

**Q.1) With reference to Microplastics, consider the following statements:**

1. Microplastics are fragments of any type of plastic less than 5 mm in length.
2. Microplastics are ingested directly by zooplanktons.
3. The Great Pacific Garbage Patch is entirely made up of microplastics.

**Which of the above statements are correct?**

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

**Q.1) Solution (d)**

**Statement analysis**

Statement 1: **Plastic pieces that are less than 5mm in length are called microplastics.** They can be formed by fragmentation of large plastic waste material. Microfibres from washing of textiles, microbeads used in cosmetics, and even paint from land run-offs can dump microplastics in the ocean.

Various studies have shown that once ingested, microplastics can settle in the stomach and lead to reduction in feeding capacity of organisms. They can also be detrimental to the intestinal function and reproductive system.

Statement 2: Microplastics can travel high up the food chain and affect even the large predators of the oceans. **Microplastics are ingested directly by the zooplankton** -- the lowest link in the food chain. The zooplankton is eaten by fish; and the microplastic finally reaches the seal, which consumes the fish.

Statement 3: The Great Pacific Garbage Patch is a collection of marine debris in the North Pacific Ocean. Marine debris is litter that ends up in the ocean, seas, and other large bodies of water.

For many people, the idea of a "garbage patch" conjures up images of an island of trash floating on the ocean. **In reality, these patches are almost entirely made up of tiny bits of plastic, called microplastics.** Microplastics can't always be seen by the naked eye. Even satellite imagery doesn't show a giant patch of garbage. The microplastics of the Great Pacific Garbage Patch can simply make the water look like a cloudy soup. This soup is intermixed with larger items, such as fishing gear and shoes.

**Q.2) Consider the following statements with reference to light pollution:**

1. Light pollution is an unwanted consequence of excessive or misdirected artificial lighting and includes such effects as sky glow, light trespass and glare.
2. It severely reduces the visibility of stars and other celestial objects.

**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 (c)**

**Explanation:**

Artificial lighting at night is contributing to an alarming increase in light pollution, both in amount and in brightness, affecting places all over the world, including India, a study has found. Light pollution, unwanted or excessive artificial light. Like noise pollution, light pollution is a form of waste energy that can cause adverse effects and degrade environmental quality.

**Light pollution is an unwanted consequence of excessive or misdirected artificial lighting and includes such effects as sky glow, light trespass and glare.** Global push towards energy and cost efficient light sources, such as LEDs, has directly contributed to an increase in light pollution.

Light pollution possess following health risk to human and Biodiversity

- **Light pollution adversely affects professional and amateur astronomers, as well as casual observers of the night sky,** because it severely reduces the visibility of stars and other celestial objects.
- Light pollution also has adverse impacts on birds and other animals. Many migratory birds, for example, fly by night, when light from the stars and Moon helps them navigate. These birds are disoriented by the glare of artificial light as they fly over urban and suburban areas
- Artificial lighting near waterways draws insects up from the water surface and toward the lighting source, disrupting food chains and weakening the local ecosystem.
- Artificial light disrupts nocturnal pollination and leads to a reduced number of fruits produced by the plant.

- With respect to adverse health effects, many species, especially humans, are dependent on natural body cycles called circadian rhythms and the production of melatonin, which are regulated by light and dark (e.g., day and night). If humans are exposed to light while sleeping, melatonin production can be suppressed. This can lead to **sleep disorders** and other health problems such as increased headaches, worker fatigue, medically defined stress, some forms of obesity due to lack of sleep and increased anxiety.

The good news is that light pollution can be reduced fairly easily by shielding lights properly, by only using light when and where it is needed, by only using the amount that is needed, by using energy efficient bulbs, and by using bulbs with appropriate spectral power distributions for the task at hand.

**Q.3) Which of the following are migratory birds to India?**

1. Siberian Crane
2. Amur Falcon
3. Bar-headed Goose
4. Great white Pelican

**Choose appropriate option:**

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

**Q.3) Solution (d)**

**Basic Information:**

Migratory birds are seasonal guests with positive impacts. Birds from 29 countries fly to India every year. The country witnesses incoming of large flocks during September-October signifying the beginning of migration.

Migratory bird species are known to be indicators for the flyway region, as they use different biomes and habitats and face different pressures along the migration route.

**Statement Analysis:**

**Statement 1: Siberian Cranes are snowy white color birds and migrate during winter to India.**

These cranes are omnivorous and breed in the arctic tundra of Russia and Siberia. Siberian Cranes or snow cranes are critically endangered species of migratory birds, wintered in Bharatpur Keoladeo National Park till 2002.

Statement 2: **Amur falcon** is a small raptor of the falcon family. It breeds in south-eastern Siberia and Northern China **before migrating in large flocks across India and over the Arabian Sea to winter in Southern Africa**. The raptor (bird of prey) — the size of a pigeon — makes its home in Nagaland, flying a staggering 22,000 km from there to South Africa, then onto Mongolia and back to **Nagaland**. The bird has one of the longest and most fascinating migratory paths in the avian world. Pangti village in Nagaland is considered as the world's Amur Falcon capital.

Statement 3: **The bar-headed goose migrates over the Himalayas to spend the winter in parts of South Asia (from Assam to as far south as Tamil Nadu)**. The modern winter habitat of the species is cultivated fields, where it feeds on barley, rice and wheat, and may damage crops.

