A SERIES

1. D

   Explanation: All are the initiatives of IUCN.
   The Integrated Tiger Habitat Conservation Programme (ITHCP) is a strategic funding mechanism which aims to save tigers in the wild, their habitats and to support human populations in key locations throughout Asia.
   SOS represents one key step in the journey toward saving a species. That process begins with knowledge generated by scientists worldwide and registered in the IUCN Red List of Threatened Species.
   Amphibian Survival Alliance – addressing the global amphibian crisis.

2. C

   Explanation: An ecological niche is the role and position a species has in its environment; how it meets its needs for food and shelter, how it survives, and how it reproduces.
   A species' niche includes all of its interactions with the biotic and abiotic factors of its environment.

3. D

   Explanation : Examples of basic adaptations that help animals and plants to survive in their respective environments.
   • Shape of bird's beak.
   • The thickness or thinness of fur.
   • Presence of feathers and wings in birds.
   • Evergreen and deciduous nature of trees.
   • Presence and absence of thorns on leaves and stems.

4. B

   Explanation : Individual , Population , Community ,Ecosystem, Biome , Biosphere is the correct hierarchy.

5. D

6. B

7. C

8. C

   Explanation: The community that initially inhabits a bare area is called pioneer community. The pioneer community after some time gets replaced by another community with different species combination.
   The terminal (final) stage of succession forms the community which is called as climax community.
   A climax community is stable,

mature, more complex and long lasting.

The entire sequence of communities in a given area, succeeding each other, during the course of succession is termed sere.

9. A

Explanation : Fish ranching is a practice of keeping which fishes in captivity for the first few years in floating cages in coastal lagoons and releasing them from captivity into water bodies. Adults are harvested when they return for spawning to the lagoons.(for laying eggs)
e.g. Salmon and Hilsa which migrate to rivers to spawn are cultivated by fish ranching method.

10. A

Explanation:

The solution to many of the above problems is Eco-industrial revolution. It refers to a new resource and efficient production system generating minimum waste. Eco-industry or industrial ecology is to make industrial manufacturing processes more sustainable by redesigning the industrial processes along the pattern of natural processes.

11. C

12. D

Explanation: India accounts for nearly 3 % of world's **mangrove** vegetation

There has been a net increase in the mangrove cover of India over last few years (latest assessment in 2015 has more mangrove cover than assessment of 2013).

13. D

Explanation: An ecotone describes a variation in species prevalence and is often not strictly dependent on a major physical factor separating an ecosystem from another, with resulting habitat variability.

An ecocline is a variation of the physicochemical environment dependent of one or two physico-chemical factors of life, and thus presence/absence of certain species.

14. C

Self explanatory. (Class XII NCERT)

Eurythermal organisms can tolerate and thrive in wide range of temperature. Warm blooded animals can maintain a constant body temperature even when the surrounding temperature is changing. Stenothermal organisms are restricted to a small range of temperature. Cold blooded animals generally hibernate

to protect themselves from extreme climatic conditions.

15.A

Explanation: Equatorial rain forests have thick canopy cover which does not allow the sunlight to reach the floor. There is stiff competition to between the trees to catch the maximum sunlight. Due to this there is very little undergrowth.

16.A

Exp: Apart from stomata plants and trees also breathe through lenticles, which are small pores present on their stem. Many desert plants have their stomata in deep pits to minimize water loss by transpiration and not evaporation.

17.D

Explanation: Humification leads to accumulation of a dark coloured amorphous substance called humus that is highly resistant to microbial action and undergoes decomposition at an extremely slow rate. Being colloidal in nature it serves as a reservoir of nutrients. The humus is further degraded by some microbes and release of inorganic nutrients occur by the process known as mineralisation

18.C

19.B

Examples of secondary succession include: The renewal of a forest after a fire: The fire itself destroys a majority of different types of trees and plant life. Because seeds and roots and other plant and tree parts remain in and on the soil, gradually the plants and trees begin to grow again and eventually return to the state of the original ecosystem.

The renewal of a crop after harvesting: A crop is completed harvested when it becomes ripe. Without new seeds being planted, the crop can regenerate the following year due to the plants and seeds that remained after harvesting. A forest renews after logging: A large amount of trees were chopped down by loggers in order to create building materials. Over time, trees grow in and the area returns to its previous state.

20.A

Explanation:

An alien species is a species introduced by humans – either intentionally or accidentally - outside of its natural past or present distribution, however not all alien species have negative impacts, and it is estimated that between 5% and 20% of all alien species become problematic.

