33) Solution (a)

The Global Energy Interconnection Development and Cooperation Organization (GEIDCO), with its permanent office domiciled in Beijing, China, is a international organization among willing firms, associations, institutions and individuals who are dedicated to promoting the sustainable development of energy worldwide.

The purpose of GEIDCO is to promote the establishment of a GEI system, to meet the global demand for electricity in a clean and green way, to implement the United Nations "Sustainable Energy for All" and climate change initiatives, and to serve the sustainable development of humanity.

The GEIDCO will promote the concept of GEI, formulate GEI development plans, promote the creation of a GEI technical standards framework, organize concerted and collaborative efforts in researches and innovations, key studies, international communication and cooperation, engineering project implementation, provide consulting services, and lead the development of GEI.

Q.34) Which of the following are benefits of 'Coated Fertilizers'?

1. Prolonged supply of nutrients
2. Uniform plant nutrition
3. Decreased leaching

Select the correct code:

a) 1 and 2
b) 2 and 3

c) 1 and 3
d) All of the above

Q.34) Solution (d)

News: Boron and Zinc coated fertilizers will attract an additional per tonne subsidy to encourage their application along with primary nutrients.

The composition and thickness of the fertilizer coating is carefully adjusted to control the nutrient release rate (It can vary from several weeks to many months). Therefore they provide a prolonged supply of nutrients.

Sustained nutrient release also decrease leaching and gaseous losses.

Prolonged nutrient release may provide more uniform plant nutrition, better growth and improved plant performance.

Q.35) Consider the following statements about Renewable Energy Certificates (RECs)

1. They are aimed at addressing the mismatch of renewable energy resources in the States and their Renewable Purchase Obligation (RPO) requirements
2. They are traded on the Indian Energy Exchange (IEX) and the Power Exchange of India Ltd (PXIL)

Select the correct statements

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

Q.35) Solution (c)

Renewable Purchase Obligation (RPO)

- It is a mechanism by which the State Electricity Regulatory Commissions are obliged to purchase a certain percentage of power from renewable energy sources.
- RPO is being implemented throughout the country to create demand for renewable energy.
- RPOs make it compulsory for all large consumers of energy to ensure that a certain percentage of that energy mix is from renewable sources such as wind and solar.
- RPO is of two categories – (a) Non Solar & (b) Solar.

Renewable Energy Certification (REC)

- RECs are aimed at addressing the mismatch of renewable energy resources in the States and their RPO requirements. Obliged entities can fulfill their RPOs by purchasing RECs.
- RECs are traded on the Indian Energy Exchange (IEX) and the Power Exchange of India Ltd (PXIL)
- In line with RPOs there are two categories of RECs – Solar & Non-Solar

Q.36) Consider the following statements about Global Partnership on Forest Landscape Restoration (GPFLR)

1. It responds directly to the Bonn Challenge to restore 150 million hectares of deforested and degraded land by 2020 and 350 million hectares by 2030.
2. It was initiated by the International Union for Conservation of Nature

Select the correct statements

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

Q.36) Solution (c)

Bonn Challenge

- It is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030.
- It was launched in 2011 by the Government of Germany and IUCN, and later endorsed and extended by the New York Declaration on Forests at the 2014 UN Climate Summit.
- Underlying the Bonn Challenge is the forest landscape restoration (FLR) approach, which aims to restore ecological integrity at the same time as improving human well-being through multifunctional landscapes.
- The Bonn Challenge is not a new global commitment but rather a practical means of realizing many existing international commitments, including the CBD Aichi Target 15, the UNFCCC REDD+ goal, and the Rio+20 land degradation neutrality goal.
- It is an implementation vehicle for national priorities such as water and food security and rural development while contributing to the achievement of international climate change, biodiversity and land degradation commitments.

Global Partnership on Forest Landscape Restoration (GPFLR)

- It was initiated by IUCN to unite governments, organisations, communities and individuals working towards the restoration of degraded and deforested lands.
- Its members are active in every major region of the world, gathering knowledge on restoration, facilitating restoration assessments, and supporting Bonn Challenge commitments.

