

**Q.1) Consider the following statements with respect Adaption Gap Report 2020:**

1. It is released by UNFCCC.
2. This report show positive development in area of Adoption by countries.
3. Paris Agreement majorly focussed on Mitigation, while ignored the adaption.

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

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

**Q.1) Solution (b)**

**Statements Explanation**

Statement 1: Adaptation Gap Report was released by United Nations Environment Programme (UNEP).it was fifth Adaption gap report. **(So statement 1 is incorrect).**

**Statement 2:** Adaptation Gap Report, 2020 assessed on three parameters –

- Planning → Adaptation action is now widely embedded in policy planning across the world. 72% of countries have adopted at least one national-level adaptation planning instrument
- Finance→ Adaption financial gap is not closing, but there has been increase in Finance.
- Implementation → Implementation of adaptation actions is growing, but there is yet limited evidence of climate risk reduction.

**(So statement 2 is correct.)**

Statement 3: Adaptation is a key pillar of the Paris Agreement. The Agreement requires all of its signatories to plan and implement adaptation measures through national adaptation plans, studies, monitoring of climate change effects and investment in a green future.

**(So statement 3 is incorrect.)**

**Q.2) Consider the following statements about Solar Energy production in India:**

1. National Solar Production has set a target of 100 GW, of which 60% will be from solar rooftop.
2. Currently, Energy from Solar Rooftop only comprises 40% of total solar production.
3. Grid connected Rooftop solar programme are being implemented by DISCOMs.

Which of the following is/are correct statements?

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

**Q.2) solution (b)**

**Explanation**

In a Solar Rooftop system the solar panels are installed in the roof of any residential, commercial, institutional and industrial buildings to produce electricity.

National Solar Mission has set a target to achieve 100 GW of installed capacity of solar energy by the end of 2022. Out of this, 40 GW is the target set for the SRT System. **(So, statement 1 is incorrect)**

At present the SRT systems account only for 12% of solar power generation. **(Hence, statement 2 is incorrect)**

**There are two type of Solar Rooftop system-**

- **SRT System with storage facility** - in this system, solar energy is stored in battery and used when sun is not available.
- **Grid-connected SRT system** – in this system, dc power generated is converted into AC power using power conditioning units.

**Grid Connected Rooftop Solar Programme**

- The Ministry of New and Renewable Energy launched this programme and it is being implemented by DISCOMs (Distribution companies).
- The objective of the programme is to achieve a cumulative capacity of 40 GW by the year 2022 through Grid Connected SRT System.
- DISCOMs are compensated for the additional expenditure they incur on implementing the programme.

**Q.3) Consider the following statements regarding Global Climate Risk Index:**

1. It is released by Germanwatch.

2. India was largest worst-hit country due to extreme weather.
3. India had a highest economic loss in 2019 due to extreme weather events.

Which of the above statement is/are correct?

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

**Q.3) Solution (b)**

**Explanation:**

**GLOBAL CLIMATE RISK INDEX**

- It has been released by Germanwatch (an NGO based in Germany).
- Index analyses to what extent countries and regions have been affected by impacts of weather-related loss events
- Reports about India
  - India had a high number of fatalities and the biggest economic loss in 2019.
  - India was the seventh worst-hit country due to extreme weather events in 2019 (Mozambique is the worst-affected). **(So, statement 2 is incorrect)**
  - Flooding caused by heavy rain was responsible for 1,800 deaths and led to the displacement of 1.8 million people.
  - There were eight tropical cyclones in India. Six of them were “very severe.
- Also Index highlight vulnerability of Poor nations due to damaging effects of hazard and lower adaption and mitigation capacity.

**Q.4) Consider the following statements regarding Ammonia Pollution:**

1. Ammonia is a white-coloured highly reactive and insoluble alkaline gas.
2. Agriculture is largest emitter of Ammonia.
3. Reaction of Ammonia with other gas leads to formation of PM 2.5.

Which of the above statement is/are correct?

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

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

#### Q.4) Solution (c)

#### Explanation:

#### Ammonia Pollution

- Ammonia (NH<sub>3</sub>) is a **colourless highly reactive and soluble alkaline gas. (Hence, Statement 1 is incorrect)**
- It is prominent constituent of the nitrogen cycle that adversely affects ecosystems at higher concentrations.
- **Sources of emissions:**
  - The largest source of NH<sub>3</sub> emissions is agriculture, including animal husbandry and NH<sub>3</sub> based fertilizer applications.
  - Other sources of NH<sub>3</sub> include
    - Industrial processes,
    - Vehicular emissions,
    - Volatilization from soils and oceans,
    - Decomposition of organic waste,
    - Forest fires,
    - Animal and human waste,
    - Nitrogen fixation processes.
- **Usage of Ammonia**
  - Industrial chemical in the production of fertilisers, plastics, synthetic fibres, dyes and other products
  - Manufacturing of fertilizers
- **Effect of Ammonia Pollution**
  - Denitrification which leads to increased greenhouse gas and thus increasing global warming.
  - Air Pollution – it reacts with other oxides and pollutant to form PM 2.5 and fine particle of ammonium salt which result into haze like condition.
  - Water Pollution – it increases toxicity of water and also leads to algal blooms.
  - Ecosystem Damage- excess of Ammonia can lead to eutrophication and acidification, which will have adverse effect on any ecosystem. It may also affect species composition

- Reaction of Ammonia with human body leads to creation of Ammonia Hydroxide, which leads to cellular destruction.