21. D

Explanation: Ecological footprints can be calculated at any scale: for an activity, a person, a community, a city, a region, a nation or humanity as a whole. Cities, due to population concentration, have large ecological footprints and have become ground zero for footprint reduction.

Global Footprints: Currently there is no fixed way to measure global footprints, and any attempts to describe the capacity of an ecosystem in a single number is a massive simplification of thousands of key renewable resources, which are not used or replenished at the same rate. However, there has been some convergence of metrics and standards since 2006.

22. C

Explanation: The Government of India has initiated various measures to ensure that Oil Spill at Sea is given top priority by all the concerned agencies. Pollution response teams have been established by the Indian Coast Guard at Mumbai, Chennai and Port Blair. Further, a pollution response centre is also established at Vadinar, Gujarat. Two dedicated pollution response vessels have been commissioned and pollution response equipment have been procured. To ensure response preparedness regular training and exercises are conducted by the Indian Coast Guard.

23. D

24. D

Explanation: A carbon credit is a generic term for any tradable certificate or permit representing the right to emit one tonne of carbon dioxide or the mass of another greenhouse gas with a carbon dioxide equivalent (tCO2e) equivalent to one tonne of carbon dioxide.

Carbon credits and carbon markets are a component of national and international attempts to mitigate the growth in concentrations of greenhouse gases (GHGs).

25. B

Explanation : The hardy lichens are useful bioindicators for air pollution, espeially sulfur dioxide pollution, since they derive their water and

essential nutrients mainly from the atmosphere rather than from the soil. It also helps that they are able to react to air pollutants all year round.

26. D

Explanation: Primary pollutants are substances directly emitted from a process, such as ash from a volcanic eruption, the carbon monoxide gas from a motor vehicle exhaust or sulfur dioxide released from factories

27. D

Explanation : Lead-based paints for homes, children's toys and household furniture have been banned in the United States since 1978. Most lead poisoning in children results from eating chips of deteriorating lead-based paint.

28. D

Explanation: In steel furnace, coke reacts with iron ore, releasing iron and generating CO and CO2 gases. Due to use of coal, pollutants such as SOx and NOx are released, thus all are correct options.

29. C

Explanation: Fly ash brick (FAB. is a building material, specifically masonry units, containing class C or class F fly ash and water.

30. C

When nitrogen levels in rivers and streams increase, they aid in algae overgrowth. As algae dies and decomposes, organic matter in the water increases. This process uses up oxygen, causing levels to drop. Without the oxygen, fish, crabs and other aquatic life die.

A soluble substance, nitrogen soaks deeply into the soil after a rainstorm or after irrigation, reaching ground water and nearby wells.

31. A

Explanation: The objectives of the International Treaty on Plant Genetic Resources for Food and Agriculture are the conservation and sustainable use of all plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security.

The United Nations Convention to Combat Desertification in Those

Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD. is a Convention to combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies.

32. D

Explanation: Nano-particles have ability to harm human and wildlife by interacting through various mechanisms.

33. D

Explanation: The most important gas which leads to acid rain is sulfur dioxide. Emissions of nitrogen oxides which are oxidized to form nitric acid are of increasing importance due to stricter controls on emissions of sulfur containing compounds.

34. A

35. C

Explanation: Arsenic, Fluoride , Uranium are some of the pollutants found in water in India.

36. B

37. C

Explanation. Mercury, Cadmium are e-wastes. Neon is a inert gas. So not a pollutant.

38. C

Explanation:

Mission Innovation (MI) is a global initiative of 22 countries and the European Union to dramatically accelerate global clean energy innovation. As part of the initiative, participating countries have committed to seek to double their governments' clean energy research and development (R&D. investments over five years, while encouraging greater levels of private sector investment in transformative clean energy technologies.

39. C

40. B

Explanation: Manufacturer, dealer, refurbisher and Producer Responsibility Organization (PRO) have been introduced as additional stakeholders in the rules.

The applicability of the rules has been extended to components, consumables, spares and parts of EEE in addition to equipment as listed in Schedule I.
Compact Fluorescent Lamp (CFL) and other mercury containing lamp brought under the purview of rules.

41.A

42.A

43.C

Explanation: The Intergovernmental Panel on Climate Change (IPCC. is the international body for assessing the science related to climate change. The IPCC was set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.