Statement 4: **The great white pelican** also is known as rosy pelican is a large bird with a long beak and a large throat pouch, distributed in Eastern Europe, Africa, and Northwest India. **This species migrates to India during winters** in large numbers and settles down mainly in the states of Assam, Uttar Pradesh, Rajasthan, and Gujarat.

Hence, all statements are correct.

**Q.4) Consider the following statements:**

1. Bioassay is a test in which organisms are used to detect the presence or the effects of any other physical factor, chemical factor, or any other type of ecological disturbance.
2. Keystone species is a dominant primary producer in an ecosystem both in terms of abundance and influence.

**Which of the above given statements is/are correct?**

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

**Q.4) Solution (a)**

**Explanation:**

Statement 1: **The Bioassay is a test in which organisms are used to detect the presence or the effects of any other physical factor, chemical factor, or any other type of ecological disturbance.**

- Bioassays are very common in pollution studies.
- Bioassays can be conducted by using any type of organisms. However, the fish and insect bioassays are very common.
- The aim is to find out either lethal concentration or effective concentration causing mortality or other effects.

Statement 2: **Foundation species is a dominant primary producer in an ecosystem both in terms of abundance and influence.** Example: kelp in kelp forests and corals in coral reefs.

**Keystone species** is a species whose addition to or loss from an ecosystem leads to major changes in abundance or occurrence of at least one other species. Certain species in an ecosystem is considered more important in determining the presence of many other species in that ecosystem.

- All top predators (Tiger, Lion, Crocodile, Elephant) are considered as keystone species because it regulates all other animals' population indirectly. Hence top predators are given much consideration in conservation.

Hence, statement 2 is incorrect.

**Q.5) Which of the following methods are being suggested to treat Air pollution from Thermal Power Plant?**

1. Gravitational settling chamber
2. Using electrostatic precipitator
3. Fluidised Bed Combustion

**Choose appropriate option:**

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

**Q.5) Solution (d)**



**Explanation:**

Methods to control air Pollution from Thermal Power Plant:-

- **Electrostatic precipitator:** It is a device that helps in pollution control by removing many chemicals. These chemicals are lime salts, activated charcoal. It also removes particles called 'Fly ash' because they are light and tend to fly around in hot flue gases.
- **Particulate filter:** It separates the particulate matter from the gases in electric power plants. The smoke passes through a series of cloth bags which trap the particulate matter.
- **Gravitational settling chamber:** This device consists of huge rectangular chambers. The gas stream polluted w/particulates is allowed to enter from one end. The horizontal velocity of the gas stream is kept low in order to give sufficient time for the particles to settle by gravity.
- **Scrubber:** It is a device that employs spray of water to catch pollutants during emissions. A dry scrubber is used to remove acid gases.
- **FLUIDISED Bed Combustion:** is a new technique to reduce the emission of sulphur dioxide and oxides of nitrogen. In the Fluidised bed system, lime stone or dolomite is used as bed material. The lime stone reacts with  $SO_2$  in flue gases from the bottom of the bed. Another advantage of using Fluidised bed is stabilization of combustion at 700 to 900 C. This temperature is well below the ash can be tapped from the bottom of the bed. The low combustion temperature also reduces the formation of oxides of nitrogen.

**Q.6) Consider the following statements in context of Wildlife census**

1. In India, Only Tiger and Elephant census is done at National level periodically.
2. According to the 4<sup>th</sup> Tiger census, Karnataka has highest tiger Populations.
3. Only critically endangered species are included Recovery programmes for saving critically endangered species.

**Which of the statements given above is/are correct?**

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

**Q.6) Solution (a)**

**Statement Analysis**

Statement 1: Census of major flagship species is undertaken at the State-level by the respective State/Union Territory Governments periodically. **However census of tiger and elephant is undertaken at the national level once every four and five years respectively.** As per the report of the latest census carried out by the state and central government, the population of endangered species especially lions, rhinos, tigers, and elephants has increased in country.

While National-level estimation processes are done for Tigers, Rhinos and Elephants and Snow Leopards but there is difference between the two, i.e. census is regular and consistent while estimation is not. **So, don't confuse. Hence, statement 1 is correct.**

Statement 2: According to the 4<sup>th</sup> Tiger census conducted in 2018, **Madhya Pradesh saw the highest number of tigers at 526, closely followed by Karnataka at 524 with Uttarakhand at number 3 with 442 tigers.** It was a moment of pride for the country as it achieved its commitment to the St.Petersburg Declaration, of doubling Tiger population, much in advance to the 2022 deadline. **Hence, statement 2 is incorrect.**

Statement 3: There are currently 22 species under the recovery programme for critically endangered species **out of which only Hangul, Indian Bustard, Malabar Civet and Jerdon Cursor are critically endangered.** Hence, statement 3 is incorrect.

**Q.7) Consider the following statements:**

1. Usage of Diclofenac for treatment of domestic animal was the major cause of decrease of Vulture Population in India.
2. Red-headed vulture is on critically endangered list of IUCN but not listed under Schedule I of the Wild Life (Protection) Act, 1972.