**Q.5) Consider the following pairs of Hydrogen according to their process of extraction:**

<i>Type of Hydrogen</i>	:	<i>Process of Extraction</i>
1. Green Hydrogen	:	Derived from Natural Gas
2. Grey Hydrogen	:	Derived using Fossil Fuel
3. Blue Hydrogen	:	Electrolysis of Water

**Which of the above pairs is/are correctly matched?**

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

**Q.5) Solution (b)**

**Explanation:**

**Types of hydrogen depending upon process of extraction**

- **Green hydrogen:** It is **derived by electrolysis of water**, separating the hydrogen atom within it from oxygen using renewable energy (such as wind, solar or hydro) that eliminates emissions during process.
- **Grey hydrogen:** Hydrogen **derived using fossil fuels** is called as grey hydrogen. Most hydrogen nowadays comes from natural gas: it is bonded with carbon and can be separated from it via a process involving water called "**steam reforming**", but the excess carbon generates CO<sub>2</sub>. Grey hydrogen accounts for most of the production today and emits about 9.3kg of CO<sub>2</sub> per kg of hydrogen production.
- **Blue hydrogen- Hydrogen** is considered blue whenever the emission generated from the steam reforming process are captured and stored underground via industrial carbon capture and storage (CSS), so that it is not dispersed in the atmosphere.

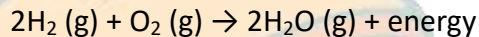
**Basics of Hydrogen Fuel**



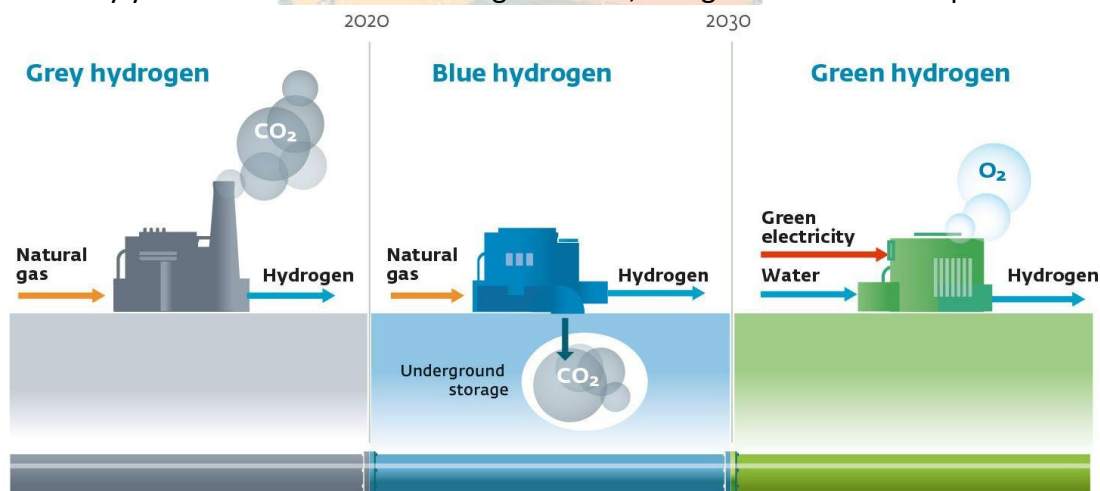
Hydrogen fuel is a zero carbon fuel burned with oxygen. It can be used in fuel cells or internal combustion engines. It has begun to be used in commercial fuel cell vehicles, such as passenger cars, and has been used in fuel cell buses for many years. It is also used as a fuel for spacecraft propulsion.

As of 2018, the majority of hydrogen (~95%) is produced from fossil fuels by steam reforming or partial oxidation of methane and coal gasification with only a small quantity by alternative routes such as biomass gasification or electrolysis of water or solar thermochemistry, a solar fuel with no carbon emissions.

In a flame of pure hydrogen gas, burning in air, the hydrogen (H<sub>2</sub>) reacts with oxygen (O<sub>2</sub>) to form water (H<sub>2</sub>O) and releases energy.



If carried out in atmospheric air instead of pure oxygen, as is usually the case, hydrogen combustion may yield small amounts of nitrogen oxides, along with the water vapour.



**Q.6) Consider the following statements:**

1. India is largest emitter of Sulphur oxide for fifth consecutive year.
2. Sulphur emission is on decline since last year.
3. Biggest contributor of Sulphur oxide in India is copper smelting plants.

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

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

d) 1, 2 and 3

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

**Explanation:**

**Statement 1:** India emitted 21% of global anthropogenic (human-made) SO<sub>2</sub> emissions, mostly from coal-fired power plants that lack pollution-curbing equipment. India still occupies the top emitter's position for the fifth consecutive year followed by Russia and China. Greenpeace India has also released an analysis of NASA data which shows that India has more than 15% of all anthropogenic SO<sub>2</sub> hotspots in the world.

**Statement 2:** For the first time in four years India's sulphur dioxide (SO<sub>2</sub>) emissions recorded a significant decline of approximately 6% in 2019 compared to 2018, the steepest drop in four years, according to a report from Greenpeace India and the Centre for Research on Energy and Clean Air (CREA).

**Statement 3:** As per the report, the biggest emission hotspots in India are thermal power stations (or clusters of power stations) at Singrauli, Neyveli, Sipat etc. Most coal plants in India are lacking in flue-gas desulfurization (FGD) technology, which is necessary to scrub emissions clean off sulphur.

**About Sulphur Oxide**

- It is emitted by the burning of fossil fuels coal, oil, and diesel or other materials that contain sulphur. It is also a natural by-product of volcanic activity. Ex: power plants, metals processing and smelting facilities, and vehicles.
- It can create **secondary pollutants** once released into the air. Secondary pollutants formed with sulphur dioxide include sulphate aerosols, particulate matter, and acid rain.
- It increases the risk of stroke, heart disease, lung cancer, and premature death.

