ForumIAS

Prelims Marathon

25th to 30th April, 2022

HISTORY
ECONOMICS
POLITY
SCIENCE AND TECHNOLOGY
GEOGRAPHY AND ENVIRONMENT

Art and Culture

Q.1) Which of the following pairs are correctly matched?

Mathematicians	**Contribution**
1. Madhava	Discovered the infinite series for pi (π)
2. Aryabhata	Pythagorean theorem
3. Brahmagupta	Law of composition for solving quadratic indeterminate equations.

Select the correct answer using the codes given below:

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

ANS: B
Explanation:

Contributions of Indian Mathematicians

Sulbasutras(~ 800 BCE): It is the oldest extant text. It explicitly states and makes use of the so-called Pythagorean theorem, besides giving various interesting approximations to surds.

Pingala's Chandassastra (~ 3rd cent. BCE): It lays foundations for various combinatorial techniques. (Knowledge of combinatorics is necessary to build a solid command of statistics).

Aryabhata (c. 499 CE): He described algorithms for extracting square root and cube root based on the decimal place-value system. He also presented the differential equation of the sine function in its finite-difference form and a method for solving the linear indeterminate equation.

Brahmagupta(c. 628): He discussed the arithmetic operations with zero. He also introduced the profound 'bhavana' law of composition for solving quadratic indeterminate equations.

Madhava (c. 1340–1420): He pioneered the Kerala School of astronomy and mathematics. He also discovered the infinite series for pi (π)—the so-called Gregory-Leibniz series)—and other trigonometric functions.

Source: Literature and Other important aspects

Q.2) Consider the following statements about Kohima War Cemetery:

1. It is a memorial dedicated to the soldiers of the British Division of the Allied Forces who died in World War II.
2. It has been identified as the only cemetery on the Earth which incorporates a tennis court.

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

ANS: C

Explanation: About Kohima War Cemetery:

- Kohima War Cemetery is a memorial dedicated to the soldiers of the British Division of the Allied Forces who died in **World War II** at Kohima in April 1944.
- It has been identified as the **only cemetery on the Earth which incorporates a tennis court**.
- It is also one of 23000 World War graves across the continents maintained by the CWGC.

Sequence of events that led to the formation of Kohima War Cemetery

- In 1944, Japanese forces attacked Kohima and its strong British force.
- This led to fighting as the British forces were pushed back to the former house of the British Deputy Commissioner. The lawn of this house had a tennis court where the British officers played for recreation.
- The British forces who were around the garden tennis court prepared for their final stand. As the Japanese forces prepared to attack, they were attacked in turn by the lead tanks, saving the defenders and pushing the attackers back.
- Despite this setback, the Japanese force continued to fight for Kohima before they were finally forced to withdraw in May 1944. Those who had fallen in the defense of Kohima were buried on the battlefield, with further burials from the surrounding areas.

Significance of Kohima in World War II

- Present Day Kohima (Nagaland) and adjoining Imphal (Manipur) comprised the **only theatre of World War II** in the Indian subcontinent.
- The occupation of these areas could have meant that the Japanese could strike further into India.

About Commonwealth War Graves Commission (CWGC)

- It is an intergovernmental organization of six member-states (Australia, Canada, India, New Zealand, South Africa, and the United Kingdom) that ensure the men and women who died in the wars will never be forgotten.
- It was formed in 1917 as the Imperial War Graves Commission. However, the present name was given in 1960.

Headquarters: Maidenhead, UK

Source: Modern History Events in News

Q.3) Consider the following statements about Indian Home Rule Society:

1. It was founded in London in 1905.

2. It was open to Indians only and found significant support amongst Indian students and other Indian populations in Britain.

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

ANS: C
Explanation: About Indian Home Rule Society (IHRS):

Founded in: London in 1905

Founded by: **Shyamji Krishna Varma** with support from a number of prominent Indian nationalists in Britain at the time including Bhikaji Cama, Dadabhai Naoroji, and Sardarsinh Ji Ravaji.

Aim: To promote the cause of self-rule in British India.

Membership: Open to Indians only and found significant support amongst Indian students and other Indian populations in Britain.

Significance: The organization was intended to be a rival organization to the **British Committee of the Indian National Congress** which was the main avenue of the loyalist opinion at the time.

- The organization was modeled after **Victorian public institutions** of the time.
- It had a written constitution and the stated aims to secure Home Rule for India and to carry on genuine Indian propaganda by all practicable means.
- The IHRS was open for membership "to Indians only", and found significant support amongst Indian students and other Indian populations in Britain.

Source: Modern History Events in News

Q.4) Consider the following statements with respect to modern history:
1. Netaji Subhash Chandra Bose hoisted the national flag for the first time on Indian soil, at Port Blair on 30 December 1945.
2. He also renamed Andaman as Shaheed and Nicobar as Swaraj Island.
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

ANS: C

Explanation: About Sankalp Smarak:

- Sankalp Smarak is a monument dedicated to **Netaji Subhas Chandra Bose.**
- The smarak is a tribute to the resolve of the soldiers of the Indian National Army and their innumerable sacrifices. It also reminds us of the values enshrined by Netaji **"Nishtha, Kartavya aur Balidan" or "Commitment, Duty and Sacrifice".** These values continue to underscore the ethos of the Indian Armed Forces and the resolve of the Indian Soldier.
- **Netaji Subhash Chandra Bose & Andaman and Nicobar Islands**
- Netaji escaped British surveillance from Kolkata on 16th Jan 1941.
- During World War II (1942–45), Japan had conquered the Andaman and Nicobar Islands from the British and handed them over to Netaji and his army, the **Azad Hind Fauj.**
- Netaji then arrived at Andaman and Nicobar Island on 29th December 1943 and declared the island free from British rule, much before India got its Independence in 1947.
- On the next day, i.e. 30 December 1943, **Netaji hoisted the national flag for the first time on Indian soil**, at Port Blair.
- During his visit, he also visited the Cellular Jail and met the freedom fighters lodged there.
- Before his departure, he renamed **Andaman as Shaheed** *("Martyrs")* Island, and **Nicobar as Swaraj** *("Freedom")* Island.

What is the significance of Netaji's visit to the Andaman and Nicobar Islands?

- **Firstly,** Netaji's visit to the Andaman and Nicobar Islands as the Head of the Provisional Government of Azad Hind and Supreme Commander of the Indian National Army marked a symbolic fulfillment of his promise that the Indian National Army would stand on Indian soil by the end of 1943.
- **Secondly,** this historic visit also marked a declaration of Andaman and Nicobar Islands as the "first liberated territory of India".

Source: Modern History Events in News

Q.5) Consider the following statements about Pal– Dadhvav massacre:

1. Pal – Dadhvav massacre took place in 1922, in Pal-Chitariya and Dadhvaav villages of Sabarkantha district, then part of Idar state.
2. Villagers gathered on the banks of River Heir as part of the 'Eki movement' led by one Motilal Tejawat.

Which of the statements given above is/are not correct?

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

ANS: D

Explanation: About Pal – Dadhvav massacre:

- Pal – Dadhvav massacre took place on March 7, 1922, in Pal-Chitariya and Dadhvaav villages of Sabarkantha district, then part of Idar state (present-day Gujarat).

- On this day, villagers from Pal, Dadhvav, and Chitariya had gathered **on the banks of River Heir** as part of the 'Eki movement' **led by one Motilal Tejawat**.

- The movement was to protest **against the land revenue tax (Lagaan)** imposed on the peasants by the British and feudal lords.
- However, the British Paramilitary force was on the hunt for Tejawat. They heard of this gathering and reached the spot.
- Nearly 2000 Bhil Tribals under the leadership of Tejawat lifted their bows and arrows. But the Britishers opened fire on them. More than 1,000 tribals (Bhils) fell to bullets. But Tejwat was taken safely from there, and later he returned to the spot to christen it 'Veer Bhumi'.
- **Recognition of the Pal-Dadhvav massacre:** The Pal-Dadhvav massacre was brought into focus at the Republic Day parade this year. The **Republic Day tableau** featured a seven-ft statue of Tejawat, inspired by the statue at the memorial. A song describing Tejawat as 'Koliyari no Vanio Gandhi' was also sung at the tableau.

Source: Modern History Events in News

Q.6) Who among the following is given the name, 'Jhansi Rani of Tranvancore' by Mahatma Gandhi?

a) Aruna Asaf Ali
b) Accamma Cherian
c) Rani Gaidinliu
d) Jhalkari Bai

ANS: B
Explanation:

Women Freedom Fighters	**Contribution to Freedom Movement**
Rani Abakka	She was the Queen of Ullal, Karnataka. She fought and defeated the mighty Portuguese in the 16th century.
Velu Nachiyar	She was the Queen of Sivaganga and was the first Indian queen to wage war against the British East India Company.
Matangini Hazra	She was a brave freedom fighter from Bengal, who laid down her life while agitating against the British.

Gulab Kaur	She was a freedom fighter who abandoned her own hopes and dreams of a life abroad to fight for and mobilise the Indian people against the British Raj.
Chakali Ilamma	She was a revolutionary woman who fought against the injustice of zamindars during the Telangana rebellion in the mid-1940s.
Subhadra Kumari Chauhan	One of the greatest Hindi poets, who was also a prominent figure in the freedom movement.
Durgawati Devi	Brave woman who provided safe passage to Bhagat Singh after the killing of John Saunders and much more during her revolutionary days.
Sucheta Kripalani	A prominent freedom fighter who became the independent India's first woman Chief Minister of UP Government.
Accamma Cherian	She is an inspirational leader of the freedom movement in Travancore, Kerala. She was given the name 'Jhansi Rani of Tranvancore' by Mahatma Gandhi.
Aruna Asaf Ali	She was an inspirational freedom fighter who is perhaps best remembered for hoisting the Indian National flag in Mumbai during the Quit India Movement in 1942.