**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.7) Solution (a)**

**Basic introduction:**

Vultures are large, magnificent raptors, often referred to as nature's own disposal system because of their scavenging habits. Until recently, India was home to large numbers of vultures – some of which thrived around human habitation, notably by scavenging in nearby carcass dumps.

**Statement analysis:**

Statement 1: A sharp decline in the vulture population was noted in the 1990s. The numbers of these once numerous and widespread raptors have since fallen by over 99% for some species. **Diclofenac, an anti-inflammatory drug administered to livestock, proved to be fatal to vultures.** Veterinary formulations of Diclofenac have since been banned, and the numbers of some vultures are stabilising, and in some cases – recovering. **Hence, statement 1 is correct.**

Statement 2: Out of nine vulture species in India, four namely — white-backed vulture, long-billed vulture, slender-billed vulture and red-headed vulture — are listed as critically endangered by the IUCN and **all are in the Schedule-1 of the Wildlife Protection Act**, the highest category of endangerment. **Hence, statement 2 is incorrect.**

**Q.8) Which of the following is a plant succession limited by water availability?**

- a) Xerosere
- b) Hydrosere
- c) Psammosere
- d) Lithosere

**Q.8) Solution (a)**

**Explanation:**

**Psammosere** is a seral community, an ecological succession that began life on newly exposed coastal sand. Most common psammoseres are sand dune systems.

**Xerosere** is a plant succession that is limited by water availability. It includes the different stages in a xerarch succession. Xerarch succession of ecological communities originated in extremely dry situation such as sand deserts, sand dunes, salt deserts, rock deserts etc.

**Hydrosere** is a plant succession which occurs in an area of fresh water such as in oxbow lakes and kettle lakes. In time, an area of open freshwater will naturally dry out, ultimately becoming woodland. During this change, a range of different landtypes such as swamp and marsh will succeed each other.



**Lithosere** (a sere originating on rock) is a plant succession that begins life on a newly exposed rock surface, such as one left bare as a result of glacial retreat, tectonic uplift as in the formation of a raised beach, or volcanic eruptions.

**Q.9) Global Environment Outlook is published by**

- a) IPCC
- b) World Bank
- c) UNEP
- d) UNDP

**Q.9) Solution (c)**

**Explanation:**

**Global Environment Outlook (GEO)** is a series of reports on the environment issued periodically by the **United Nations Environment Programme (UNEP)**. The GEO project was initiated in response to the environmental reporting requirements of UN Agenda 21 and to a UNEP Governing Council decision of May 1995 which requested the production of a new comprehensive global state of the environment report.

The sixth edition of the Global Environment Outlook (GEO-6) published in 2019 provides a clear assessment of the current state of the environment, the challenges that we face and how well we have dealt with them, with due consideration given to gender, indigenous knowledge and cultural dimensions.

**Q.10) "It is a second largest contiguous protected area network and is largest high altitude reserve in India. It has highest density of Snow Leopard in the World and it lies in rain shadow area of Himalayas." Which of the protected area is being discussed here?**

- a) Namdampha National Park
- b) Nanda Devi Biosphere Reserve
- c) Kanchenjunga National Park
- d) Hemis National Park

**Q.10) Solution (d)**

**Explanation:**

Hemis National Park, is a high altitude national park in Ladakh. It is the only national park that lies north of the Himalayan Mountains and is the **second-largest contiguous protected zone in India after Nanda Devi Biosphere reserve.**

- It is also **the largest notified protected area** and national park in the country.
- The Indus river serves as the park's eastern and northern boundary and several of the rivers major catchment areas such as Rumbak and Markha fall within the national park. In the west, the Zaskar river acts as a boundary.
- The Park falls within the Karakoram-West Tibetan Plateau alpine steppe ecoregion. It primarily consists of alpine shrublands, alpine meadows, and alpine tundra.
- The mean annual precipitation in the region varies from 200mm to 900mm and 90% of it is in the form of snow. This **region is in the rain shadow of the Himalayas.**
- It is globally famous for its snow leopards, it is believed to have the **highest density of them in any protected area in the world.**

**Q.11) Consider the following statements about Sunderban Delta:**

1. It is the only mangrove forest inhabited by Tigers.
2. It is both Ramsar Site and World Heritage site.

**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 (c)**

**Statement Analysis**

Statement 1: The Sundarbans is a mangrove area in the delta formed by the confluence of the Ganges, Brahmaputra and Meghna Rivers in the Bay of Bengal. It is spread over India and Bangladesh, **is the only mangrove forest in the world inhabited by tigers.**

Statement 2: **It is a UNESCO World Heritage Site inscribed in 1987 and it has been designated as a Ramsar site since 2019.** It is considered as a World Network of Biosphere Reserve (Man and Biosphere Reserve) from 1989.

Hence, both are correct.

**Q.12) Consider the following statements about Montreux Record:**

1. It is register of wetland sites on the List of Wetlands of International Importance.
2. It is maintained as a part of Ramsar List.
3. Currently Chilika Lake and Kaledao National Park from India is listed under it.

**Which of the above statements is/are correct?**

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

**Q.12) Solution (a)**

**Statement Analysis**

Statement 1: 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.