**Q.7) With reference to Dam Rehabilitation and Improvement Project (DRIP), consider the following statements:**

1. This project is being implemented by Central Water Commission.
2. This project also includes capacity building of Dam owners.
3. This project is assisted by World Bank and Asian Infrastructure Investment Bank.

**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.7) Solution (d)**

**Explanation:**

The Dam Rehabilitation and Improvement Project (DRIP) has been taken up with loan assistance of the World Bank for rehabilitation and improvement of about 223 dam Projects initially in seven States (namely Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Tamil Nadu, and Uttarakhand) and institutional strengthening and project management in Central Water Commission (CWC) and other Implementing Agencies; the actual number of dams under DRIP may vary owing to the addition / deletion of dams during implementation. **For Phase II and III, financial assistance of 7000 crore Rupees have been made by World Banks and Asian Infrastructure Investment Bank.**

**The project consists of three components:**

- 1) **Rehabilitation and Improvement of dams and associated appurtenances** → focusing on structural and non-structural measures at 223 project dams, many of which are more than 25 years old. The number of dams proposed for inclusion in the project is based on proposals received from the four participating states
- 2) **Dam Safety Institutional Strengthening in participating States and CWC** → focusing on regulatory and technical frameworks for dam safety assurance. The activities include targeted training nationally and internationally to Dam Safety Organizations at Central (CDSO) and State (SDSO) level, development of Management Information Systems (MIS) and other programs to capture and analyse data for long-term planning and guiding of dam operations; support to the further development within CWC of the Dam Health and Rehabilitation Monitoring Application (DHARMA) program . **In addition to physical rehabilitation, emphasis has been given to capacity building of dam owners through customized training programmes.**
- 3) **Project Management** → The overall responsibility for project oversight and coordination will rest with the Dam Safety Rehabilitation Directorate in the CDSO of CWC.

**Q.8) Consider the following statements about Nitrogen Pollution:**



1.  $N_2O$  is 300 times more potent as a greenhouse gas than carbon dioxide ( $CO_2$ ).
2. Fossil-fuel burning — for power, transport and industry — is the largest emitter of Nitrogen oxide.

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

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

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

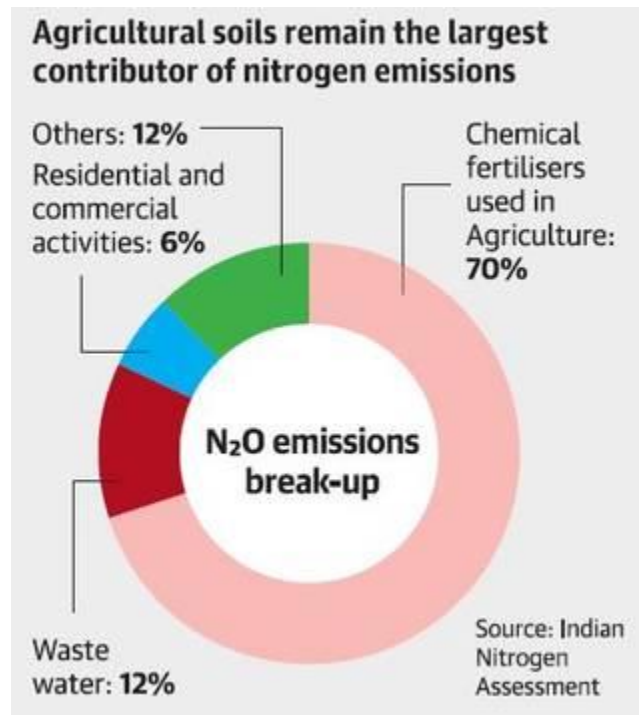
**Explanation:**

**About Nitrogen**

- Nitrogen is essential to all life on Earth as it forms an important component of life-building and propagating biochemical molecules like proteins.
- But overuse in agriculture in the form of fertilisers and other fields have made this important element more bane than boon.
- Some of these forms of nitrogen like  $N_2O$  can have far reaching impacts for humanity.
- $N_2O$  is 300 times more potent as a greenhouse gas than carbon dioxide ( $CO_2$ ).

**Nitrogen Emission in India:**

- $NO_x$  emissions grew at 52% from 1991 to 2001 and 69% from 2001 to 2011 in India.
- Agriculture is the largest contributor to nitrogen emissions.
- Non-agricultural emissions of nitrogen oxides and nitrous oxide were growing rapidly, with sewage and fossil-fuel burning — for power, transport and industry — leading the trend.



**Q.9) Consider the following statement regarding India Water Resources Information System (India- WRIS):**

1. It was launched under National Hydrology Project.
2. National Water Informatics Centre has been established to maintain and update India-WRIS.
3. This portal also contains data regarding evapotranspiration and soil moisture.
4. It is mandatory for every state to provide data regarding water usage under this portal.

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

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

**Q.9) Solution (a)**

**Explanation:**

### India Water Resource Information System

- The Ministry of Jal Shakti has launched a new version of the India Water Resources Information System (India-WRIS) with new functionalities and features.
- **Ministry of Jal Shakti (MoJS), under the National Hydrology Project, launched the first version of India Water Resources Information System (India-WRIS) in July, 2019.**
- Since then, a number of new functionalities and features have been added into the system.
- This portal contains information related to Water Resources through dashboards for rainfall, water levels & discharge of rivers, water bodies, ground water levels, reservoir storages, **evapotranspiration and soil moisture**, as well as modules on water resources projects, water bodies, hydro-met data availability and tools for GIS layer editing.
- India WRIS is, at present, receiving data from many central and state agencies like CWC, CGWB, IMD, NRSC, Andhra Pradesh, Uttar Pradesh and Gujarat etc. on regular basis. However, there is no compulsion on states to submit data regarding water usage. **(So, statement 4 is incorrect)**
- Data from other agencies is also being integrated into the system, so that it becomes a comprehensive platform for any data related to water and land resources.
- **The MoJS has established a dedicated organization, National Water Informatics Centre (NWIC) to maintain and update India WRIS.**