Durgabai Deshmuk	She was a tireless worker for the emancipation of women in Andhra Pradesh and was also an eminent freedom fighter and member of the Constituent Assembly.
Rani Gaidinliu	Naga spiritual and political leader, she led an armed uprising against the British in Manipur, Nagaland and Assam.
Usha Mehta	She was a freedom fighter from a very young age, who is remembered for organising an underground radio station during the Quit India Movement of 1942.
Parbati Giri	She was one of Odisha's most prominent women freedom fighters who was called the Mother Teresa of Western Odisha for her work in the upliftment of her people.
Tarkeshwari Sinha	She was a prominent freedom fighter during the Quit India Movement, she went on to become an eminent politician in the early decades of independent India.
Snehlata Varma	She was a freedom fighter and tireless worker for the education and upliftment of women in Mewar, Rajasthan.

Tileshwari Baruah	She was one of India's youngest martyrs, she was shot at the age of 12 by the British, during the Quit India Movement, when she and some freedom fighters tried to unfurl the Tricolour atop a police station.
Jhalkari Bai	She was a woman soldier who grew to become one of the key advisors to the Rani of Jhansi and a prominent figure in the First War of Indian Independence, 1857.
Padmaja Naidu	She was the daughter of Sarojini Naidu and a freedom fighter in her own right, who would later become Governor of West Bengal and a humanitarian after Independence.
Bishni Devi Shah	She inspired a large number of people in Uttarakhand to join the freedom movement.

Source: Important Historical Personalities in news

Q.7) Which of the following statements about Ramanujacharya is/are correct?

1. Statue of unity is dedicated to social reformer and saint Ramanujacharya.
2. He propagated the concept of "vasudhaiva kutumbakam", which translates as "all the universe is one family".

Select the correct answer using the codes given below:

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

ANS: B

Explanation: About Statue of Equality:

Statue of Equality is a 216-foot-tall statue dedicated to 11th-century social reformer and saint, Ramanujacharya. The statue will be in a sitting position.

It is composed of **'panchaloha', a combination of five metals comprising gold, silver, copper, brass, and zinc**. The statue will be the second-highest sitting statue in the world [the tallest is the Great Buddha in Thailand at 302 ft.]

About Ramanujacharya

- **Born**: Sriperumbudur in Tamil Nadu in 1017.
- He was also referred to as **Ilaya Perumal**, which means the radiant one.
- Ramanujacharya was a Vedic philosopher and social reformer.
- **He revived Bhakti Movement** and considered to be the inspiration for poets like Annamacharya, Ramdas, Thyagaraja, Kabir, and Meerabai. His preaching inspired other Bhakti schools of thought.
- He is also credited with establishing the correct procedures for rituals performed in temples throughout India, the most famous being Tirumala and Srirangam.
- He appealed for the **protection of nature and its resources like air, water, and soil**.
- He propagated the **concept of "vasudhaiva kutumbakam",** which translates as "all the universe is one family".
- **Literary contribution**: He wrote **nine works** that came to be known as the **Navratnas** including three major commentaries, the **Vedartha-Sangraha**, the **Sribhasya** and the **Bhagavadgita-bhasya** aimed at providing a philosophical foundation for devotional worship.

About Vishistadvaita

- Ramanujacharya is famous as the chief proponent of **Vishishtadvaita subschool** of **Vedānta**. Vishishtadvaita is a non-dualistic school of Vedanta philosophy. It is non-dualism of the qualified whole, in which Brahman alone is seen as the Supreme Reality, but is characterized by multiplicity.
- It can be described as qualified monism or qualified non-dualism or attributive monism. It is a school of Vedanta philosophy that believes in all diversity subsuming to an underlying unity.

Source: Important Historical Personalities in news

Q.8) Government has declared 23rd January as Parakram Diwas to commemorate birth anniversary of whom among the following?

a) Subhash Chandra Bose
b) Jawahar Lal Nehru
c) Bhagat Singh
d) Captain Vikram Batra

ANS: A
Explanation: Decisions taken by the Govt to honour Netaji Subhash Chandra Bose

1. Government has declared 23rd January as **Parakram Diwas to** commemorate the 125th birth anniversary of Netaji Subhas Chandra Bose,
2. Government has instituted the **annual Subhas Chandra Bose Aapda Prabandhan Puraskar.** It will recognize and honour the invaluable contribution and selfless service rendered by individuals and organisations in India in the field of disaster management. The award is announced every year on 23rd January.
3. Republic Day celebrations from this year will start on January 23 instead of January 24 to include the birth anniversary of Netaji Subhas Chandra Bose.

Source: Important Historical Personalities in news

Q.9) Consider the following statements about National Youth Festival:

1. It is celebrated to commemorate the birth anniversary of Swami Dayanand Saraswati.
2. It is organized by Ministry of Youth Affairs and Sports.

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

ANS: B
Explanation:

About National Youth Festival (NYF)

- National Youth Festival is an annual gathering of youth with various activities including competitive ones.
- The festival has been conducted since the year 1995. It is celebrated to commemorate the birth anniversary of **Swami Vivekananda**.
- **Objective:** To provide a platform to bring the youth of the country together in an attempt to provide them with the opportunity to showcase their talents in various activities.
- **Organized by: Ministry of Youth Affairs and Sports** in collaboration with one of the State Governments.

Source: Important Historical Personalities in news

Q.10) Consider the following statements about Adi Shankaracharya:
1. He propounded the philosophy of Advaita Vedanta.
2. Shankaracharya established Mathas in Sringeri, Dwaraka, Puri, and Joshimath.

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

ANS: C

Explanation: About Adi Shankaracharya:

- He was an 8th-century Indian spiritual leader and philosopher. He is said to have been born in Kaladi village on the bank of the Periyar, the largest river in Kerala.

Philosophy of Adi Shankaracharya

- **Advaita Vedanta:** He propounded the philosophy of Advaita Vedanta which articulates a philosophical position of **radical non dualism,** a revisionary worldview which it derived from the ancient Upanishadic texts.
- According to the philosophy, the whole world is a manifestation of the one and only God (brahman) and all diversity we see is delusion (maya) as the result of ignorance (advidya).
- **Mathas**: Shankaracharya established **Mathas** in Sringeri, Dwaraka, Puri, and Joshimath for the spread of Advaita Vedanta.

Major Works of Adi Shankaracharya

- He **authored 116 works**. Among them, the celebrated commentaries (bhashyas) are on Upanishads, the Brahma Sutra, and the Gita. His famous poetic works include **Maneesha Panchakam and Saundaryalahiri.**
- He authored the **Vivekachudamani** which spells out the qualifications required in a student of Vedanta.
- He also composed the **Kanakadhara Stotram**, following which there was a rain of golden amlas which brought prosperity to the household.
- Further, he also composed texts like **Shankara Smrithi** which seeks to establish the social supremacy of Nambuthiri Brahmins.

Source: Important Historical Personalities in news

Science and Technology

Q.1) Consider the following statements about mWRAPR:

1. It is India's first indigenous bio-sample collection kit.
2. The kit helps to preserve genetic content in all types of biological samples including microbiomes, saliva, cells, tissues, blood, body fluids, and fecal tubes.

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

ANS: C

Explanation: About mWRAPR:

It is India's first indigenous bio-sample collection kit.

Application:

- It can be used as a biosample collection kit and storage medium for samples destined for genomic sequencing labs, biobanks, and research labs handling biological samples for molecular analysis.
- The kit helps to preserve genetic content in all types of biological samples including microbiomes, saliva, cells, tissues, blood, body fluids, and fecal tubes.

Significance of this development: It is the only Molecular Transport Medium to be manufactured in India that competes with other notable foreign bio-sample collection kits.

Source: Biology and Biotechnology

Q.2) Consider the following statements about Lassa fever:

1. It is caused by Bacteria.
2. It spreads by rats.

Which of the statements given above is/are not correct?

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

ANS: A

Explanation: About Lassa fever:

Lassa fever-causing virus **is found in West Africa**. It was first discovered in 1969 in Lassa, Nigeria. The Lassa virus is named **after a town in Nigeria** where the first cases were discovered.

Transmission: The virus spreads by rats.

Human Transmission can be caused by**:**

- Contact with household items or food that is contaminated with the urine or feces of an infected rat.
- Contact with a sick person's infected bodily fluids or through mucous membranes such as the eyes, nose or mouth.
- Person-to-person transmission in healthcare settings.

Symptoms: Symptoms typically appear 1-3 weeks after exposure. Mild symptoms include slight fever, fatigue, weakness, headache, and more serious symptoms include bleeding, difficulty breathing, and vomiting, facial swelling, pain in the chest, back, abdomen, and shock.

Deaths: The death rate associated with this disease is low, at around 1%. But the death rate is higher for certain individuals such as pregnant women among others.

Treatment: The antiviral drug ribavirin seems to be an effective treatment for Lassa fever if given early on in the course of clinical illness.
Source: Biology and Biotechnology

Q.3) Which among the following are possible applications of synthetic biology?