Read More - http://www.forestlandscaperestoration.org/about-partnership

Q.37) Consider the following statements about 'Satkosia Tiger Reserve'

1. It is located where the Mahanadi River passes through a gorge in the Eastern Ghats
2. It supports moist deciduous forest and dry deciduous forest
3. It is a natural habitat for Sangai Deer

Select the correct statements

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

Q.37) Solution (b)

Satkosia Tiger Reserve is a tiger reserve located in the Angul district of Odisha, covering an area of 988.30 km².

It is located where the Mahanadi River passes through a 22 km long gorge in the Eastern Ghats mountains.

The area of Satkosia Tiger Reserve supports moist deciduous forest, dry deciduous forest and moist peninsular Sal forest. This area is the home for Tiger, Leopard, Elephant, Gaur, Sambar, Spotted deer, Mouse deer, Nilgai, Chousingha, Sloth bear, Wild dog etc., Varieties of resident and migratory birds, reptilian species(Gharial, Magar, Crocodile, Fresh Water turtle, Poisons & Non poisons snakes etc.)

Q.38) Consider the following statements about 'Global Invasive Alien Species Information Partnership (GIASI Partnership)'

1. All Parties to the Convention of Biological Diversity are partners of the GIASI Partnership
2. The partners are committed to the effective implementation of Aichi Biodiversity Target 9

Select the correct statements

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

Q.38) Solution (c)

Global Invasive Alien Species Information Partnership (GIASI Partnership) is intended to support Parties to the CBD who are committed to the effective implementation of Article 8(h), Aichi Biodiversity Target 9 (invasive alien species), and the various decisions under the CBD pertaining to the prevention, eradication, and control of invasive alien species.

Q.39) Consider the following statements in respect of Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC):

1. TRAFFIC is a bureau under United Nations Environment Programme (UNEP).
2. The mission of TRAFFIC is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

Which of the above statements is/are correct?

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

Q.39) Solution (b)

TRAFFIC, the Wildlife Trade Monitoring Network, is the leading non-governmental organisation working globally on the trade of wild animals and plants in the context of both biodiversity and sustainable development. It was founded in 1976 as a strategic alliance of the World Wide Fund for Nature (WWF) and the International Union for the Conservation of Nature (IUCN)

Q.40) From the ecological point of view, which one of the following assumes importance in being a good link between the Eastern Ghats and the Western Ghats?

a) Sathyamangalam Tiger Reserve
b) Nallamala Forest
c) Nagarhole National Park
d) Seshachalam Biosphere Reserve

Q.40) Solution (a)

Sathyamangalam Tiger Reserve – Tamil Nadu

Nallamala Forest - Eastern Ghats

Nagarhole Park - Karnataka

Seshachalam Biosphere - Andhra Pradesh

Q.41) 'Biological Oxygen Demand (BOD)' is a standard criterion for

a) Measuring oxygen levels in blood
b) Computing oxygen levels in forest ecosystems
c) Pollution assay in aquatic ecosystems
d) Assessing oxygen levels in high altitude regions

Q.41) Solution (c)

Biochemical Oxygen Demand is the amount of dissolved oxygen needed by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period.

Q.42) With reference to an initiative called "The Economics of Ecosystems and Biodiversity (TEEB)', which of the following statements is/are correct?

1. It is an initiative hosted by UNEP, IMF and World Economic Forum.
2. It is a global initiative that focuses on drawing attention to the economic benefits of biodiversity.
3. It presents an approach that can help decision-makers recognize, demonstrate and capture the value of ecosystems and biodiversity.

Select the correct answer using the code given below.

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

Q.42) Solution (c)

Statement 1 - It is a major international initiative funded by the European Commission, Germany, United Kingdom, Norway, the Netherlands and Sweden and is managed by the United Nations Environment Programme as part of its Green Economy Initiative (GEI).