**Q.10) "Race to Zero" Campaign is organised by which of the following organisation?**

- a) United Nations Environment Programme (UNEP)
- b) Intergovernmental Panel on Climate Change (IPCC)
- c) United Nations Framework Convention on Climate Change (UNFCCC)
- d) International Union for Conservation of Nature (IUCN)

**Q.10) Solution (c)**

**Explanation:**

The UNFCCC's Climate Ambition Alliance has launched a global campaign called "Race to Zero" that encourages countries, companies, and other entities to deliver structured net-zero greenhouse-gas emission pledges by the time the talks begin.

"Race to Zero" is a global campaign to rally leadership and support from businesses, cities,

regions, investors for a healthy, resilient, zero carbon recovery that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth.

It mobilizes a coalition of leading net zero initiatives, representing **454 cities, 23 regions, 1,397 businesses, 74 of the biggest investors, and 569 universities**. These 'real economy' actors join 120 countries in the largest ever alliance committed to achieving net zero carbon emissions by 2050 at the latest. Collectively these actors now cover nearly 25% global CO<sub>2</sub> emissions and over 50% GDP.

Led by the High-Level Climate Champions for Climate Action – Race to Zero mobilizes actors outside of national governments to join the Climate Ambition Alliance, which was launched at the UNSG's Climate Action Summit 2019.

**Q.11) Consider the following statements regarding Climate Ambition Alliance (CAC):**

1. It was led by India at 25<sup>th</sup> Conference of Party of UNFCCC.
2. Under this CAC, targets are more ambitious than defined in Paris Agreement.
3. This alliance includes regions, cities and investment companies.

**Choose correct option from below:**

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

**Q.11) Solution (c)**

**Explanation:**

#### **CLIMATE AMBITION ALLIANCE**

As requested by the United Nations Secretary General, António Guterres, and with the support of the UNFCCC and UNDP, **Chile led the Mitigation Coalition during the UN Climate Action Summit 2019.**

- In that context, **Chile announced on September, in New York, the Climate Ambition Alliance that commits nations to be more ambitious in their Nationally Determined Contributions as established in the Paris Agreement.**

- It also includes firm actions on adaptation and an active participation of the private sector.
- All efforts aim to accelerate the necessary transformation to reach the goals of the Paris Agreement and stabilize the global temperature rise to 1.5°C.
- This commitment also includes regions, cities, companies and investments.
- To give an extra boost to the Climate Ambition Alliance, on World Environment Day 2020, Chile and the United Kingdom launched the “Race To Zero” campaign, which will bring together the leadership and support of businesses, cities, regions and investors for a healthy, resilient and carbon-free recovery that prevents future threats, creates decent jobs, and enables inclusive and sustainable growth.
- All members of the alliance are committed to the same goal: achieving carbon neutrality by 2050.

**Q.12) Consider the following statements about afforestation measures taken by international organisation:**

1. Deforestation and forest degradation account for carbon emissions, more than the entire global transportation sector and energy sector.
2. UN-REDD, launched by UNFCCC, incentivize country for sustaining forests.
3. REDD+ focused to mitigate climate change through reducing net emissions of greenhouse gases through enhanced forest management in developing countries.

**Which of the above given statement are *incorrect*?**

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

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

**Explanation**

**Statement 1:** Deforestation and forest degradation account for approximately 11 percent of carbon emissions, more than the entire global transportation sector and **second only to the energy sector.**

**Statement 2:** The United Nations Programme on Reducing Emissions from Deforestation and



Forest Degradation (**UN-REDD Programme**) is a collaborative programme of the Food and Agriculture Organization (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), created in 2008 in response to the UNFCCC decisions on the Bali Action Plan and REDD at COP-13. **(So, Statement 2 is incorrect)**

The overall development goal of the Programme is "to reduce forest emissions and enhance carbon stocks in forests while contributing to national sustainable development". The UN-REDD Programme supports nationally led REDD+ processes and promotes the informed and meaningful involvement of all stakeholders, including indigenous peoples and other forest-dependent communities, in national and international REDD+ implementation

**Statement 3:** REDD+ was first negotiated under the United Nations Framework Convention on Climate Change (UNFCCC) in 2005, with the objective of mitigating climate change through reducing net emissions of greenhouse gases through **enhanced forest management in developing countries.**

**Q.13) Consider the following statements regarding "National Adaption Fund for Climate Change":**

1. It was established in 2015 to meet the cost of adaption to climate change in particularly vulnerable States and Union Territories.
2. The National Afforestation and Eco-Development Board (NAEB) is National Implementing Agency of this fund.

**Which of the given statement is/are correct?**

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

**Q.13) Solution (a)**

**Explanation:**

#### **NATIONAL ADAPTATION FUND FOR CLIMATE CHANGE**

- The National Adaptation Fund for Climate Change (NAFCC) was established in August, 2015 to meet the cost of adaptation to climate change for the State and Union

Territories of India that are particularly vulnerable to the adverse effects of climate change.