44.A

45.A

46.D

47.C

48.D

49.C

Acid rain makes waters acidic, and causes them to absorb the aluminum that makes its way from soil into lakes and streams.

50.B

51.C

52. A

Deep, ocean waters are naturally u dear saturated with carbonate ions causing shells of most calcifying organisms to dissolve. Saturation horizon is the level below which calcium carbonate minerals undergo dissolution.
Ocean acidification causes the horizon to rise vertically in a water column. Calcium carbonate occurs in two common crystalline forms: aragonite and calcite. Aragonite is much more soluble than calcite, so the aragonite saturation horizon is always nearer to the surface than the calcite saturation horizon.

53.B

54.D

Explanation: Global warming potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide. A GWP is calculated over a specific time interval, commonly 20, 100, or 500 years.

55. C

56. B

Neuston are unattached organisms which live at the air water interface such as floating plants.
Periphyton are organisms attached to stems and leaves of rooted plants or substances emerging above the bottom mud.
Nekton are animals which are swimmers from insects to large animals like blue whale
Benthos are found living at the deep bottom ocean floor.

57. B

pyramid of numbers is both upright and inverted whereas pyramid of energy is always upright as energy decreases from lower tropic level to higher tropic level according to 10% rule.

Flow of energy is always unidirectional from lower to higher trophic levels.

58. C

59. C

60. C

61. C

62. C

63. C

64. D

65. C

Coral bleaching not only happens because of warm temperature but can also happen due to Cold temperature. Not all bleaching events are due to warm water. In January 2010, cold water temperatures in the Florida Keys caused a coral bleaching event that resulted in some coral death. Water temperatures dropped 12.06 degrees Fahrenheit lower than the typical temperatures observed at this time of year. Researchers will evaluate if this cold-stress event will make corals more susceptible to disease in the same way that warmer waters impact corals.

When a coral bleaches, it is not dead. Corals can survive a bleaching event, but they are under more stress and are subject to mortality.

66. D

The Bio-safety protocol is Cartagena not Nagoya. Rest are correct

67. D

68. D

69. A

70. B

71. C

72. C

73. B

Explanation:

There are a number of natural factors responsible for climate change. Some of the more prominent ones are continental drift, volcanoes, ocean currents, the earth's tilt, and comets and meteorites.

74. B

Explanation:
CO, VOCs and NO are called Ozone precursors. VOCs include methane also.

75. B

Explanation: Biochemical oxygen demand (BOD, also called biological oxygen demand. is the amount of dissolved oxygen needed (i.e., demanded. by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period.
Greater the BOD more is the polluting potential. Actually, in secondary treatment or biological treatment of sewage water in plant, the primary effluent is passed into large aeration tanks where it is constantly agitated mechanically and air is pumped into it. This allows vigorous growth of useful aerobic microbes into flocs (masses of bacteria associated with fungal filaments to form mesh like structures). While growing, these microbes consume the major part of the organic matter in the effluent. This significantly reduces the BOD (biochemical oxygen demand. of the effluent. BOD refers to the amount of the oxygen that would be consumed if all the organic matter in one litre of water were oxidised by bacteria. The sewage water is treated till the BOD is reduced.

76. (d)
Exp: *Arsenic:* comes from industries, smelting processes, it increases toxicity and causes liver and kidney damage. *Fluoride:* comes from municipal water supplies, agricultural fields, causes crippling bone disorder. *Lead:* comes from industry & mining, causes disruption in mental and physical development and disorder for babies. *Nitrate:* comes from agricultural fields, causes toxicity and blue baby diseases

77. (b)
Exp: Ozone is both beneficial and harmful for human beings on earth. Harmful when present in troposphere as being a poisonous gas and

beneficial when present in stratosphere by protecting from UV rays. Refrigeration by humans on earth is releasing Ozone Depleting Substances

(ODS) like CFCs thus destroying ozone molecules.
ODS are generally halogen compounds like CFCs ,HCFCs which contain elements likeclorine and flourine and are responsible for ozone depletion.

78. (d)
Exp: Irreparable computers and other electronic goods are known as electronic wastes (ewastes).
E-wastes are buried in landfills or incinerated. Over half of the e-wastes generated in the developed world are exported to developing countries, mainly to China, India and Pakistan, where metals like copper, iron, silicon, nickel and gold are recovered during recycling process.
Unlike developed countries, which have specifically built facilities for recycling of e-wastes, recycling in developing countries often involves manual participation thus exposing workers to toxic substances present in e-wastes. Recycling is the only solution for the treatment of e-waste, provided it is carried out in an environment friendly manner.