1. It is used for the treatment of malaria
2. It delivers fixed nitrogen to plants
3. Develop **synthetic organisms for vaccination**
4. To make natural compounds
Select the correct answer using the codes given below:

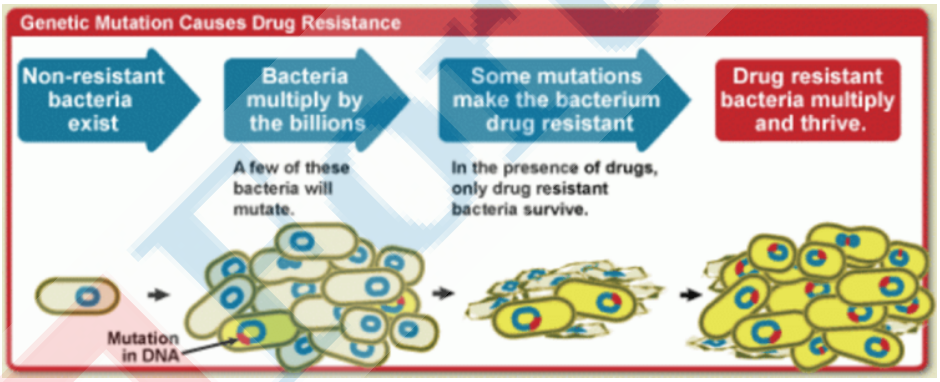
a) 1 and 2 only
b) 2 and 3 only
c) 1, 3 and 4 only
d) 1, 2, 3 and 4

ANS: D
Explanation:
About synthetic biology: Synthetic biology refers to the science of using genetic sequencing, editing, and modification to create unnatural organisms or organic molecules that can function in living systems.
Applications of Synthetic biology
Synthetic biology enables scientists to design and synthesize new sequences of DNA from scratch.
It has applications in various fields. For instance, It can help in
a) Developing **synthetic organisms for vaccination**,
b) Creating **natural products in a lab** such as vanillin, extracted from vanilla seeds, can be grown in yeasts with additional plant genomes,
c) Use of gene editing systems such as CRISPR will allow defective genes in animals, plants and even people to be silenced, changed.

Pharmaceutical industry: Synthetic biology can be used to make natural compounds such as artemisinin.It is used for the treatment of malaria and Car T cell therapy for cancer treatment.
In the fashion industry: Some companies are exploring the possibility of dyeing jeans without producing hazardous waste using synthetic biology.
In Agriculture: Companies using synthetic biology to deliver fixed nitrogen to plants instead of using fertilisers, engineering microbes to create food additives or brew proteins.
Source: Biology and Biotechnology

Q.4) Consider the following statements about Superbugs:
1. Superbugs are pathogens that are not resistant to multiple antimicrobial drugs.
2. Patients infected with any of these bugs often have to be treated with last-line drugs, which are both expensive and toxic.
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

ANS: B
Explanation:
About Superbugs: Superbugs are pathogens that are resistant to multiple antimicrobial drugs, thus making it harder to treat.
Patients infected with any of these bugs often have to be treated with last-line drugs, which are both expensive and toxic. And many of them succumb.
How are superbugs developed?



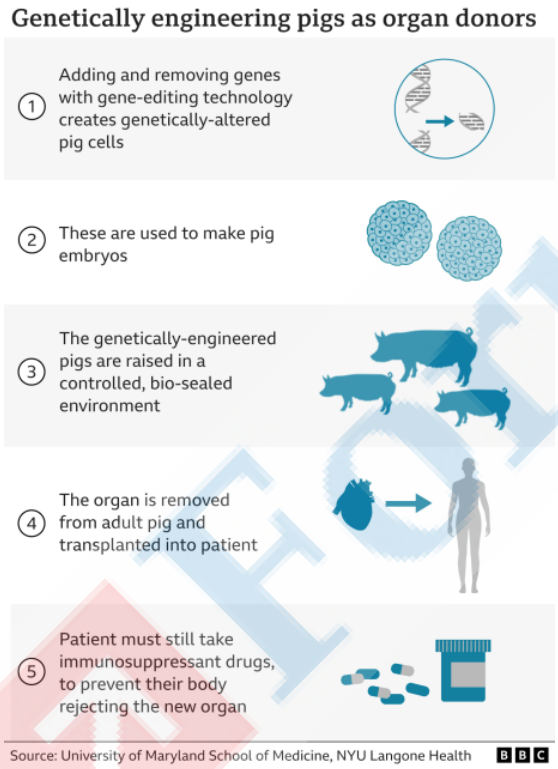
Like any living organism, bacteria can mutate as they multiply. Also like any living organism, bacteria have a strong evolutionary drive to survive. So, over time, a select few will mutate in particular ways that make them resistant to antibiotics. Then, when antibiotics are introduced, only the bacteria that can resist that treatment can survive to multiply further, proliferating the line of drug-resistant bugs.
Cause of worry: Basically, superbugs are becoming more powerful and widespread than ever. Medical experts are afraid that humans are just one step away from deadly, untreatable infections since the MCR-1 E.coli is resistant to that last-resort antibiotic Colistin.
Source: Biology and Biotechnology

Q.5) Consider the following statements about xenotransplantation:
1. It involves the transplantation, implantation, or infusion of non-human tissues or organs into human recipients.
2. There are no successful attempts of animal-to-human heart transplants.
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

ANS: A
Explanation:

About the recent Xenotransplantation Operation: The earlier attempts of animal-to-human heart transplants have failed, largely because patients' bodies rapidly rejected the animal organs. The most notable example was that of American infant Baby Fae, a dying infant in 1984 who lived 21 days with a baboon heart.



This time, the surgeons used a heart from a **pig that had undergone gene editing to remove sugar** in its cells that's responsible for the hyper-fast rejection of organs.

About xenotransplantation

Xenotransplantation involves the **transplantation, implantation, or infusion** of non-human tissues or organs into human recipients.

About the potential advantages of Pigs in Xenotransplantation

- Pig **organs have similarities** to human organs in respect of anatomy and physiology. For instance, physiologically, cardiac output and stroke volume, which are major indicators of cardiac function, have been reported to be comparable in pigs and humans,
- Pigs **could provide an unlimited supply of organs, tissues, and cells**, e.g., it is easy to raise and achieve adult human organ size in six months from pigs.
- Pigs are **easy to breed and have large litters**,
- From a scientific viewpoint, pigs are **genetically modifiable to reduce the chances of rejection** by the human body,
- When bred and housed under 'clean' conditions, pigs **could provide exogenous infection-free organs, tissues, and cells**, For instance, there are now companies breeding genetically modified pigs. One such U.S.-based company, Revivicor supplied the pig heart for the New York transplant,
- Pigs are produced for food, so **using them for organs raises fewer ethical concerns.**

Source: Biology and Biotechnology

Q.6) Consider the following statements about Mud Crab Reovirus (MCRV):

1. The virus mainly infects connective tissue cells of the hepatopancreas, gills and intestine in mud crabs.
2. It is zoonotic disease.

Which of the statements given above is/are not correct?

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

ANS: B

Explanation:

About Mud Crab Reovirus (MCRV): Mud Crab Reovirus (MCRV) is also known as Sleeping Disease. The virus belongs to the "Reoviridae" family. The virus mainly infects connective tissue cells of the hepatopancreas, gills and intestine in mud crabs.

Note: Reoviridae is a family of double-stranded RNA viruses. This virus has a wide host range including vertebrates, invertebrates, plants, protists, and fungi.

About Mud Crab: Scylla Serrata commonly known as the Mud crab, Green crab, or Mangrove Crab, is an economically important species of crab found in the estuaries and mangroves of India.

There has been a huge interest in the aquaculture of this species due to their high demand/ price, high flesh content and rapid growth rates in captivity.

In India, crab culture is developing very fast in the states of AP, Kerala, West Bengal, and Odisha.

Source: Biology and Biotechnology

Q.7) Consider the following statements about Ambergris:

1. Ambergris is a solid, waxy, flammable substance of a dull grey or blackish color.
2. It is produced in the digestive system of sperm whales.
3. It is referred to as floating gold.

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

ANS: D
Explanation:

About Ambergris

Ambergris is a solid, waxy, flammable substance of a dull grey or blackish color. It is produced in the digestive system of **sperm whales.**

- German physician Franz Schwediawer in 1783 called it "**preternaturally hardened whale dung**". This excretion is so valuable it is referred to as **floating gold**.
- However, Ambergris is produced only by an estimated 1% of sperm whales.

Formation: It is incorrectly referred to as **whale vomit**. This is because one of the theories about its formation suggests that it is produced in the **gastrointestinal tract of some of the sperm whales** for the passage of hard, sharp objects that are ingested when the whale eats large quantities of marine animals.

Uses: Ambergris is **used to produce perfumes** that have notes of musk. There are also records of it being used to flavor food, alcoholic beverages, and tobacco in some cultures in the past. Ancient Egyptians used it as **incense**. It is also believed to be used in some **traditional medicines**.

Protection to sperm whales

There is a ban on possession and trade of ambergris in countries like the USA, Australia and India. In several other countries, it is a tradable commodity but with limitations.

In the Indian context, sperm whales are a protected species under **Schedule 2 of the Wildlife Protection Act,** and possession or trade of its by-products, including Ambergris and its byproducts, is illegal under provisions of the Wildlife Protection Act, 1972.
Source: Biology and Biotechnology

Q.8) Consider the following statements about Neurocysticercosis (NCC):
1. It is a zoonotic disease.
2. It is a neurologic infection caused when a human consumes meat of an infected pig.
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

ANS: C
Explanation: About Neurocysticercosis(NCC) :
Neurocysticercosis(NCC) is a zoonotic disease. It is a neurologic infection caused when a human consumes meat from — or is indirectly in contact with — a pig infected with tapeworm.

The eggs of the tapeworm invade the muscles of the human body to make cysts. Sometimes these cysts get into people's brains, triggering epileptic seizures, headaches, difficulty with balance, and excess fluid around the brain.