- Government has set up a budget provision of Rs.350 crores for the year 2015-16 and 2016-17, with an estimated requirement of Rs. 181.5 crores for financial year 2017-18 for NAFCC.
- The projects under NAFCC prioritize the needs that build climate resilience in the areas identified under the SAPCC (State Action Plan on Climate Change) and the relevant Missions under NAPCC (National Action Plan on Climate Change).
- Considering the existing arrangement with NABARD as National Implementing Entity (NIE) for Adaptation Fund (AF) under Kyoto Protocol and its presence across the country, NABARD has been designated as National Implementing Entity (NIE) for implementation of adaptation projects under NAFCC by Govt. of India. **(Hence , Statement 2 is incorrect)**
- Under this arrangement, NABARD would perform roles in facilitating identification of project ideas/concepts from State Action Plan for Climate Change (SAPCC), project formulation, appraisal, and sanction, disbursement of fund, monitoring & evaluation and capacity building of stakeholders including State Governments.

**Q.14) Kyoto Protocol and Paris Agreement are two significant measures to contain environment degradation. But there are differences in their approaches. Which of the following are some of those differences?**

1. Kyoto Protocol had differentiated between developed and developing countries, while there was not such differences in Paris Agreement.
2. Kyoto Protocol has set binding target for some countries, while Paris Agreement has no such binding target.
3. Kyoto Protocol's objective is reduction of emission of 6 major Green House Gas, while Paris Agreement targets temperature control.

**Choose correct option from below:**

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

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

**Explanation:**

Kyoto Protocol	Paris Agreement
The Kyoto Protocol was established in 1997	The Paris Agreement was signed in 2016.
The Kyoto Protocol primarily targeted industrialised nations. Developing nations were exempt from the Kyoto Protocol	The Paris Agreement required both developing and developed nations to reduce their greenhouse emissions.
The objective of the Kyoto Protocol was to reduce greenhouse gases to 5.2%, below pre-1990 levels. Member of agreement can only emit Party's assigned amount.	The objective of the Paris Agreement was to prevent the average global temperature from rising more than 2 degrees Celsius above pre-industrial levels.
The Kyoto Protocol was aimed at 6 major greenhouse gases such as carbon dioxide, methane, sulphur hexafluoride, HFCs, PFCs and nitrous oxide.	The Paris Agreement was focused on reducing all anthropogenic greenhouse gases.
Targets of the Kyoto Protocol for many developed country was binding and Party can only emit its assigned amount, which were differentiated in Annex A and Annex B.	There are no Binding targets under Paris Agreement. These targets are voluntary and do not differentiate between developed and developing countries.
The first phase of the Kyoto Protocol lasted until 2012.	The goals of the Paris Agreement are set to be achieved between 2025 and 2030.

**Q.15) Consider the following statements about "The Intergovernmental Panel on Climate Change (IPCC)":**

1. It was created by United Nation Environment Programme and World Meteorological Organisation in 1988.
2. It does not conduct its own research.
3. IPCC's reports are neutral, but not policy prescriptive.

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

- a) 1 and 2 only

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

**Q.15) Solution (d)**

**Explanation:**

**The Intergovernmental Panel on Climate Change (IPCC)**

- Created by the United Nations Environment Programme (UN Environment) and the World Meteorological Organization (WMO) in 1988, the IPCC has 195 Member countries.
- In the same year, the UN General Assembly endorsed the action by WMO and UNEP in jointly establishing the IPCC.
- The IPCC was created to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options.
- Through its assessments, the IPCC determines the state of knowledge on climate change.
- It identifies where there is agreement in the scientific community on topics related to climate change, and where further research is needed.
- The reports are drafted and reviewed in several stages, thus guaranteeing objectivity and transparency.
- The IPCC does not conduct its own research.
- IPCC reports are neutral, policy-relevant but not policy-prescriptive.
- The assessment reports are a key input into the international negotiations to tackle climate change.

**Q.16) Consider the following statements regarding Emission Gap Report, 2020:**

1. India, China, Russia are expected to achieve the target mentioned in Paris Agreement.
2. All member of G20 cumulatively emit more than 75% of Global GHG emission.
3. Even if all unconditional commitments under Paris Agreement are implemented, temperature is expected to rise above 3 degree Celsius.

**Which of the above 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.16) Solution (d)**

**Explanation:**

**About Emission Gap Report:**

- It is released by United Nation Environment Programme (UNEP).
- The report assesses the gap between anticipated emissions in 2030 and levels consistent with the 1.5°C and 2°C targets of the Paris Agreement'.

**Trends as per Emission Gap Report, 2020:**

- **Record high Green House Gas (GHG) emissions** - for the third consecutive year in 2019, global GHG emission has been highest.
- **Record carbon emission:** Fossil carbon dioxide (CO<sub>2</sub>) emissions (from fossil fuels and carbonates) dominate total GHG emissions.
- **G20 countries account for bulk of emissions:**
  - Over the last decade, the top four emitters (China, the United States of America, EU27+UK and India) have contributed to 55% of the total GHG emissions without Land Usage Change.
  - The top seven emitters (including the Russian Federation, Japan and international transport) have contributed to 65%, with **G20 members accounting for 78%**.
- **Impact of Pandemic:** With reduced Mobility and reduced economic production, CO<sub>2</sub> Emission could decrease by 7%, while expected fall in non- CO<sub>2</sub> gas is smaller.
- World has to cut its emissions by 7.6% each year between 2020 and 2030 to get on track towards the 1.5°C temperature goal of the Paris Agreement.
- Even if all current unconditional commitments under the Paris Agreement are implemented, temperatures are expected to rise by 3.2°C.
- The levels of ambition in the Paris Agreement still must be roughly tripled for the 2°C pathway and increased at least fivefold for the 1.5°C Pathway.

**Q.17) Consider the following statements about United Nation Environment Programme**



**(UNEP):**

1. United Nations Environment Assembly (UNEA) is governing body of the UNEP.
2. UNEP hosts Carpathian Convention.
3. UNEP publishes Global Environment Outlook.