79. (c)
Exp: The sunlight that reaches us is made up of two types of harmful rays: long wave ultraviolet A (UVA) and short wave ultraviolet B (UVB). Basically, UVA rays can age us and UVB rays can burn us.
Overexposure to either can damage the skin.
UV radiation of wavelengths shorter than UV-B, are almost completely absorbed by Earth's atmosphere, given that the ozone layer is intact. But, UV-B damages DNA and mutation. It causes aging of skin, damage to skin cells and various types of skin cancers. In human eye, cornea

absorbs UV-B radiation, and a high dose of UV-B causes inflammation of cornea, called snow-blindness, cataract, etc. Such exposure may permanently damage the cornea.

80. (a)
Exp: Coal gasification is the process of producing syngas-a mixture consisting primarily of methane (CH_4), carbon monoxide (CO), hydrogen (H_2), carbon dioxide (CO_2) and water vapor (H_2O)- from coal and water, air and/or oxygen.
The main technology being used is coal

gasification - instead of burning the fossil fuel, it is chemically transformed into synthetic natural gas (SNG).The process is decades old, but recent rises in the price of gas mean it is now more economically viable.
Coal gasification produces more Co2 than traditional coal plant

81. (d)
Exp: The sources are:
Excess rainfall leaches base cation from the soil, increasing the percentage of Al3+ and H+ relative to other cations. Highly weathered soils are also characterized by having high concentrations of Fe and Al oxides. Severely acidic conditions form in soils near mine spoils due to the oxidation of pyrite.

82. (a)
Exp: Objectives of Street Light National Programme:
• Mitigate climate change by implementing energy efficient LED based street lighting.
• Reduce energy consumption in lighting which helps DISCOMs to manage peak demand.
• Provide a sustainable service model that obviates the need for upfront capital investment as well as additional revenue expenditure to pay for procurement of LED lights.
• Enhance municipal services at no upfront capital cost of municipalities.

83. (c)
Exp: ISA will work with partner countries in the identification of national opportunities to accelerate development and deployment of existing clean solar energy technologies, the potential for which largely remains untapped. The increased deployment of solar technologies will benefit the countries in terms of direct and indirect employment opportunities generated and the economic activity that will be triggered through electricity and solar appliance access to predominantly rural households. Across developing countries, it is mostly micro, small and medium enterprises that generate most of the economic activity and are the ones that benefit the most from electricity access, as they will be able to operate into the evening and increase their turnover. Increased deployment will also go a long way in realizing social benefits,

for example through solar lanterns that improve educational outcomes from increased study hours, and lead to better health service delivery levels across communities. If a rural primary health clinic has solar lights, it is more likely to be staffed after dark, and therefore it is also more likely to be visited by those who need its services.

84. (d)
Exp: Solar technologies can be used in areas of lighting, heating, cooling, distillation, desalination, disinfection, sterilization, pasteurization, pumping, storage, refrigeration, telecommunication, irrigation, drinking water supply, energy efficiency, etc. to promote income and welfare of the poor.

85. (c)
Exp: *Acidification of oceans:* changing the pH level will destroy the ecological balance in corals.
Rising sea surface temperature: corals need optimum temperature for growth, increasing or decreasing the temperature can lead to coral bleaching.
Uncontrolled Fishing and Uncontrolled Navigation: these activities destroys the rich biodiversity thus disturbs the ecological balance.

86. (b)
Exp: Biochemical oxygen demand (BOD, also called biological oxygen demand) is the amount of dissolved oxygen needed (i.e., demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period.
Dissolved oxygen (DO) is the amount of oxygen that is present in the water. The higher value of BOD indicates low DO content of water. Since BOD is limited to biodegradable materials Therefore, it is not a reliable method of measuring pollution load in water.
The higher value of BOD indicates low DO content of water. Since BOD is limited to biodegradable materials Therefore, it is not a reliable method of measuring pollution load in water.

87. (c)
Exp: Colony collapse disorder (CCD) is the phenomenon that occurs when the majority of worker bees in a colony disappear and leave behind a queen, plenty of food and a few nurse bees to care for the remaining immature bees and the

queen. Pesticides are the probable cause of massive colony collapse disorder (CCD).

88. (d)
Exp: Environmental Impact Assessment (EIA) is the process by which the anticipated effects on the environment of a proposed development or project are measured. If the likely effects are unacceptable, design measures or other relevant mitigation measures can be taken to reduce or avoid those effects. Screening, Scoping, Public hearing and appraisal.