Transmission: Those with NCC cannot spread the disease to other people. But people with taeniasis (tapeworm infection in the intestine) may spread tapeworm eggs to other people if they do not practice good hygiene (e.g. handwashing after they use the toilet).
Source: Biology and Biotechnology

Q.9) Consider the following statements about Canine Parvovirus:
1. It is a highly contagious fungal disease.
2. The virus impacts dogs' gastrointestinal tracts.
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

ANS: B
Explanation: About the Canine Parvovirus:
Canine Parvovirus is a highly contagious viral disease that can be life-threatening in puppies and dogs. **The virus impacts dogs' gastrointestinal tracts** and has a 90% mortality rate.

Symptoms: Bloody diarrhea, vomiting, drastic weight loss, dehydration, and lethargy are some of its symptoms.

Transmission among Dogs: The virus spreads through direct contact with an infected dog or by indirect contact with a contaminated object, including the hands and clothing of people who handle infected dogs.

Treatment: Parvovirus has **no cure** and vaccinating a puppy or a dog gives them a fighting chance against the infection.
Source: Biology and Biotechnology

Q.10) Consider the following statements about Norovirus:
1. It is an animal-borne disease.
2. It is easily transmitted through close contact with people who have been infected.
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

ANS: C
Explanation: About the Norovirus

- Norovirus is an **animal-borne disease**. It causes gastrointestinal illness including inflammation of the lining of the stomach and intestines, severe vomiting, and diarrhea.
- Norovirus is resistant to many disinfectants and can heat up to 60°C. Therefore, merely steaming food or chlorinating water does not kill the virus.
- The virus can also survive many common hand sanitizers.

Transmission: Norovirus is **easily transmitted through close contact with people** who have been infected, or by touching contaminated surfaces. It can also be spread by eating food that has been prepared or handled by someone with a stomach bug.
Impact: Norovirus does not significantly affect healthy people, but it can be serious in young children, the elderly, and people with comorbidities.
Treatment: No specific treatment for the infection. Recovery generally depends on the health of the immune system. In most people, the illness usually resolves within a few days.
Source: Biology and Biotechnology

Science and Technology

Q.1) Consider the following statements about Perovskite Solar Cell:
1. Perovskites materials offer excellent light absorption, charge-carrier mobilities, which act as the light-harvesting active layer.
2. Perovskite materials are stable towards humidity and oxygen.
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

ANS: A
Explanation: About Perovskite Solar Cell (PSC):

- Perovskite Solar Cell (PSC) is made by a perovskite-structured compound. Perovskites materials offer excellent light absorption, charge-carrier mobilities, which act as the light-harvesting active layer.
- PSCs have become commercially attractive because of the potential of achieving even higher efficiencies and very low production costs.
- However, the challenge lies in its short- and long-term stability. Similarly, perovskite materials are unstable towards humidity and oxygen, which restricts their commercialization.

Present solar cell tech:

- Currently, silicon-based inorganic solar cells are a major player in the market.
- However, this technology requires high-temperature processing that results in the high price of solar panels. Further, the recycling of solar panels is perilous and complicated.

Source: Chemistry and related aspects

Q.2) Consider the following statements about Gallium Nitride Ecosystem Enabling Centre and Incubator (GEECI):

1. It is established by The Ministry of Science and Technology and IISc Bengaluru, jointly.
2. It aims to establish Gallium Nitride (GaN) based Development Line Foundry facility, especially for Radio Frequency and power applications, including strategic applications.

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

ANS: B

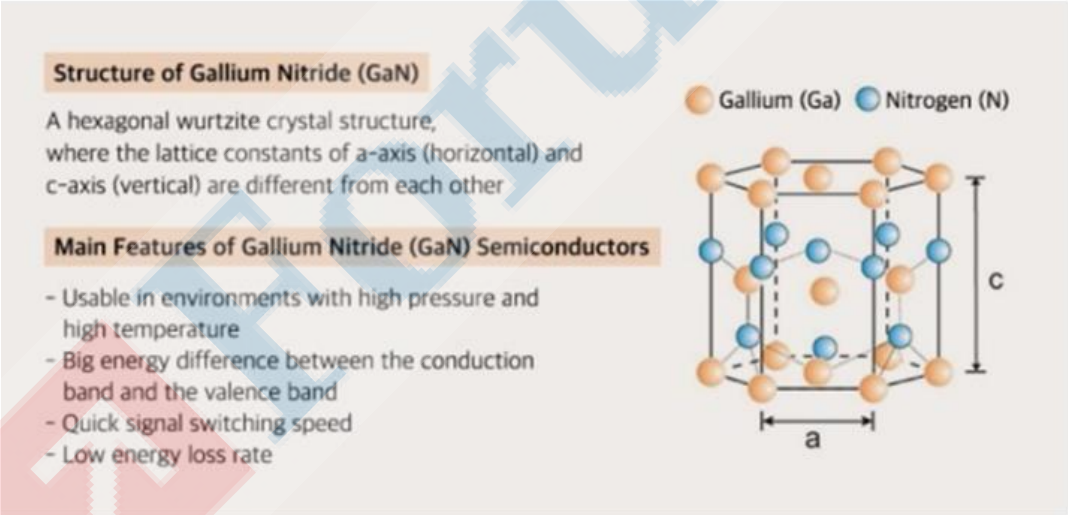
Explanation: About Gallium Nitride Ecosystem Enabling Centre and Incubator (GEECI):

Established by: The Ministry of Electronics and Information Technology and IISc Bengaluru, jointly.

Aim: To establish **Gallium Nitride (GaN)** based Development Line Foundry facility, especially for Radio Frequency and power applications, including strategic applications.

About Gallium Nitride (GaN): Gallium Nitride (GaN) is a very hard, mechanically stable wide bandgap semiconductor material.

Properties of Gallium Nitride: High heat capacity, Sensitivity to ionizing radiation is low, faster-switching speed, higher thermal conductivity, and lower on-resistance.



Applications of Gallium Nitride

- **LEDs and lasers**: GaN-based violet laser diodes are used to read Blu-ray Discs.
- **Transistors and Power ICs**: GaN transistors are suitable for high frequency, high voltage, high temperature and high-efficiency applications.
- **Space and Strategic Applications**: Its sensitivity to ionizing radiation is low, making it a suitable material for solar cell arrays for satellites. Military and space applications could also benefit, as devices have shown stability in radiation environments.

- **Nanoscale**: GaN nanotubes and nanowires are proposed for applications in nanoscale electronics, optoelectronics, and biochemical-sensing applications.
- **5G Devices**: Due to high power density and voltage breakdown limits, GaN is emerging as a promising candidate for 5G cellular base station applications. It will also play a key role in enabling e-vehicles and wireless communication.

Source: Chemistry and related aspects

Q.3) Which of the following statement about Boltzmann Medal is/are correct?

1. It is awarded by the Commission on Statistical Physics (C3) of the International Union of Pure and Applied Physics (IUPAP).
2. The award is given only once to a person and on the condition that person has won the Nobel prize.

Select the correct answer using the codes given below:

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

ANS: A
Explanation: About Boltzmann Medal:

Initiated in: 1975.

Awarded by: The Commission on Statistical Physics (C3) of the International Union of Pure and Applied Physics **(IUPAP).**

Award conditions: The award is given to physicists that obtain new results concerning statistical mechanics.

- The award is given only once to a person and on the condition that person has not won the Nobel prize so far.

Note: Ludwig Eduard Boltzmann was an Austrian physicist and philosopher. His greatest achievements were the development of statistical mechanics and the statistical explanation of the second law of thermodynamics.

About Professor Deepak's achievement: He has been given the award for his seminal contributions to several areas of statistical physics. Some highlights are exact solutions of self-organized criticality models, inter-facial growth, and universal long-time relaxation in disordered magnetic systems among others.

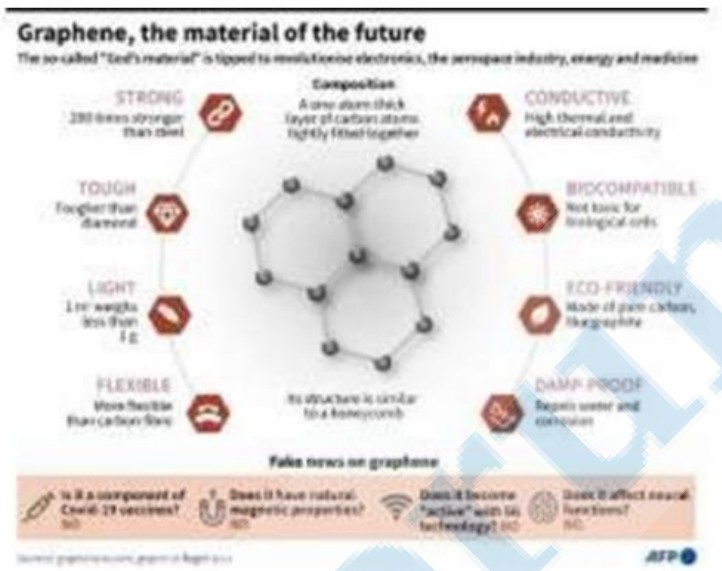
Source: Chemistry and related aspects

Q.4) With respect to Graphene, which of the statements given above is not correct?

a) Graphene is a one-atom-thick layer of carbon atoms arranged in a heptagonal lattice.
b) It is the thinnest, most electrically and thermally conductive material in the world.
c) Graphene could increase the lifespan of a traditional lithium-ion battery.
d) Graphene oxide membranes are capable of forming a perfect barrier when dealing with liquids and gases.