Statement 2 - It seeks to draw attention to the global economic benefits of biodiversity, to highlight the growing costs of biodiversity loss and ecosystem degradation, and to draw together expertise from the fields of science, economics and policy to enable practical actions moving forward.

Statement 3 - It follows a structured approach to valuation that helps decision-makers recognize the wide range of benefits provided by ecosystems and biodiversity, demonstrate their values in economic terms and, where appropriate, capture those values in decision-making.

Q.43) If a wetland of international importance is brought under the 'Montreux Record', what does it imply?

a) Changes in ecological character have occurred, are occurring or are likely to occur in the wetland as a result of human interference.
b) The country in which the wetland is located should enact a law to prohibit any human activity within five kilo meters from the edge of the wetland
c) The survival of the wetland depends on the cultural practices and traditions of certain communities living in its vicinity and therefore the cultural diversity therein should not be destroyed
d) It is given the status of 'World Heritage Site'

Q.43) Solution (a)

The Montreux Record is a register of wetland sites on the List of Wetlands of International Importance where changes in ecological character have occurred, are occurring, or are likely to occur as a result of technological developments, pollution or other human interference. It is maintained as part of the Ramsar List.

Q.44) The most important strategy for the conservation of biodiversity together with traditional human life is the establishment of

a) Biosphere reserves
b) Botanical gardens
c) National parks
d) Wildlife sanctuaries

Q.44) Solution (a)

Biosphere Reserves (BRs) are representative parts of natural and cultural landscapes extending over large area of terrestrial or coastal/marine ecosystems or a combination thereof and representative examples of bio-geographic zones/provinces.

The transition area 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 characteristics of the region.

Read More - http://www.moef.nic.in/division/biosphere-reserves

Q.45) With reference to 'Eco-Sensitive Zones', which of the following statements is/are correct?

1. Eco-Sensitive Zones are the areas that are declared under the Wildlife (Protection) Act, 1972.
2. The purpose of the declaration of Eco-Sensitive Zones is to prohibit all kinds of human activities, in those zones except agriculture.

Select the correct answer using the code given below.

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

d) Neither 1 nor 2

Q.45) Solution (d)

Eco-Sensitive Zones (ESZs) or Ecologically Fragile Areas (EFAs) are areas notified by the Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India around Protected Areas , National Parks and Wildlife Sanctuaries. The purpose of declaring ESZs is to create some kind of "shock absorbers" to the protected areas by regulating and managing the activities around such areas. They also act as a transition zone from areas of high protection to areas involving lesser protection.

The Environment (Protection) Act, 1986 does not mention the word "Eco-Sensitive Zones". However, Section 3(2)(v) of the Act, says that Central Government can restrict areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards.

It doesn't talk about prohibiting all kinds of human activities.

Q.46) What is the role of ultraviolet (UV) radiation in the water purification systems?

1. It inactivates/kills the harmful microorganisms in water.
2. It removes all the undesirable odours from the water.
3. It quickens the sedimentation of solid particles, removes turbidity and improves the clarity of water.

Which of the statements given above is/are correct?

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

Q.46) Solution (a)

Ultraviolet water purification is the most effective method for disinfecting bacteria from the water. Ultraviolet (UV) rays penetrate harmful pathogens in your home's water and destroy illness-causing microorganisms by attacking their genetic core (DNA). This is extremely efficient in eliminating their ability to reproduce. Disinfecting your water with Ultraviolet light is exceptionably simple, effective and environmentally safe. UV systems destroy 99.99% of harmful microorganisms without adding chemicals or changing your water's taste

or odor. UV water purification is usually used with other forms of filtration such as reverse osmosis systems or carbon block filters.

Q.47) If a tropical rain forest is removed, it does not regenerate quickly as compared to a tropical deciduous forest. This is because

a) The soil of rain forest is deficient in nutrients
b) Propagules of the trees in a rain forest have poor viability
c) The rain forest species are slow-growing
d) Exotic species invade the fertile soil of rain forest

Q.47) Solution (a)

Most soils found under the tropical rainforests are deficient in nutrients because of the warm and humid climate > leads to decomposition of the organic material as well as the inorganic parent material of the soil. > Frequent rains leach the decomposing material off the soil, out of the root zone quickly.