Statement 2: Montreux record is a voluntary mechanism to highlight specific wetlands of international importance that are facing immediate challenges. It is maintained as part of the List of Ramsar wetlands of international importance. **It is under Ramsar Site.**

Statement 3: Currently, two wetlands of India are in Montreux record i.e. Keoladeo National Park (Rajasthan) and Loktak Lake (Manipur), **Chilka Lake (Odisha) was placed in record but was later removed from it. Hence, statement 3 is incorrect.**

**Q.13) Consider the following statements about International Renewable Energy Agency:**

1. It is an intergovernmental organisation that supports countries in their transition to a sustainable energy.
2. IRENA is the first international organisation to focus exclusively on the issue of renewable energies.
3. IRENA is an official United Nations observer.

Which of the above statements is/are correct?

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

**Q.13) Solution (d)**

**Basic Information:**

The International Renewable Energy Agency (IRENA) is an intergovernmental organisation mandated to facilitate cooperation, advance knowledge, and promote the adoption and **sustainable use of renewable energy**.

- It is **the first international organisation to focus exclusively on renewable energy**.
- The aim of the new Agency is to close throughout the world the gap between the enormous potential of renewables and their current relatively low market share in energy consumption.
- It was founded in 2009 and its statute entered into force on 8 July 2010.
- The agency is headquartered in Abu Dhabi
- **IRENA is an official United Nations observer.**

**Q.14) Recently which of the following has become the first state or UT to launch Carbon Watch, a mobile application to assess the carbon footprint of an individual?**

- a) Karnataka
- b) Madhya Pradesh
- c) Chandigarh
- d) Delhi

**Q.14) Solution (c)**

**Explanations:**

In news: **Chandigarh** became the first state or Union Territory in India to launch **Carbon Watch**, a mobile application to assess the carbon footprint of an individual. Although the app can be accessed by everyone, it has specific options for the residents of Chandigarh to compile a detail study.



**Q.15) Recently two wetlands have been declared as Ramsar site, of which Kabartal wetland is located in?**

- a) Uttarakhand
- b) Uttar Pradesh
- c) Bihar
- d) Tamil Nadu

**Q.15) Solution (c)**

**Explanation:**

Recently, **Kabartal in Bihar's Begusarai district** was recognised as a wetland of international importance, the first such wetland in the state, under the Ramsar Convention. Besides Karbatal, **Asan Wetland from Uttarakhand** has also been included in Ramsar site.

Earlier in 2020, India designated 10 more wetlands as a Ramsar site, taking the total number from 27 to 37. With 2 more inclusions, the total number of Ramsar sites in India is 39, the highest in South Asia.

**Q.16) Which of the following farming practices contribute to Carbon sink?**

- 1. Reduction in tillage
- 2. Reducing fallow periods
- 3. Planting shrubs and trees as shelterbelts
- 4. Adding synthetic manures and Pesticide

**Select the correct option:**

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

**Q.16) Solution (b)**

**Explanation:**

Historically, when lands were first cropped, large amounts of carbon were lost because cultivation accelerated decay and removal of harvests meant less carbon was returned to soil. But today, farmers can rebuild some of the lost carbon through improved practices.

If land management practices are changed in ways that increase the soil organic carbon, CO<sub>2</sub> is effectively removed from the atmosphere and stored or 'sequestered' in the soil. The size of the 'sink' is increased. **Farm practices that contribute to the carbon sink are:**

- Reduction in tillage
- Restoring degraded land, improving pasture management
- Reducing fallow periods
- Adding animal manures to the soil
- Crop residue management
- Using legumes and/or grasses in crop rotations
- Converting marginal crop land to perennial grass or trees
- Using rotational grazing and high-intensity/short duration grazing
- Planting shrubs and trees as shelterbelts
- Restoring wetlands

In addition to sequestering carbon in the soil, these practices also increase soil productivity, enhance the quality of water running off or draining from agricultural land, and provide a more hospitable environment for wildlife inhabiting agricultural lands.

**Q.17) Consider the following about Convention on Biological Diversity:**

1. It is a legally binding convention.
2. It does not cover genetic resources.
3. Cartagena Protocol on Biosafety is one of its Supplementary agreement.

**Select the correct statements:**

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

**Q.17) Solution (c)**

**Explanation:**

Statement 1: **CBD is a legally binding Convention** recognized for the first time, that the conservation of biological diversity is “a common concern of humankind” and is an integral part of the development process. The convention was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993.

Statement 2: The **agreement covers all ecosystems, species, and genetic resources.**

Statement 3: **It has two supplementary agreements, the Cartagena Protocol and Nagoya Protocol.** The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another. It was adopted on 29 January 2000 as a supplementary agreement to the CBD and entered into force on 11 September 2003.

**Q.18) Consider the following statements about National Board for Wildlife:**

1. It is a statutory body chaired by Minister of Environment, Forest and Climate change.
2. No alternation of boundaries in wildlife sanctuaries can be done without approval of the National Board of Wildlife (NBWL).

**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.18) Solution (b)**

**Explanation:**

Statement 1: **The National Board for Wildlife (NBWL) is a “statutory board” constituted under the Wild Life (Protection) Act, 1972 (wildlife act).**

- However, it is important to point out that the wildlife act, as originally enacted in 1972, did not provide for the NBWL.
- It was only through an amendment of the wildlife act in 2002 that the NBWL was constituted.