ANS: A
Explanation:

About Graphene: Graphene is a one-atom-thick layer of carbon atoms arranged in a hexagonal lattice. It is the thinnest, most electrically and thermally conductive material in the world. It is also flexible, transparent, and incredibly strong.



Application of Graphene

Biomedical: Targeted drug delivery; improved brain penetration; DIY health-testing kits and 'smart' implants.

Composites and Coatings: One of the simplest and most effective ways of harnessing the potential of graphene is to combine it with existing products – so-called composite materials.

Electronics: Graphene has the potential to create the next generation of electronics, currently limited to sci-fi. Faster transistors; semiconductors; bendable phones and other electronics.

Battery: Graphene could dramatically increase the lifespan of a traditional lithium-ion battery, meaning devices can be charged quicker – and hold more power for longer.

Graphene Membranes: Graphene oxide membranes are capable of forming a perfect barrier when dealing with liquids and gases. They can effectively separate organic solvent from water and remove water from a gas mixture to an exceptional level.

Sensors: Ultra-sensitive sensors made from graphene could detect minute dangerous particles, helping to protect potentially dangerous environments.
Source: Chemistry and related aspects

Q.5) Consider the following statements about Digital Embossing Technology:
1. It is a process that eliminates the need for printing plates, moulds, chemicals, and solvents.
2. It emits no pollutants or waste and reduces overall energy usage.
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

ANS: C
Explanation: About Digital Embossing Technology:

- It is a process that eliminates the need for printing plates, moulds, chemicals, and solvents. It emits no pollutants or waste and reduces overall energy usage.

Introduced by: introduced, designed, and implemented for the first time in India by **National Atlas & Thematic Mapping Organisation (NATMO)**.

Significance: The maps produced using this technology are not only useful for high-speed production of the maps. It can also produce Braille Maps that can be used by more people for years together.

About National Atlas & Thematic Mapping Organisation(NATMO)

NATMO was established in 1997. It is a subordinate department under the Department of Science & Technology, Ministry of Science & Technology.

Functions:

- Compilation of the National Atlas of India in Hindi, English and other regional languages
- Preparation of thematic maps based on socio-economic, physical, cultural, environmental, demographic and other issues
- Preparation of maps/atlases for visually impaired
- Digital mapping and training using Remote sensing, GPS and GIS technology
- Training and
- Research & Development.

Headquarter: Kolkata

Significance: NATMO has become popularized with the publication of Braille Atlas for Visually Impaired (India), edition 2017 in English Braille Script. It was developed with an indigenous manual embossing method. For this, it was also conferred the National Award on "Science & Technology Intervention for Physically Challenged".
Source: Chemistry and related aspects

Q.6) Consider the following statements about Giant Metrewave Radio Telescope(GMRT):
1. GMRT is an array of thirty fully steerable parabolic radio telescopes of 45-meter diameter, observing at meter wavelengths.
2. It is operated by the National Center for Radio Astrophysics (NCRA).
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

ANS: C
Explanation:

GMRT is an array of thirty fully steerable parabolic radio telescopes of 45-meter diameter, observing at meter wavelengths.

Purpose: It is a very versatile instrument for investigating a variety of radio astrophysical problems ranging from the nearby Solar system to the edge of the observable Universe

Operated by: It is operated by the National Center for Radio Astrophysics (NCRA), a part of the Tata Institute of Fundamental Research, Mumbai.

Location: Pune
Source: Space Technology

Q.7) Which of the statements given about India-based Neutrino Observatory (INO) is not correct?

a) It is a proposed Pure-Science underground laboratory.
b) The proposed site of the observatory is in Bodi West Hills, in Theni district.
c) The observatory is jointly supported by the Department of Atomic Energy (DAE) and Department of Science & Technology (DST) with DST acting as the nodal agency.
d) Its primary goal is to study the properties and interactions of neutrinos.

ANS: C
Explanation: About India-based Neutrino Observatory (INO):

- The **India-based Neutrino Observatory (INO)** is a proposed Pure-Science underground laboratory. Its primary goal is to study the properties and interactions of **neutrinos.**
- The observatory is jointly supported by the Department of Atomic Energy (DAE) and Department of Science & Technology (DST) with DAE acting as the nodal agency.
- The proposed site of the observatory is in Bodi West Hills, in Theni district. The site is spread across Kerala and Tamil Nadu.

Why is the observatory being opposed by the Tamil Nadu Government?

Firstly, the observatory, if constructed, will affect the flora and fauna of the Periyar Tiger Reserve and Mathikettan Shola National Park in the Western Ghats.

Secondly, the tunneling works for the proposed project involve blasting hard and composite rock in the Western Ghats. This would impact the conservation efforts in the Western Ghats.

Thirdly, the project area links the Periyar Tiger Reserve in Kerala with Srivilliputhur Meghamalai Tiger Reserve. Quarrying and construction activities will upset wild animals which use the corridor for seasonal migrations.
Source: Space Technology

Q.8) Which of the following statements about ISRO's Space missons is/are correct?
1. Trishna is a joint mission of ISRO and NASA for accurate mapping of land surface temperature.
2. Disha is a twin-satellite system that will study Earth's aeronomy, the uppermost layer of Earth's atmosphere.
Select the correct answer using the codes given below:

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

ANS: B
Explanation:

Disha: It is a twin-satellite system that will study Earth's aeronomy, the uppermost layer of Earth's atmosphere.

Trishna: It stands for **Thermal Infrared Imaging Satellite for High-resolution Natural resource Assessment**. It is a joint mission of ISRO and CNES, the French space agency. It is meant for accurate mapping of land surface temperature. It is scheduled for a 2024 launch.

EOS-4 and EOS-6: These are Earth Observation Satellites. They will be launched onboard the Polar Satellite Launch Vehicle (PSLV).

NISAR [NASA-ISRO SAR] mission: It is scheduled for launch in 2023. It is optimized for studying hazards and global environmental change and can help manage natural resources better and provide information to scientists to better understand the effects and pace of climate change.

X-ray Polarimeter Satellite (**XPoSat**): It is an ISRO planned space observatory to study polarization of cosmic X-rays. It is planned to be launched in the second quarter of 2022. The telescope is being developed by the Indian Space Research Organisation (ISRO) and the Raman Research Institute.

Aditya-L1: It is India's first solar mission.

Chandrayaan-3: It is a third lunar mission of ISRO. It is planned to demonstrate India's capability of soft landing on a celestial body, with the rover then communicating with Earth via the existing orbiter from Chandrayaan-2. It is planned to be launched in the third quarter of 2022.

Shukrayaan Mission: It is expected to be launched in 2024 by ISRO. It will study Venus for four years.
Source: Space Technology

Q.9) Consider the following statements about Dhawan-1:
1. It is India's first privately developed, fully cryogenic rocket engine.
2. It runs on two high-performance rocket propellants — Compressed natural gas (CNG) and dry oxygen.
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

ANS: A
Explanation:

About Dhawan-1: Dhawan-1 is **India's first privately developed, fully cryogenic rocket engine**. It runs on two high-performance rocket propellants — liquid natural gas (LNG) and liquid oxygen (LoX). The engine was developed using 3D printing with a super alloy.

About Vikram: Vikram is a series of launch vehicles to be launched by Skyroot space. These vehicles are specially crafted for the small satellite market.

Vikram-1: It is based on a solid propulsion engine. After Skyroot successfully designed and developed the solid propulsion rocket engine, it became the first private firm in the country to do so.

Vikram-2: This vehicle is using a cryogenic engine. It will be launched into orbit in the next 2 years.
Source: Space Technology

Q.10) Consider the following statements about Imaging X-ray Polarimetry Explorer (IXPE):
1. IXPE observatory is a joint effort of NASA and the JAXA.
2. It aims to study the most extreme and mysterious objects in the universe – supernova remnants, supermassive black holes, and dozens of other high-energy 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

ANS: B
Explanation:

About the IXPE Mission: IXPE observatory is a **joint effort of NASA** and the **Italian Space Agency**.

Aim: To study the most extreme and mysterious objects in the universe – supernova remnants, supermassive black holes, and dozens of other high-energy objects.

Duration: The mission's duration is **2 years**.

Instruments used: IXPE carries three state-of-the-art space telescopes. Each of the three telescopes hosts one light-weight X-ray mirror and one detector unit. These will help observe polarized X-rays from neutron stars and supermassive black holes.

- By measuring the polarization of these X-rays, we can study where the light came from and understand the geometry and inner workings of the light source.

The mission will complement other X-ray telescopes such as the Chandra X-ray Observatory and the European Space Agency's X-ray observatory, XMM-Newton.

Importance of the mission

The mission will help scientists answer questions such as:

- How do black holes spin?
- Was the black hole at the center of the Milky Way actively feeding on surrounding material in the past?
- How do pulsars shine so brightly in X-rays?
- What powers the jets of energetic particles that are ejected from the region around the supermassive black holes at the centers of galaxies?

Source: Space Technology

Science and Technology

Q.1) Hermetic Wiper, recently seen in news is a ____?

a) Computer virus
b) Malware
c) Trojan horse
d) Side-Channel Attack

ANS: B
Explanation: About Hermetic Wiper:

- Hermetic Wiper is a data-wiper malware that was detected on hundreds of computers in Ukraine.
- This malware when downloaded can erase all the data on a device it targets in a manner that renders the data irretrievable.
- The malware is also capable of attacking data recovery tools on a system and the rebooting system of a hard drive, making it difficult for the device to reboot into its operating system, essentially making it inoperable.