**Which of the above 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.17) Solution (d)**

**Explanation:**

The United Nations Environment Programme (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system, and serves as an authoritative advocate for the global environment.

United Nations Environment Assembly (UNEA) is governing body of the UNEP. UNEA is the world's highest-level decision-making body on the environment, with a universal membership of 193 members.

UNEP also host the secretariats of many multilateral environmental agreements. These include:

- The Convention on Biological Diversity
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora
- The Minamata Convention on Mercury
- The Basel, Rotterdam and Stockholm Conventions
- The Vienna Convention for the Protection of Ozone Layer and the Montreal Protocol
- The Convention on Migratory Species
- The Carpathian Convention- sub regional treaty to foster the sustainable development and the protection of the Carpathian
- The Bamako Convention- Treaty of African nations prohibiting the import into Africa of any hazardous waste.
- The Tehran Convention- Protection of the Marine Environment of the Caspian Sea

Flagship Publication by UNEP: Emission Gap Report, Our Planet; Atlas of Our Changing Environment; Global Environment Outlook.

**Q.18) Consider the following statements regarding Climate Performance Index, 2020?**

1. It is released by Intergovernmental Panel on Climate Change
2. This index assesses all the members of the UNEP.
3. India for the first time entered in the top ten of the list.

**Which of the above statement are *incorrect*?**

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

**Q.18) Solution (a)**

**Explanation:**

**About Climate Change Performance Index (CCPI)**

It is published by Germanwatch, Climate Action Network International and the NewClimate Institute, annually. **(Hence, Statement 1 is not correct)**

It aims to enhance transparency in international climate politics and enables comparison of climate protection efforts and progress made by individual countries.

The Index covers 57 countries and the EU. **(not all member of UNEP are assessed under the index)**

The ranking results are defined by a country's aggregated performance in 14 indicators within the four categories of GHG

- Emission- 40%
- Renewable Energy – 20%
- Energy Use- 20%
- Climate Policy- 20%

**India's performance** → Improvement in Ranking: India's ranking improved two places, from 11th (CCPI 2019) to 9th (CCPI 2020) entering into top ten rankings for the first time. **(Hence, statement 3 is correct)**

**Q.19) Consider the following statements regarding "Carbon Pricing Leadership Coalition (CPLC)":**

1. It is an initiative started by UNFCCC, under which all the signatory of convention are its members.
2. It also bring business, civil society and academia and to understand carbon-pricing in better way.
3. From India, Indian Railways and Delhi Metro Rail Corporation also have joined it.

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

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

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

**Explanation:**

**Carbon Pricing Leadership Coalition (CPLC)**

- The Carbon Pricing Leadership Coalition (CPLC) is a voluntary initiative that catalyses action towards the successful implementation of carbon pricing around the world. **(Hence, statement 1 is incorrect)**
- The CPLC brings together leaders from government, business, civil society and academia to support carbon pricing, share experiences and enhance the global, regional, national and sub-national understanding of carbon pricing implementation.
- The CPLC Secretariat is administered by The World Bank Group.
- The CPLC was launched in United Nations Framework Convention on Climate Change 21st Conference of Parties (COP21) in 2015.
- As of 2019, the Coalition comprises 34 national and sub-national governments, 163 private sector organizations from a range of regions and sectors.

- From India, Delhi Metro Rail Corporation and Indian Railways are the government level partners.

**Q.20) Which of the following Convention does not recognize Environmental refugee?**

- a) New York Declaration for Refugees and Migrants, UNHCR
- b) The Global Compact on safe, orderly and regular migration
- c) Nansen Initiative Protection Agenda for Cross Border Displaced Persons
- d) UN Refugee Convention

**Q.20) Solution (d)**

**Explanation:**

**New York Declaration for Refugees and Migrants, UNHCR (2016):** It seeks to protect the human rights of all refugees and migrants, regardless of their status.

**The Global Compact on safe, orderly and regular migration, 2018:** It is the first-ever UN global agreement on a common approach to international migration in all its dimensions. The Global Compact for Safe, Orderly and Regular Migration is an intergovernmental negotiated agreement, prepared under the auspices of the United Nations, that describes itself as covering "all dimensions of international migration in a holistic and comprehensive manner". 'Climate refugees', migrants who move due to natural disasters and climate change, are now recognised under its Objective.

**Nansen Initiative Protection Agenda for Cross Border Displaced Persons (2015):** It's a state led consultative process to build consensus on a protection agenda addressing the needs of people displaced across borders in the context of disasters and the effects of climate change.

**Cross-border displaced who have migrated due to climate change are not recognised as refugees under the 1951 Refugee Convention or its 1967 protocol, and thus do not qualify for protection under national or international legal frameworks for refugee protection.**

**Q.21) Consider the following pairs:**

<b><i>Military Exercise</i></b>	<b><i>Country Involved</i></b>
1. SIMBEX-20	Singapore
2. SITMEX-20	Thailand

3. SLINEX-20

Srilanka

Which of the pairs given above are correctly matched?

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

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

- **SIMBEX-20**: The 27th edition of India – Singapore Bilateral Maritime Exercise
- **SITMEX-20**: The SITMEX series of exercises are conducted to enhance mutual interoperability and imbibing best practices between IN, Republic of Singapore Navy (RSN) and Royal Thai Navy (RTN).
- **SLINEX-20**: The 8th edition of annual India – Sri Lanka bilateral naval maritime exercise.

**Q.22) The Moscow Declaration recently seen in news was adopted by which of the following organization?**

- a) G20
- b) BRICS
- c) Shanghai Cooperation Organization (SCO)
- d) Eurasian Economic Union (EAEU)

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

The 2020 BRICS Summit was held virtually under the chairmanship of Russia, which adopted the motto for the year as 'BRICS Partnership for Global Stability, Shared Security and Innovative Growth'.