- It is a 47-member committee, **headed by the Prime Minister** and the minister of environment, forest and climate change (environment minister) as vice chairperson. **Hence, statement 1 is incorrect.**

Statement 2:

The NBWL Standing Committee chaired by the Union Minister, Environment & Forests is duty bound to ensure compliance of the mandate's statutory processes prescribed by the WLPA in letter and spirit.

Specific provisions in the WLPA include:

- **No alteration of the boundaries of a National Park or wildlife sanctuaries except on a recommendation of the National Board for Wildlife; Hence, statement 2 is correct.**
- No destruction, removal of wildlife or forest produce from a National Park or diversion of habitat unless State Government in consultation with the National Board for wildlife authorizes the issue of such permit.
- Ensure Tiger Reserves and areas linking one protected area with another are not diverted for ecologically unsustainable uses except in public interest and with the approval of the National Board for wildlife.
- No alteration or denotification of Tiger Reserves without the approval of the National Board for Wildlife.

**Q.19) Consider the following statements about Great Green wall Project:**

1. It is a project to address desertification, land degradation and climate change in Sahel Region of Africa.
2. It is led by African Union and aims to grow 8,000-kilometre-long and 15-km-wide mosaic of trees, grasslands, vegetation and plants.

**Which of the statements given above is/are correct?**

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

**Q.19) Solution (c)**



**Explanation:**

In News: More than 13 years after the **Great Green Wall (GGW) initiative** was started by the African Union **to address desertification, land degradation and climate change in the Sahel region**, the project had hit a wall due to funds crunch. The project aims to restore 100 million hectares of degraded land by 2030; only four million hectares had been restored between 2007 and 2019.

GGW, as conceived by 11 countries located along the southern border of the Sahara and their international partners, is aimed at limiting the desertification of the Sahel zone.

The GGW initiative, **launched in 2007 by the African Union**, aims to transform the lives of 100 million people by growing **an 8,000-kilometre-long and 15-km-wide mosaic of trees, grasslands, vegetation and plants.**

**Q.20) Consider the following statements about Coral Bio-Triangle Region:**

1. The Coral Triangle is a marine area located in the western Pacific Ocean
2. Due to its importance it is known as Amazon of the seas.

**Select the correct statements:**

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

**Q.20) Solution (c)**

**Explanation:**

**The Coral Triangle is a marine area located in the western Pacific Ocean.** It includes the waters of Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor Leste and Solomon Islands. Named for its staggering number of corals (nearly 600 different species of reef-building corals alone), the region nurtures six of the world's seven marine turtle species and more than 2000 species of reef fish.

As one of eight major coral reef zones in the world, the Coral Triangle is recognized as a global centre of marine biodiversity and a global priority for conservation. **Known as the "Amazon of the seas", its biological resources make it a global hotspot of marine biodiversity.** It is said to be 10 times as biodiverse as Australia's Great Barrier Reef.

**Q.21) Consider the following statements about the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS):**

1. It is an international legal agreement between all the member nations of the World Trade Organization (WTO).
2. TRIPS Agreement is also described as a “Berne and Paris-plus” Agreement.
3. TRIPS was negotiated at the end of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT).

**Which of the above statements is/are correct?**

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

**Q.21) Solution (d)**

**Explanation:**

**About TRIPS Agreement**

- It is an international legal agreement between all the member nations of the World Trade Organization (WTO).
- It establishes minimum standards for the regulation by national governments of different forms of intellectual property (IP) as applied to nationals of other WTO member nations.
- It applies basic international trade principles regarding intellectual property to member states.
- **TRIPS was negotiated at the end of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) between 1989 and 1990 and is administered by the WTO.**
- TRIPS Agreement lays down the permissible exceptions and limitations for balancing the interests of intellectual property with the interests of public health and economic development.
- **The TRIPS Agreement is also described as a “Berne and Paris-plus” Agreement.**
- India's IPR regime is in compliance with the WTO's agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

- The Agreement makes disputes between WTO Members about the respect of the TRIPS obligations subject to the WTO's dispute settlement procedures.

Hence all statements are correct.

**Q.22) Recently which of the following country started first space military exercise called 'AsterX'?**

- a) USA
- b) France
- c) China
- d) Japan

**Q.22) Solution (b)**

**Explanation:**

**Space Military exercise: AsterX**

- Amid the growing competition among the world powers in the field of space, France has begun its first space military exercises to test its ability to defend its satellites.
- The exercise drills are codenamed "AsterX" to commemorate the first French satellite Asterix from 1956.
- These exercises are part of France's strategy to become the world's third- largest space power, after the USA and China.
- These space military exercises are the first ever attempt not only for the French army but also for Europe.

**Q.23) Consider the following statements about 'Mucormycosis':**

1. It is an aggressive and invasive bacterial infection.
2. The disease often manifests in the skin and also affects the lungs and the brain.
3. It mainly affects people who are on medication for health problems that reduces their ability to fight environmental pathogens.

**Which of the statements given above are correct?**

- a) 1 and 2 only

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

**Q.23) Solution (c)**

**Explanation:**

**Mucormycosis**

- It is a rare serious **fungal infection** that has been observed in a number of Covid-19 patients recently. **Hence, statement 1 is incorrect**
- It **often manifests in the skin and also affects the lungs and the brain.**
- It is caused by a group of moulds known as mucormycetes present naturally in the environment.
- **It mainly affects people who are on medication for health problems that reduces their ability to fight environmental pathogens.**
- Warning signs of the disease include pain and redness around the eyes or nose, with fever, headache, coughing, shortness of breath, bloody vomits, and altered mental status.