About DDoS or distributed denial-of-service attack:

- A DDoS attack essentially floods a website with countless frivolous requests for information, eventually leading it to paralyze or crash.
- It uses bots to send these queries that bombard the site, leaving it inaccessible to legitimate users.
- Such attacks, in a conflict situation, can damage critical digital infrastructure, disable government communication and the information ecosystem in a country.

Source: Computer and Information Technology

Q.2) Which of the following statement about non-fungible token (NFT) is not correct?

a) NFTs are unique digital items stored on a blockchain, the same network that runs cryptocurrencies.
b) NFTs are certificates of authenticity.
c) With NFTs, artwork cannot be "tokenized" to create a digital certificate of ownership.
d) NFTs enable digital content creators and owners of IP to monetize their work or assets.

ANS: C
Explanation: About NFT:

- NFTs, or non-fungible tokens, are unique digital items stored on a blockchain, the same network that runs cryptocurrencies.

- NFTs are not the digital art but instead certificates of authenticity, and mostly used in the blockchain of ethereum, the second-biggest cryptocurrency.

Note: A fungible asset is something that can be readily interchanged like money. With money, you can swap a £10 note for two £5 notes, and it will have the same value.

About working of NFTs:

Traditional works of art such as paintings are valuable because they are one of a kind. But digital files can be easily and endlessly duplicated. With NFTs, artwork can be "tokenized" to create a digital certificate of ownership that can be bought and sold.

When a digital asset is tokenized as NFT, a unique code is generated and stored on the block chain network. This can be used to identify the creator as well as the future and past owners.

Applications of NFT:

- Anything digital – images, videos, music, online version of various articles – can be converted into an NFT and monetized.
- NFTs also enable digital content creators and owners of IP (intellectual property) to monetize their work or assets without a 'middleman' and earn a royalty every time the NFT is resold.
- Gives strength to the underlying idea of **direct creator-to-audience platforms**

Source: Computer and Information Technology

Q.3) Consider the following statements about Open Network for Digital Commerce (ONDC):

1. It is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT).
2. Under this, all seller and buyer platforms will work through one open protocol and can connect through ONDC.

Which of the statements given above is/are correct?

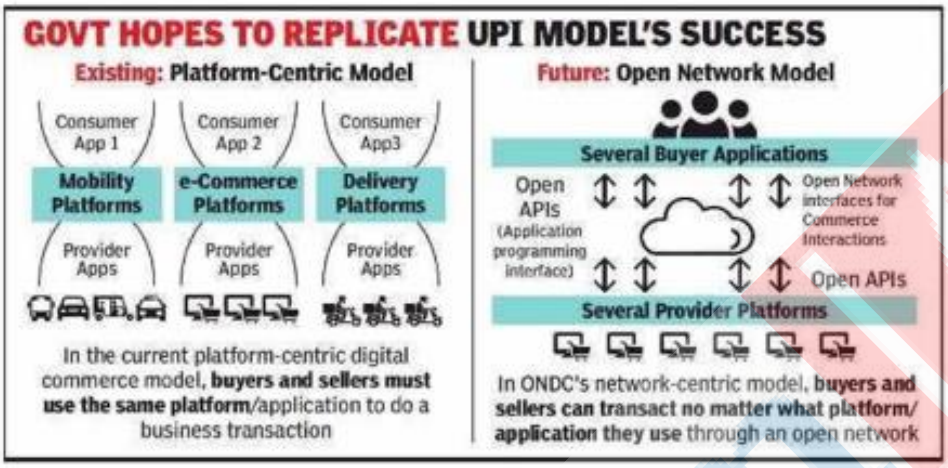
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

ANS: C

Explanation: About ONDC:

- ONDC is a **network aimed at promoting open networks** developed on open-sourced methodology, using open specifications and open network protocols independent of any specific platform.
- It is an initiative of the **Department for Promotion of Industry and Internal Trade** (DPIIT) under the **Ministry of Commerce and Industry.**
- Under this, all seller and buyer platforms will work through **one open protocol** and can connect through ONDC.

- Even if one has to buy a product, ONDC will show all the options of various platforms for the product, and the consumer can choose what he or she wants.
- Thus, the platform will help in creating new opportunities, curb digital monopolies and support micro, small and medium enterprises and small traders and help them get on online platforms.



Aim of ONDC: The **Unified Payment Interface (UPI)** has disrupted the digital payments' domain. ONDC seeks to achieve something similar for e-commerce.

- It aims to democratise digital commerce by moving it away from platform-centric models like Amazon and Flipkart to an open network.
- This will enable more sellers to be digitally visible. The transactions will also be executed through an open network.

Source: Computer and Information Technology

Q.4) Consider the following statements about SANT Missile:
1. It is an indigenously designed and developed surface-to-surface missile.
2. The missile can neutralize targets in a range of up to 10 km.

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

ANS: B
Explanation:

About SANT Missile: Stand-off Anti-Tank (SANT) is an indigenously designed and developed air-to-surface missile. The missile has been designed and developed by Research Centre Imarat (RCI), Hyderabad in coordination with other DRDO labs.

Key Features of SANT Missile

1. Firstly, the missile is equipped with a state-of-the-art Milli Metre Wave (MMW) seeker, which provides high precision strike capability from a safe distance.
2. Secondly, the missile can neutralize targets in a range of up to 10 km.

Significance of the launch of SANT Missile

In recent times, SANT is the third in the series of indigenous stand-off weapons which has been tested. The others were the long-range bombs and smart anti airfield weapons.

Hence, the missile is expected to further strengthen the arsenal of the Indian Air Force (IAF).
Source: Defence technology

Q.5) Consider the following statements about Pinaka-ER Multi Barrel Rocket Launcher System:
1. It is used for attacking the adversary targets prior to the close-quarter battles.
2. The extended range of the new Pinaka is over 100 km.
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

ANS: A
Explanation: About Pinaka:
Pinaka is a multiple rocket launcher. It is used for attacking the adversary targets prior to the close-quarter battles.

About Pinaka-ER: It is the upgraded version of the Pinaka which has been in service with the Indian Army for the last decade.

Designed by: The system is jointly designed by laboratories of Defence Research and Development Organisation (DRDO) – Armament Research & Development Establishment (ARDE), Pune and High Energy Materials Research Laboratory (HEMRL), Pune.

Range: The extended range of the new Pinaka is over 70 km, as opposed to the 45 km the system currently has.

Moreover, it has the ability to strike within 10 metres of where it is aimed, allowing the army to destroy a terrorist camp, or an enemy post, logistics dump or headquarters without needing to send soldiers across the border.
Source: Defence technology

Q.6) Consider the following statements about VL-SRSAM missile:
1. It has been indigenously designed and developed for Indian Coast Guard.
2. It is meant for neutralizing various aerial threats at close ranges including sea-skimming targets.
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

ANS: B
Explanation: About VL-SRSAM:

- VL-SRSAM missile has been indigenously designed and developed by Defense Research and Development Organization (DRDO) for the Indian Navy.

Purpose: It is meant for neutralizing various aerial threats at close ranges including sea-skimming targets.

Note: Sea skimming is a technique of flying as close as possible to the sea surface to avoid being detected by the radars onboard warships.

Features: The missile has an operational range of 50 to 60 km. It also features mid-course inertial guidance through a fiber optic gyroscope and active radar homing in the terminal phase.
Source: Defence technology

Q.7) Which of the following statement about Zircon Missile is/are not correct?
1. It is a Hypersonic Cruise Missile developed by North Korea.
2. The missile speed is so fast that the air pressure in front of the weapon forms a plasma cloud as it moves, absorbing radio waves and making it practically invisible to active radar systems.
Select the correct answer using the codes given below:

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

ANS: A
Explanation: About the Zircon Missile:

Source: The Sun

Zircon is a Hypersonic Cruise Missile developed by Russia. It has been called one of the invincible missiles by the Russian President.

Special features of Zircon Missile

- The missile flies with an **advanced fuel** that the Russians say gives it a range of up to 1,000 kilometers.
- The missile speed is also so fast that the air pressure in front of the weapon forms a plasma cloud as it moves, **absorbing radio waves** and making it practically invisible to active radar systems.

Note: The Zircon will join the Avangard hypersonic glide vehicle that was put into service in 2019 and the air-launched Kinzhal (Dagger) missiles in Russia's arsenal.

Significance for India

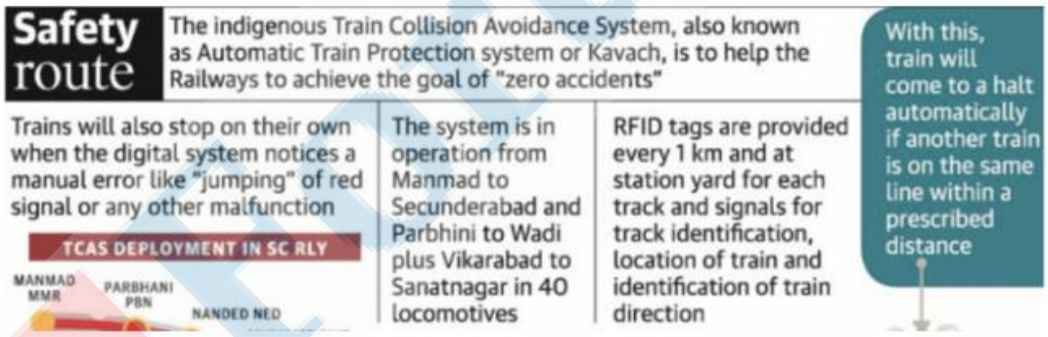
This successful test of Zircon is being termed as good news for India as it will hasten the development of the delayed BrahMos-II hypersonic cruise missile, a joint India-Russia project.
Source: Defence technology

Q.8) Which of the following statement about Kavach system is not correct?

a) It is an indigenously developed Automatic Train Protection (ATP) System for Indian Railways.
b) It needs single person to activate the train braking system.
c) It is developed by Research Design and Standards Organisation(RDSO).
d) It prevents trains from passing the signal at Danger (Red) and avoiding collisions.