Q.48) Which of the following of a species best describes, how an organism or population responds to the distribution of resources and competitors, and how it in turn alters those same factors for its survival?

a) Ecotone
b) Ecology
c) Ecological niche
d) Edge effect

Q.48) Solution (c)

An ecological niche describes how an organism or population responds to the distribution of resources and competitors (for example, by growing when resources are abundant, and when predators, parasites and pathogens are scarce) and how it in turn alters those same factors (for example, limiting access to resources by other organisms, acting as a food source for predators and a consumer of prey).

Q.49) Any practice that affects the equilibrium of an aquatic environment may alter the temperature of that environment and subsequently cause thermal pollution. Consider the following statements regarding thermal pollution:

1. Thermal pollution comes in the form of dumping warm waters and not cold waters into lake, river, or ocean.
2. Volcanic eruption is one source of thermal pollution.
3. Due to thermal pollution dissolved oxygen content in water increases.

Choose the correct answer using the codes given below.

a) 1 and 3 only
b) 2 only
c) 3 only
d) None

Q.49) Solution (b)

Any practice that affects the equilibrium of an aquatic environment may alter the temperature of that environment and subsequently cause thermal pollution. It may come in the form of warm or cold water being dumped into a lake, river, or ocean.

In layman's terms, thermal pollution is when an industry or other human-made organization takes in water from a natural source and either cools it down or heats it up. They then eject that water back into the natural resource, which changes the oxygen levels and can have disastrous effects on local ecosystems and communities.

Thermal pollution is defined as sudden increase or decrease in temperature of a natural body of water which may be ocean, lake, river or pond by human influence. This normally occurs when a plant or facility takes in water from a natural resource and puts it back with an altered temperature. Usually, these facilities use it as a cooling method for their machinery or to help better produce their products.

Source of thermal pollution

- Volcanic eruption or geothermal activities below the ocean.
- Heated waste water produces from coal-based power plant,
- Textile paper and pulp industry.
- Deforestation and decreasing tree coverage and Soil erosion.

Ecological Impact of thermal Pollution

- Decrease in dissolved oxygen: warmer water increases the rate of decomposition of organic matter, resulting in higher rate of decreasing the depleted oxygen. Threat to

temperature sensitive organism for instance, stenothermic organism can survive in a narrow range of temperature any variation in temperature is detrimental to their survival. It disrupts the stability of food chain and alters the ecology of marine organisms.

Q.50) Which of the following is/are the possible consequence/s of heavy sand mining in riverbeds?

1. Decreased salinity in the river
2. Pollution of groundwater
3. Lowering of the water-table

Select the correct answer using the code given below:

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

Q.50) Solution (b)

Eliminate statement 1. Answer is (b)

Instream mining lowers the stream bottom, which may lead to bank erosion. Depletion of sand in the streambed and along coastal areas causes the deepening of rivers and estuaries, and the enlargement of river mouths and coastal inlets. It may also lead to saline-water intrusion from the nearby sea.

Q.51) Recently the Pet Coke or Petroleum coke was in news. Consider the following statements about it.

1. Pet coke is a solid carbon rich material derived from oil refining.
2. It is cleaner alternative to coal and emits 11% less greenhouse gas.
3. India is the world's largest producer of pet coke.

Select the correct statements using the codes given below.

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

Q.51) Solution (a)

Eliminate statement 3. You might have often read in news that India imports pet coke.

Petroleum coke or pet coke is a solid carbon rich (90% carbon and 3% to 6% sulfur) material derived from oil refining. It is categorized as a “bottom of the barrel” fuel. It is a dirtier alternative to coal and emits 11% more greenhouse gases than coal. India is the world’s biggest consumer of petroleum coke. It is an approved fuel in many states such as Andhra Pradesh, Telangana, Gujarat and Karnataka.