**Q.24) Consider the following statements about the species of Pangolins found in India:**

1. Indian Pangolin is endemic to India.
2. Chinese Pangolin is critically endangered while Indian Pangolin is endangered under IUCN list.
3. Both these species are protected and are listed under the Schedule I Part I of the Wild Life (Protection) Act, 1972

**Which of the above given statements is/are incorrect?**

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

**Q.24) Solution (d)**

**Explanation**



### About Pangolins found in India

- Out of the eight species of pangolin, the Indian and the Chinese pangolins are found in India. Pangolins are among the world's most trafficked mammals.

### Habitat

- Indian Pangolin is widely distributed in India, except the arid region, high Himalayas and the North-East. The species is also found in Bangladesh, Pakistan, Nepal and Sri Lanka. **Hence, statement 1 is incorrect, since it is not endemic to India.**
- Chinese Pangolin is found in the Himalayan foothills in Eastern Nepal, Bhutan, Northern India, North-East Bangladesh and through Southern China.

### THREATS

- Loss and deterioration of habitat
- Increase in the agrarian economy
- improved irrigation and the use of pesticides .

### IUCN Red List

- Indian Pangolin: Endangered ,
- Chinese Pangolin: Critically Endangered

**Both these species are listed under Schdule I Part I of the Wildlife (Protection) Act, 1972.**

### Q.25) Consider the following statements about “Adoptions provisions in India”

1. Central Adoption Resource Authority (CARA) functions as the nodal body for adoption of Indian children and is mandated to monitor and regulate in-country and inter-country adoptions
2. In India Adoption is governed by the Adoption Regulations 2017 and in accordance with the Juvenile Justice (Care and Protection of Children) Act, 2015.
3. India has ratified Hague Convention on Inter-country Adoption.

**Which of the above given statements is/are correct?**

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

- c) 2 and 3 only
- d) 3 only

**Q.25) Solution (b)**

**Explanation:**

**Adoptions provisions in India**

- It is **governed by the Adoption Regulations 2017 and in accordance with the Juvenile Justice (Care and Protection of Children) Act, 2015**, under the Ministry of Women and Child Development.
- JJ Act, 2015 prohibits offering or receiving children outside the processes laid down under the Act as well as their sale and purchase
- The Act gave statutory status to **Central Adoption Resource Authority (CARA), which is the nodal body for adoption of Indian children and is mandated to promote and facilitate in-country and inter-country adoptions.**
- CARA also deals with inter-country adoptions in accordance with the provisions of the **Hague Convention on Inter-country Adoption, 1993, ratified by India in 2003.**
- CARA primarily deals with adoption of orphan, abandoned and surrendered children through its associated /recognised adoption agencies.
- CARA is responsible for granting a 'no objection' certificate for all inter-country adoptions, pursuant to India becoming a signatory to the 1993 Hague Convention on Protection of Children and Cooperation in Respect of Inter-country Adoptions.
- India is also a signatory to the UN Convention on the Rights of the Child.

**Q.26) Consider the following statements regarding 'export of organic products' –**

1. At present, organic products are exported provided they met the requirements of the National Programme for Organic Production (NPOP).
2. Organic products covered under the bilateral agreement with NPOP need not be recertified for import in India.

**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 (c)**

**Explanation:**

**Export of organic products from India**

- At present, organic products are exported provided they are produced, processed, packed and labelled as per the requirements of the National Programme for Organic Production (NPOP).
- The NPOP has been implemented by APEDA since its inception in 2001 as notified under the Foreign Trade (Development and Regulations) Act, 1992.
- NPOP has also been recognized by the Food Safety Standard Authority of India (FSSAI) for trade of organic products in the domestic market.
- Organic products covered under the bilateral agreement with NPOP need not be recertified for import in India.

Hence, Both statements are correct.

**Q.27) Consider the following statements about 'Agricultural and Processed Food Products Export Development Authority (APEDA):**

1. It is a statutory body under Ministry of Agriculture and Farmer Welfare.
2. APEDA is mandated with the responsibility of export promotion and development of scheduled products such as Fruits, Vegetable, Meat, Poultry Products.
3. APEDA has been entrusted with the responsibility to monitor import of sugar.

**Which of the statements given above is/are correct?**

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

**Q.27) Solution (c)**

**Explanation:**

- It was established under the Agricultural and Processed Food Products Export Development Authority Act passed by the Parliament in December, 1985.
- It functions under Ministry of Commerce and Industry.

- **APEDA is mandated with the responsibility of export promotion and development of scheduled products such as Fruits, Vegetable, Meat, Poultry Products.** Dairy Products, Confectionery, Biscuits, Bakery Products, Honey, Jaggery and Sugar Products, Cocoa products, chocolates, floriculture Products. Pickles, Papads and Chutneys etc. > It also provides financial assistance, Information, guidelines towards the development of scheduled products.
- **In addition to this, APEDA has been entrusted with the responsibility to monitor import of sugar.**
- APEDA has marked its presence in almost all agro potential states of India and has been providing services to agri-export community through its head office, five Regional offices and 13 Virtual offices.