ANS: B
Explanation: About Kavach system:

- KAVACH is an indigenously developed **Automatic Train Protection (ATP)** System for Indian Railways.



Main Function of Kavach: It is designed to bring a train to a halt automatically when it notices another train on the same line within a prescribed distance.

Developed by: Research Design and Standards Organisation(RDSO) of the Ministry of Railways in collaboration with Indian industry.

Features of Kavach

- Prevents trains from passing the signal at Danger (Red) and avoiding collisions.
- Activates the train braking system automatically if the driver fails to control the train as per the speed restrictions.

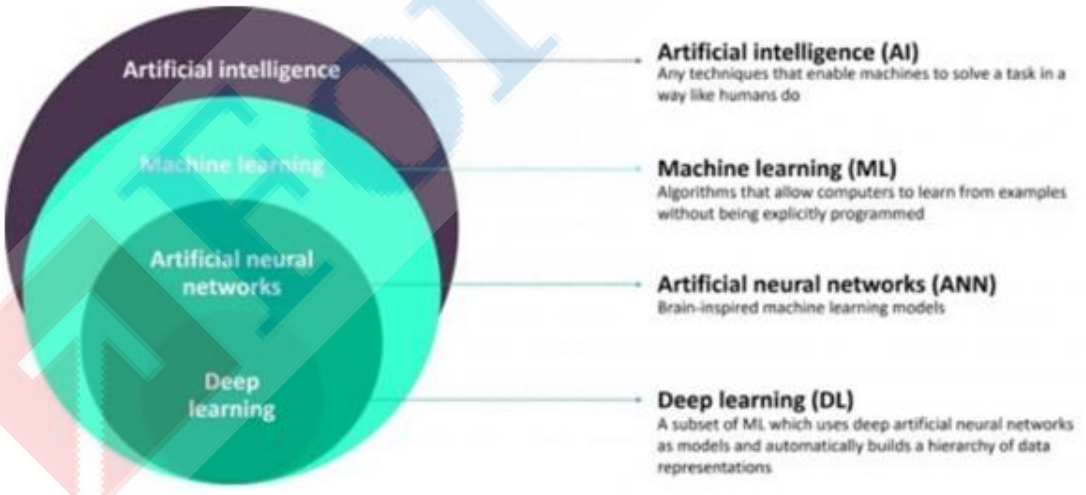
- Continuous update of Movement Authority with the display of signal aspects in Driver Machine Interface(DMI)/Loco Pilot operation cum Indication Panel
- Auto whistling while approaching Level Crossing Gates
- Prevention of collision between two Locomotives equipped with functional KAVACH
- SoS Messages during emergency situations
- Centralised live monitoring of Train movements through Network Monitor System.

Significance of Kavach: 1) Kavach is one of the cheapest, Safety Integrity Level 4(SIL-4) certified technologies with the probability of an error being 1 in 10,000 years. **2)** It opens avenues of export of this indigenous technology for Railways. **3)** It helps the Railways to achieve the goal of "zero accidents".
Source: Robotics, AI, and others

Q.9) Consider the following statements about Artificial Neural Network:
1. These are a vital subset of machine learning and are at the heart of deep learning algorithms.
2. They have the ability to fine-tune the responses, but they do not have access to the specific decision-making process.
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

ANS: C
Explanation: About Artificial Neural Network (ANN):



Definition: Artificial Neural Networks (ANN) also known as Neural Networks are a vital subset of machine learning and are at the heart of deep learning algorithms.

- Their name and structure are inspired by the human brain, mimicking the way that biological neurons signal to one another.

- They are not like other machine learning algorithms that process numbers or organize data, it is an algorithm that learns from experience and repeated tasks performed by users.
- It is fed massive volumes of data in the beginning phases. In most cases, training is done by providing input and informing the network about what should be the output.

Note:
Backpropagation is a commonly used method for training artificial neural networks, especially deep neural networks.

Applications of Artificial Neural Network (ANN):
Image Preprocessing and Character Recognition, Forecasting, Credit rating, Fraud Detection, Portfolio Management among others.

Limitations of Artificial Neural Network (ANN)
Time it takes to train networks, which frequently demand an acceptable level of computational power for even complex tasks.

- Neural networks are computer systems in which the user categorizes the trained data and gets responses. They have the ability to fine-tune the responses, but they **do not have access to the specific decision-making process**.

Source: Robotics, AI, and others

Q.10) Consider the following statements about Zariski cancellation problem:
1. It is one of the world's greatest physics problems.
2. Professor Neena Gupta has been awarded Ramanujan Prize for solving the Zariski cancellation problem.
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

ANS: B
Explanation: About the Zariski cancellation problem:

- It is one of the world's greatest math problems. It is a fundamental problem in Algebraic Geometry.
- The problem was posed by one of the most eminent founders of modern Algebraic Geometry, Oscar Zariski, in 1949.

What is the problem? "

- The cancellation problem asks that if one have cylinders over two geometric structures, and that have similar forms, can one conclude that the original base structures have similar forms?"
- Neena Gupta solved this problem which is considered as one of the best works in algebraic geometry in recent years done anywhere.

About Ramanujan Prize for Young Mathematicians: It is awarded annually to young mathematicians from developing countries since 2005.

Who is the prize awarded to? The prize is given to an eminent Mathematician who is less than 45 years of age on 31 December of the year of the award and has conducted outstanding research in developing countries

Administered by: The Prize is administered by the **Abdus Salam International Centre for Theoretical Physics (ICTP)** jointly with the Department of Science and Technology (DST) Government of India and the **International Mathematical Union (IMU)**.

Sponsored by: Department of Science and Technology, Government of India (DST).

ICTP: It was founded in 1964 by the late Nobel Laureate Abdus Salam. It seeks to accomplish its mandate by providing scientists from developing countries with the continuing education and skills that they need to enjoy long and productive careers.

IMU: It is an international non-governmental and non-profit scientific organization with the purpose of promoting international cooperation in mathematics.
Source: Robotics, AI, and others

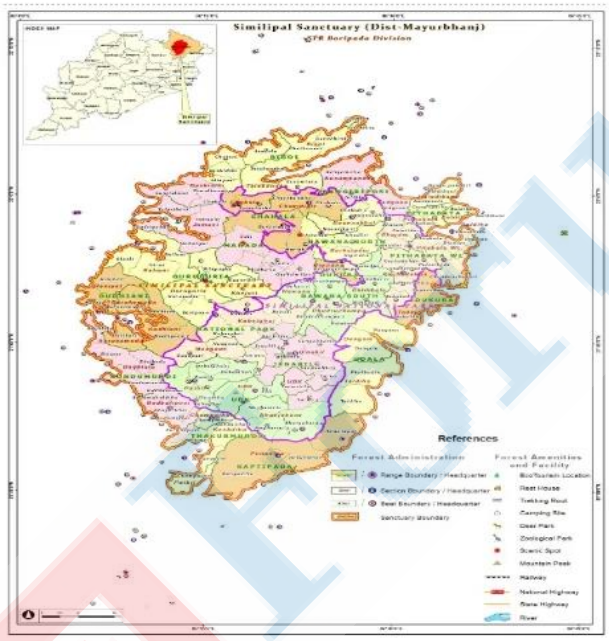
Environment and Ecology

Q.1) Consider the following statements about Simlipal biosphere reserve:
1. It is a part of the UNESCO World Network of Biosphere Reserves.
2. ErengaKharias and the Mankirdias inhabit the reserve's forests.
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

ANS: C
Explanation: About Similipal Biosphere Reserve:

- It was formally designated a tiger reserve under Project Tiger in May 1973. It was declared as a wildlife sanctuary in 1979 with an area of 2750 sq. Km.



Origin of Name: The park derives its name from 'Simul', which are red silk cotton trees growing in the area.

UNESCO Biosphere Reserve: The park was declared a biosphere reserve by the Government of India in 1994. It is a part of the UNESCO World Network of Biosphere Reserves since 2009.

Location: Simlipal biosphere reserve located in the Mayurbhanj district of Odisha. It is the 7th largest national park in India and Asia's second-largest Biosphere Reserve. It lies in the eastern end of the Eastern Ghat.

Part of: Similipal is part of the Mayurbhanj Elephant Reserve. Other Protected Areas Include:

1. Similipal Tiger Reserve,
2. Hadgarh Wildlife Sanctuary
3. Kuldiha Wildlife Sanctuary

Flora: The park has a high biodiversity with about 94 species of orchids and 3,000 species of plants. Among them, Sal is a dominant tree species in the park.

Fauna: The park is home to the Bengal tiger, Asian elephant, gaur, and chausingha. It also has a sizeable population of reptiles, which includes the longest venomous snake, the King cobra, and the Tricarinate hill turtle.

Rivers: At least 12 rivers cut across the plain area, all of which drain into the Bay of Bengal. The prominent among them are Burhabalanga, PalpalaBandan, Salandi, Kahairi and Deo. It is also home to some beautiful waterfalls like Joranda and Barehipani Falls.

Tribes: The two tribes namely Erenga Kharias and the Mankirdias inhabit the reserve's forests. Other dominant tribes include the Ho, Gonda, and Munda among others.