- The **Moscow Declaration was adopted by BRICS** which reflects the five countries' consolidated approach to the further development of the association.
- Two pillars of this year's summit are the economy and counterterrorism - Strategy for BRICS Economic Partnership 2020-2025 and The BRICS counter-terrorism strategy.



**Q.23) Consider the following statements:**

1. La Nina is the cold phase of the El Nino-Southern Oscillation (ENSO).
2. La Nina occurs less frequently than El Nino.
3. Strong La Nina events contribute to weaker monsoons and even droughts in India.

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

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

**Q.23) Solution (a)**

- Recently, the World Meteorological Organization (WMO) has announced the arrival of La Nina in the central and eastern equatorial Pacific Ocean after nearly a decade's absence.
- La Nina is the unusual cooling of sea surface temperatures. In a La Nina year the easterly winds blow much stronger; this makes the water near the equator a few degrees colder than normal. Thus upwelling is enhanced. Also this change in the ocean's temperature impacts the weather across the world.

Statement 1	Statement 2	Statement 3
Correct	Correct	Incorrect
El Nino and La Nina are opposite phases of the El Nino-Southern Oscillation (ENSO). <b>La Nina is sometimes referred to as the cold phase of ENSO</b> and El Nino as the warm phase of ENSO.	La Nina and El Nino usually last between 9 and 12 months. While their frequency is fairly irregular, they take place every two to seven years. <b>Typically, El Nino occurs more frequently than La Nina.</b>	<b>In the 'La Nina year', rainfall associated with the summer monsoon in Southeast Asia tends to be greater than normal,</b> especially in northwest India and Bangladesh. Strong El Nino events contribute to weaker monsoons and even droughts in India.

**Q.24) With reference to Negative-yield bonds, consider the following statements:**

1. These are debt instruments that offer to pay the investor a maturity amount higher than the purchase price of the bond.
2. These are issued by private companies only.
3. These bonds attract investments during times of stress and uncertainty.

Which of the statements given above is/are **NOT** correct?

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

**Q.24) Solution (c)**

Statement 1	Statement 2	Statement 3
Incorrect	Incorrect	Correct
Negative-yield bonds are debt instruments that offer to pay the investor a maturity amount lower than the purchase price of the bond.	These are generally issued by central banks or governments, and investors pay interest to the borrower to keep their money with them. Recently, China sold negative-yield debt for the first time, and this saw a high demand from investors across Europe.	Negative-yield bonds attract investments during times of stress and uncertainty as investors look to protect their capital from significant erosion. During Covid-19 pandemic interest rates in developed markets across Europe are much lower, investors are looking for relatively better-yielding debt instruments to safeguard their interests.

**Q.25) The 'AIM–Sirius Innovation Programme 3.0' is a bilateral youth innovation initiative between India and which of the following?**

- a) Switzerland
- b) Netherland
- c) UK
- d) Russia

**Q.25) Solution (d)**

- The Atal Innovation Mission (AIM) and Russia's Sirius (Scientific International Research In Unique Terrestrial Station) launched '**AIM–Sirius Innovation Programme 3.0**'.
- It is a 14-day virtual programme for Indian and Russian schoolchildren.
- The first **Indo-Russian bilateral youth innovation initiative**, the AIM–Sirius programme seeks to develop technological solutions (both web- and mobile-based) for the two countries.

**Q.26) Consider the following statements regarding All India Trade Union Congress (AITUC):**

1. It was founded after Non-cooperation Movement was launched.
2. It was formed to provide labour representation for India at the International Labor Organization (ILO).
3. N M Joshi was the first general secretary of the AITUC.

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

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

**Q.26) Solution (a)**

Statement 1	Statement 2	Statement 3
Correct	Correct	Incorrect
The Non-cooperation movement was launched on 4 September 1920 by Mahatma Gandhi with the aim of self-governance and obtaining Purna Swaraj. AITUC was founded on 31 October 1920.	AITUC was formed in 1920 by leaders like Bal Gangadhar Tilak, Lala Lajpat Rai, Narayan Malhar Joshi, Joseph Baptista, Diwan Chaman Lal etc. to provide labour representation for India at the International Labor Organization (ILO).	Lala Lajpat Rai was elected as the first president of AITUC and <b>Dewan Chaman Lal as the first general secretary.</b>

**Q.27) The *Roridomyces phyllostachydis*, a bioluminescent variety of mushroom was recently discovered in which of the following region?**

- a) Northeast India
- b) Western Ghats
- c) Andaman and Nicobar islands
- d) Lakshadweep Islands

**Q.27) Solution (a)**

- A mushroom documentation project in the forests of **Northeast India** has led to a new discovery: **a bioluminescent (light emitting) variety of mushroom**.
- The new species - named **Roridomycesphyllostachydis** - was first sighted in August in Meghalaya's Mawlynnong in East Khasi Hills district and later at KrangShuri in West Jaintia Hills district.
- It is now one among the 97 known species of bioluminescent fungi in the world. The new species is important because it is the first mushroom in the Roridomyces genus to be found in India. It was the only member in its genus to have light emitting from its stipe or stalk.
- Bioluminescence is the property of a living organism to produce and emit light. Animals, plants, fungi and bacteria show bioluminescence.

**Q.28) With reference to Param Siddhi, consider the following statements:**

1. It is the high performance computing-artificial intelligence (HPC-AI) supercomputer established under National Supercomputing Mission (NSM).
2. It is ranked within Top 100 most powerful distributed computer systems in the world.
3. It is developed jointly by Department of Science and Technology (DST) and Ministry of Electronics and Information Technology (MeitY).