**Q.28) Which of the following agency conducts consumer confidence survey?**

- a) FICCI
- b) RBI
- c) Department of Financial services
- d) NSO

**Q.28) Solution (b)**

**Explanation**

**About Consumer Confidence Survey**

- It is conducted by the Reserve Bank of India (RBI)
- CCS seeks qualitative responses from households, regarding their sentiments on the general economic situation, employment scenario, price level, households' income and spending which provides useful inputs for monetary policy.
- The Consumer Confidence survey has two main indices - current situation index and future expectations index. The current situation index measures the change in consumer perception over an economic issue in the last one year while the future expectations index measures what consumer thinks about the same variables, one year ahead.

**Q.29) Consider the following statements about 'India's engagement with the Arctic region'**

1. India is member of Arctic council since 2013.
2. India has a permanent research station in the Arctic called Bharati.



3. The research in the Arctic region from India is coordinated, conducted, and promoted by Ministry of Earth Sciences.

Which of the statements given above is/are correct?

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

**Q.29) Solution (c)**

**Explanation:**

**India and Arctic**

- India's engagement with the Arctic began in 1920 with the signing of the Svalbard Treaty in Paris.
- Since July 2008, India has a permanent **research station in the Arctic called Himadri** at Ny Alesund, Svalbard Area in Norway. (**Not Bharati, it is a research station in Antarctic.**)
- **Since 2013, India enjoys 'Observer' status in the Arctic Council** with twelve other countries (Japan, China, France, Germany, UK, Italy, Switzerland, Poland, Spain, Netherlands, Singapore, and South Korea). **India is not a member of Arctic council.** Only countries bordering Arctic Ocean can become member of Arctic Council. **Hence statement 2 is incorrect.**
- It has also deployed a multi-sensor moored observatory called IndARC in the Kongsfjorden fjord since July 2014.
- The launch of NISAR (NASA-ISRO Synthetic Aperture Radar) satellite mission by India, in collaboration with the USA, is underway.
- India also contributes to the Sustained Arctic Observational Network (SAON).
- **The research in the Arctic region from India is coordinated, conducted, and promoted by the National Centre for Polar and Ocean Research (NCPOR), Goa, under the Ministry of Earth Sciences**

**Q.30) Consider the following statements about 'Asian Development Bank':**

- 1. It was established by members of ASEAN Countries in Manila.
- 2. India is one of its founding members.

3. It was modelled closely on the World Bank, and has a similar weighted voting system.

Which of the statements given above is/are correct?

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

**Q.30) Solution (d)**

**Explanation:**

**About Asian Development Bank (ADB):**

- It was conceived in the early 1960s when a resolution was passed at the first Ministerial Conference on Asian Economic Cooperation held by the United Nations Economic Commission for Asia and the Far East in 1963.
- **The institution was opened in 1966 at Manila, Philippines with 31 initial members.**
- Headquarters: Manila, Philippines
- Members: It has 67 members—of which 48 are from within Asia and the Pacific and 19 outside.
- **India is one of the founding members.**
- Objective: A financial institution that would be Asian in character and foster economic growth and cooperation in one of the poorest regions in the world.
- ADB provides loans, technical assistance and grants.
- Working: **The ADB was modelled closely on the World Bank, and has a similar weighted voting system where votes are distributed in proportion with members' capital subscriptions.**
- As of 31 December 2016, Japan and USA hold the largest proportion of shares (15.607%), China holds 6.444%, India holds 6.331%, and Australia holds 5.786%
- ADB is an official United Nations Observer.
- **It was not established by ASEAN member countries. Hence, statement 1 is incorrect.**

Read the following passage and answer the questions that follow each passage. Your answer to these questions should be based on passage only.

**Passage 1**

The forest fire in Tamil Nadu's Theni hills that claimed the lives of 11 trekkers and severely injured many others is a heart-rending tragedy, with many of them being women who were out to celebrate International Women's Day. Questions are naturally being asked whether the Forest Department failed to stop treks during the February-June fire season, and whether the response to the early distress alerts was slow. It appears that the difficult terrain gave many of those caught in the fire line little chance, and proved challenging for the State's rescue operation launched in coordination with the Central government. The residents of the hills played a commendable role in aiding the effort. Yet, several families are left scarred as they try to cope with the loss of loved ones. The tragedy has highlighted the lack of emphasis on safety in the way such events are organised. Indeed, if there is any lesson that can be learnt from the episode, it is that such adventures should place safety above everything else, and that the government has a key role to play in evolving the protocols. In a country with rich landscapes and forests, the wish to briefly leave the urban life behind and take to the outdoors is but natural.

**Q.31) Which of the following best describes the central theme of the given passage?**

- a) The fatal incident of women who struck in forest fire while celebrating International Women's Day
- b) Heroic role played by the residents of the hills in rescuing the fire incident victims
- c) Lack of emphasis on safety while going outdoors
- d) None of the above

**Q.31) Solution (c)**

Option a is just an extracted statement from the passage which does not give the whole picture of the passage.

Option b is not the theme

In passage safety is emphasised number of times which talks about the central theme of the passage. Forest fire incident is just an example to show that how safety measures are ignored while going outdoors.

Hence option c is correct.