89. (b)
Exp: Central Pollution Control Board estimates that 75-80% of water pollution by volume is from domestic sewerage, while untreated sewerage flowing into water bodies including rivers have almost doubled in recent years.

90. (c)
Exp: Sequence of unit processes: presedimentation - mixing, flocculation, settling -filtration - adsorption -disinfection.

91. (d)
Exp: Inter cropping disparity because it was food grains which got impetus especially wheat and many other crops were neglectedeg: pulses. Mechanization was supported and encouraged to get the better benefits of Green revolution thus resulting into unemployment. Self sufficiency was brought only in food grains like rice wheat etc, and not in every crop. With unbalanced fertilizers usage it led to soil fertility decline and also crops were grown in such areas where those were not supposed to be grown like rice crop which was started in Haryana and Punjab because of Green revolution.

92. (c)
Exp: Bharat stage regulate emissions of nitrogen oxides (NOx), hydrocarbons (HC), carbon monoxide (CO), particulate matter (PM), and particle numbers (PN) by technological upgradation of vehicles as well as of fuel.

93. (a)
Exp: If there was no CO2 then the temperature would have been lower than the present.

94. (a)
Exp: Article 48A of the constitution is in the Directive Principles where it states that The state shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country. This act has provided for both penalty as

well as for imprisonment extended upto 5 years.
It has relaxed the locus standi where any person can approach the court.

95. (d)
Exp: The Convention on the Conservation of Migratory Species of Wild Animals -- more commonly abbreviated to just the Convention on Migratory Species (CMS) or the Bonn Convention -- aims to conserve terrestrial, marine and avian migratory species throughout their range. Several Memoranda of Understanding (MoU) have been concluded to date under the auspices of CMS. They aim to conserve: High Andean Flamingos; Aquatic Warbler; Bukhara Deer; Dugong; Marine Turtles; Siberian Crane MoU; Marine Turtles, etc.

96. (a)
Exp: The Agasthyamala Biosphere Reserve has recently been included in UNESCO's List of World Biosphere Reserve Network. The area falls in the Malabar rainforests and is one of the noted hotspot in the Western Ghats. It covers about 3500 sqkms and is part of different districts of Tamil Nadu and Kerala. Agastya Mala, the peak after which the reserve is named, rises up to almost 1868 metres above sea level, in Thiruvananthapuram. There are many endemic and endangered species of flora and fauna in the reserve including endangeredNilgiriTahr. It includes the Indian eco regions of moist deciduous forests, montane rainforests and Shola forests and grasslands. There are three wildlife sanctuaries within the reserve - Shendurney, Peppara, and Neyyar.

97. (a)
Exp: Gujarat government has launched the Sloth Bear Habitat project to provide better habitat by restoring the ecology of Jessore wildlife sanctuary, where more trees will be planted and unwanted vegetation removed.

98. (a)
Exp: The IPPC aims to protect world plant resources, including cultivated and wild plants by preventing the introduction and spread of plant pests and promoting the appropriate measures for their control. The convention provides the mechanisms to develop the International Standards for Phytosanitary Measures (ISPMs), and to

help countries to implement the ISPMs and
the other obligations under the IPPC, by
facilitating the national capacity development, national reporting and dispute settlement. The Secretariat of the
IPPC is hosted by the Food and Agriculture
Organization of the United Nations (FAO).

99. (d)
Exp: The ICCWC brings together:
• Secretariat of the Convention on International Trade in Endangered Species
of Wild Fauna and Flora (CITES);
• INTERPOL;
• United Nations Office on Drugs and Crime
(UNODC);
• World Bank;
• World Customs Organization (WCO).
The ICCWC seeks to ensure that perpetrators of serious wildlife crimes face
a formidable and coordinated response,
departing from the present situation where
the risk of detection and punishment is all
too low.

100. (c)
Exp: An electric vehicle (EV), also referred to as
an electric drive vehicle, uses one or more
electric vehicle or Traction motors for propulsion. An electric vehicle may be powered through a collector system by electricity from off-vehicle sources, or may
be self-contained with a battery or generator to convert fuel to electricity. Electric cars put curb on noise pollution as
they are much quieter. Electric cars are 100
percent eco-friendly as they run on electrically powered engines. It does not
emit toxic gases or smoke in the environment as it runs on clean energy
source.