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

- a) 1 and 2 only

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

**Q.28) Solution (c)**

Statement 1	Statement 2	Statement 3
Correct	Incorrect	Correct
Param Siddhi is the high performance computing-artificial intelligence (HPC-AI) supercomputer established under National Supercomputing Mission (NSM).	Param Siddhi has achieved global ranking of 63 in TOP 500 most powerful non-distributed computer systems in the world. In a non-distributed (or co-located) system, all the parts of the system are in the same physical location. In a distributed system, parts of the system exist in separate locations.	It is developed by Department of Science and Technology (DST), Ministry of Electronics and Information Technology (MeitY) under National Supercomputing Mission (NSM) at Centre for Development of Advanced Computing.

**Q.29) The GIS One District One Product (ODOP) digital map of India was recently launched by which of the following ministry?**

- a) Ministry of Micro, Small and Medium Enterprises
- b) Ministry of Electronics and Information Technology
- c) Ministry of Food Processing
- d) Ministry of social justice and empowerment

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

- **The Ministry of Food Processing launched the GIS One District One Product (ODOP) digital map of India.**
- The digital ODOP map provides detailed information about ODOP products to all states and facilitates the stakeholders.
- The digital map also has indicators for tribal, SC, ST, and aspirational districts. It will enable stakeholders to make concerted efforts for its value chain development.



**Q.30) With reference to UN Sanitation and Hygiene Fund consider the following statements:**

1. It is a global financing mechanism for countries with high burden of diseases stemming from lack of sanitation services.
2. It is hosted by the World Bank.

**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.30) Solution (a)**

Statement 1	Statement 2
Correct	Incorrect
UN Sanitation and Hygiene Fund will fund countries with high burden of diseases stemming from lack of sanitation services and have the least ability to respond to them.	The fund is hosted by the UN Office for Project Services, which provides technical advice and project implementation to the UN and its partners.

**Q.31) The length, breadth and height of a room are in the ratio 3:2:1. If the breadth and height are halved while the length is doubled, then the total area of the four walls of the room will**

- a) decrease by 13.64%
- b) decrease by 15%
- c) decrease by 18.75%
- d) decrease by 30%

**Q.31) Solution (d)**

The area of the four walls is  $\text{length} \times \text{height} \times 2 + \text{breadth} \times \text{height} \times 2$

$$\text{Initial area} = 3 \times 1 \times 2 + 2 \times 1 \times 2 = 10$$

$$\text{Final area} = 6 \times \frac{1}{2} \times 2 + 1 \times \frac{1}{2} \times 2 = 7$$

So, the area is decreased by 30%

**Q.32) In a village, 60% of registered voters cast their votes in the election. Only two candidates (A and B) were contesting the election. A won the election by 600 votes. Had B received 40% more votes, the result would have been a tie. How many registered voters are there in the village?**

- a) 4000
- b) 3500
- c) 3000
- d) 3250

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

Let B gets X number of votes

Then, A gets X+600 votes

If B gets 40% more votes then,  $B = 1.4x$

As per the question

$$1.4X = X + 600 - 0.4X$$

$$X = 750$$

So,  $A = 600 + 750 = 1350$  and  $B = 750$

Total votes = 2100 (60%)

Hence, 100% votes = 3500

**Q.33) The sum of the radius and height of a cylinder is 42 cm. Its total surface area is 3,696 cm<sup>2</sup>. What is the volume of a cylinder?**

- a) 17,428 cubic cm
- b) 17,248 cubic cm

- c) 17,244 cubic cm
- d) 17,444 cubic cm

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

Total surface area of cylinder

$$\Rightarrow 2\pi rh + 2\pi r^2 = 3,696$$

$$2\pi r(r + h) = 3,696$$

Given radius and height is,  $(r + h) = 42$

$$2 \times 22/7 \times r \times 42 = 3,696$$

$$44 \times 6 \times r = 3,696$$

$$r = 14 \text{ cm}$$

$$h = 42 - 14 = 28 \text{ cm}$$

Volume of the cylinder =  $\pi r^2 h$

$$= 22/7 \times 14 \times 14 \times 28 = 17,248 \text{ cm}^3$$

Therefore, option b is correct.

**Directions for the following 2 (two) questions:**

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

Rag-pickers go in the early hours of every day throughout the city, harmoniously and mutually agreeing upon each one's territory, travel around 8-10kms, bend at least 1000 times and collect 15-20kgs of recyclable waste with their bare hands, and carry that in large bags on their head and shoulders.

In Ahmedabad alone, there are 40,000 such women collecting nearly 8,00,000 kgs of recyclable waste every day. Due to their efforts, this immense amount of recyclable waste reaches a recycling unit, which translates into saving of nearly 2,400,000kgs CO<sub>2</sub> from being emitted into the Environment. Because they do such a vital service to both society and the environment, we call them Paryavaran Mitra (PM) (Friends of the Environment).

**Q.34) What is the central theme of the passage?**

- a) Ahmedabad and its rag-pickers
- b) Rag-pickers and their life
- c) Solid Waste Management
- d) Women and their hardships

**Q.34) Solution (b)**

As the passage starts with the description of rag-picking women and their work on daily basis and how it is contributing towards our society and the environment, the main theme and point of sharing is Rag-pickers and their life.

**Q.35) Women are referred as Paryavaran Mitra because**

- a) They work in early hours of the morning every day
- b) They carry so much load of waste on their head and shoulder
- c) They are illiterate and therefore doing the work of rag-picking
- d) They do immense service to both society and Environment by virtue of their.

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

The three options a, b and c, all talk about the rag-picking ladies. But the questions ask for the main explanation behind the reason for referring them as ParyavaranMitra which is option (d).