## Passage 2

There is strong evidence that alcohol causes cancer at seven sites in the body and probably others. Current estimates suggest that alcohol-attributable cancers at these sites make up 5.8% of all cancer deaths world-wide. Confirmation of specific biological mechanisms by which

alcohol increases the incidence of each type of cancer is not required to infer that alcohol is a cause.

**Q.32) What is the stated relation between alcohol consumption and the occurrence of the cancer?**

1. There is no evidence to show any correlation between the two.
2. Strong evidence is available to show that they are directly correlated atleast for the seven sites into discussion.

**Which of the following is correct?**

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

**Q.32) Solution (b)**

It is clearly mentioned that strong evidence is there to prove the correlation between alcohol and the cancer at the seven discussed sites.

### Passage 3

I've been following the economic crisis for more than two years now. I began working on the subject as part of the background to a novel, and soon realized that I had stumbled across the most interesting story I've ever found. While I was beginning to work on it, the British bank Northern Rock blew up, and it became clear that, as I wrote at the time, "If our laws are not extended to control the new kinds of super-powerful, super-complex, and potentially super-risky investment vehicles, they will one day cause a financial disaster of global-systemic proportions." I was both right and too late, because all the groundwork for the crisis had already been done—though the sluggishness of the world's governments, in not preparing for the great unravelling of autumn 2008, was then and still is stupefying. But this is the first reason why I wrote this book: because what's happened is extraordinarily interesting. It is an absolutely amazing story, full of human interest and drama, one whose byways of mathematics, economics, and psychology are both central to the story of the last decades and mysteriously unknown to the general public. We have heard a lot about "the two cultures" of science and the arts—we heard a particularly large amount about it in 2009, because it was the fiftieth anniversary of the speech during which C. P. Snow first used the phrase. But I'm not sure the idea of a huge gap between science and the arts is as true as it was half a century ago—it's certainly true, for instance, that a general reader who wants to pick up an education in the



fundamentals of science will find it easier than ever before. It seems to me that there is a much bigger gap between the world of finance and that of the general public and that there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us. Many bright, literate people have no idea about all sorts of economic basics, of a type that financial insiders take as elementary facts of how the world works. I am an outsider to finance and economics, and my hope is that I can talk across that gulf.

My need to understand is the same as yours, whoever you are. That's one of the strangest ironies of this story: after decades in which the ideology of the Western world was personally and economically individualistic, we've suddenly been hit by a crisis which shows in the starkest terms that whether we like it or not—and there are large parts of it that you would have to be crazy to like—we're all in this together. The aftermath of the crisis is going to dominate the economics and politics of our societies for at least a decade to come and perhaps longer.

**Q.33) According to the passage, the author is likely to be supportive of which one of the following programmes?**

- a) An educational curriculum that promotes economic research.
- b) An educational curriculum that promotes developing financial literacy in the masses.
- c) The complete nationalisation of all financial institutions.
- d) Economic policies that are more sensitively calibrated to the fluctuations of the market.

**Q.33) Solution (b)**

The author laments the fact that many bright, literate people have no idea about all sorts of economic basics. So, he is likely to be supportive of an educational curriculum that promotes developing financial literacy in the masses.

Note that option 'a' is incorrect as it talks of economic "research".

There is no basis for options c and d in the passage. Hence, option b is correct.

**Q.34) All of the following, if true, could be seen as supporting the arguments in the passage, except:**

- a) The story of the economic crisis is also one about international relations, global financial security, and mass psychology.
- b) Economic crises could be averted by changing prevailing ideologies and beliefs.
- c) The failure of economic systems does not necessarily mean the failure of their ideologies.



- d) The difficulty with understanding financial matters is that they have become so arcane.

**Q.34) Solution (c)**

The author calls the crisis "absolutely amazing story, full of human interest and drama, one whose byways of mathematics, economics, and psychology are both central to the story". So, Option 'a' is in line with the arguments in the passage.

While beginning to work on the crisis the author wrote that was extending the laws to control risky investment vehicles was essential to avoid a global financial disaster. Option b, too, is in line with the arguments in the passage.

The author also states that "there is a need to narrow that gap, if the financial industry is not to be a kind of priesthood, administering to its own mysteries and feared and resented by the rest of us". In other words, financial matters have become very arcane and difficult to understand. So, option 'd' supports the arguments in the passage.

However, in the last paragraph, the author states that the economic crisis shows the failure of the personally and economically individualistic ideology of the Western world. Hence, option c, if true, does not support the arguments in the passage.

**Q.35) Three partners shared the profit in a business in the ratio 4:6:8. They had partnered for 12 months, 8 months and 6 months respectively. What was the ratio of their investments?**

- a) 4:6:8
- b) 4:7:8
- c) 4:8:16
- d) 4:9:16

**Q.35) Solution (d)**

Let their investments be Rs x for 12 months, Rs y for 8 months and Rs z for 6 months respectively.

Then,  $12x : 8y : 6z = 4 : 6 : 8$

Now,  $12x/8y = 4/6 \Leftrightarrow 9x=4y \Leftrightarrow y=9x/4$

And,  $12x/6z = 4/8 \Leftrightarrow 4x=z \Leftrightarrow z=4x$

Therefore,  $x : y : z = x : 9x/4 : 4x = 4 : 9 : 16$