Threats:

Forest Fires in the Simlipal National Park: The forest fires seemed to be both due to natural causes and human-made causes.

- Natural causes: lighting or even soaring temperatures can sometimes result in these fires. Moreover, the forests of Similipal are of a dry deciduous type and the fallen leaves become highly inflammable if there is no precipitation.

Man-Made Causes**:**

- **Poaching and hunting**: the poachers set a small patch of forest on fire to divert the wild animals. It can lead to forest fires.
- Sometimes, Forest areas are set on fire by the villagers to clear the dry leaves on the ground for easy collection of mahua flowers. These flowers are used to prepare a drink that is addictive in nature.

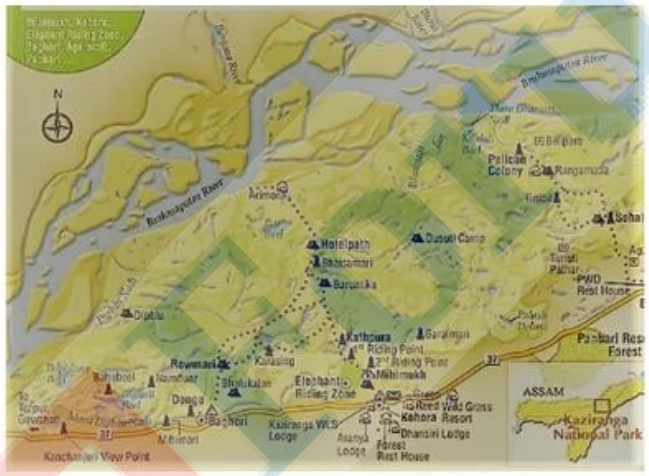
Source: Protected areas

Q.2) "The Park is known for its rare and endangered endemic wildlife such as the roofed turtle, hispid hare, golden langur, and pygmy hog. It is also famous for its population of wild water buffalo." Which of the following is described in the above statement?

a) Namdapha National Park
b) Manas National Park
c) Periyar National Park
d) Dachingam National Park

ANS: B
Explanation: Manas National Park:

About Manas national park: It is a UNESCO World Heritage Site, a Tiger reserve, an elephant reserve and a biosphere reserve. It is also called Kamrup Sanctuary,



Location: It is located in the Himalayan foothills in Assam. It is contiguous with the Royal Manas National Park in Bhutan.

Origin of Name: The name of the park is originated from the Manas River.

Flora: The combination of Sub-Himalayan BhabarTerai and the Himalayan subtropical broadleaf forests makes Manas National Park one of the richest biodiversity in India. There are around 543 plant species recorded in the core of the national park.

Vegetation: There are four types of vegetation in Manas National Park namely, Sub-Himalayan Light Alluvial Semi-Evergreen forests (northern parts); East Himalayan mixed Moist and Dry Deciduous forests; Low Alluvial Savanna Woodland, and Assam Valley Semi-Evergreen Alluvial Grasslands.

Fauna: The Park is known for its rare and endangered endemic wildlife such as the Assam roofed turtle, hispid hare, golden langur, and pygmy hog. It is also famous for its population of wild water buffalo.

River: The Manasriver flows through the west of the park. Manas is a major tributary of Brahmaputra River. The river is named after the serpent goddess Manasa.

Village: Pagrang is the only forest village located in the core of the Manas national park. Apart from this village 56 more villages surround the park. Many more fringe villages are directly or indirectly dependent on the park.

Significance:

- **Cultural services** include all non-material benefits obtained from ecosystems. Manas and Royal Manas National Parks attract several thousands of tourists, both Indian and foreign. In addition, the Bodo community living in the area and their livelihoods, culture, and food all depend on forests to a great extent.
- Manas and other protected areas also provide regulating services**.** These are benefits obtained from the regulation of ecosystem processes. Manas natural habitats play a significant role in climate and disease control, water regulation, as well as pollination.
    - It helps regulate floods as the water rushes down from the Himalayas. The vast green grassland in Manas is one of the most productive ecosystems and acts as a carbon sink, sequestrating huge amounts of carbon each year.
- **Supporting services** are necessary for the production of all other ecosystem services. The entire range of ecosystems in Manas helps in soil formation and nutrition supplements. Manas is home to thousands of species and is a haven for securing the Himalayas' genetic diversity.

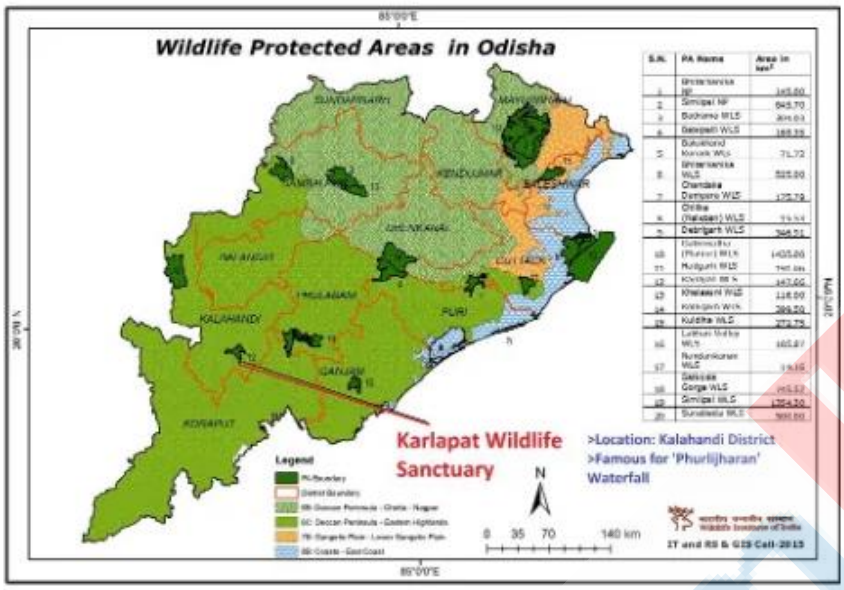
Source: Protected areas

Q.3) Karlapat Wildlife Sanctuary, is located in which of the following state?

a) Jharkhand
b) Assam
c) Odisha
d) Kerala

ANS: C
Explanation: About Karlapat Wildlife Sanctuary:

- It is a wildlife sanctuary located in the Kalahandi district in Odisha. The sanctuary is famous for the lush green dry deciduous forest.



Flora: The sanctuary consists of flora like Sal, Bija, Asan, Harida, Amala, Bahada, Bamboo and varieties of medicinal plants.

Fauna: The sanctuary is home to a plethora of wildlife animals such as leopard, gaur, sambar, nilgai, barking deer, elephants, mouse deer, soft claws ottawa, and a wide variety of birds.

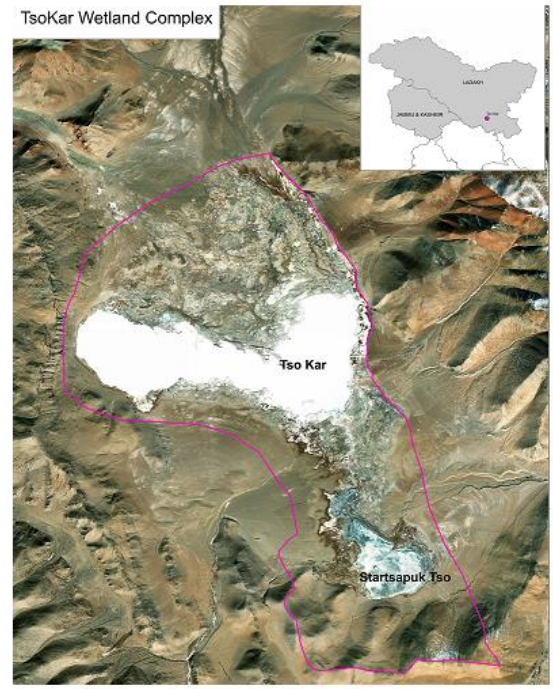
Waterfalls: It is famous for the Phurlijharan waterfall. There are other several small and big waterfalls inside the sanctuary like Ghusrigudi, Dumnijhola, Kamalajharan, Koyirupa, Kuang, and Raja Rani.
Source: Protected areas

Q.4) TsoKar Wetland, is located in which of the following state/UT?

a) Ladakh
b) Sikkim
c) Arunachal Pradesh
d) Himachal Pradesh

ANS: A
Explanation: About TsoKar Basin:

- It is a high-altitude wetland complex. It consists of two connected lakes; Startsapuk Tso (a freshwater lake of about 438 hectares to the south) and TsoKar (a hypersaline lake of 1800 hectares to the north).
- The name TsoKar refers to the white salt efflorescence on the margins of the lake caused by the evaporation of the saline waters.



Location: It is situated in the Changthang region of Ladakh, India.

Fauna: Numerous threatened species inhabits this wetland, including the endangered saker falcon, and Asiatic wild dog or dhole, and the vulnerable snow leopard.

Important Bird Area: The TsoKar Basin is an A1 Category Important Bird Area (IBA) as per Bird Life International and a key staging site in the Central Asian Flyway.

Important Breeding Ground: The site is one of the most important breeding areas of the Black-necked Crane in India. It is also the major breeding area for Great Crested Grebe Bar-headed Geese, Ruddy Shelduck, Brown-headed Gull, Lesser Sand-Plover, and many other species.

Source: Protected areas

Q.5) "It is home to species such as white-rumped vulture (Critically Endangered), red-headed vulture (Critically Endangered), and two waterbirds, the sociable lapwing and Baer's pochard. It is formed in the depression between River BurhiGandak and the paleochannel of River Bagmati."

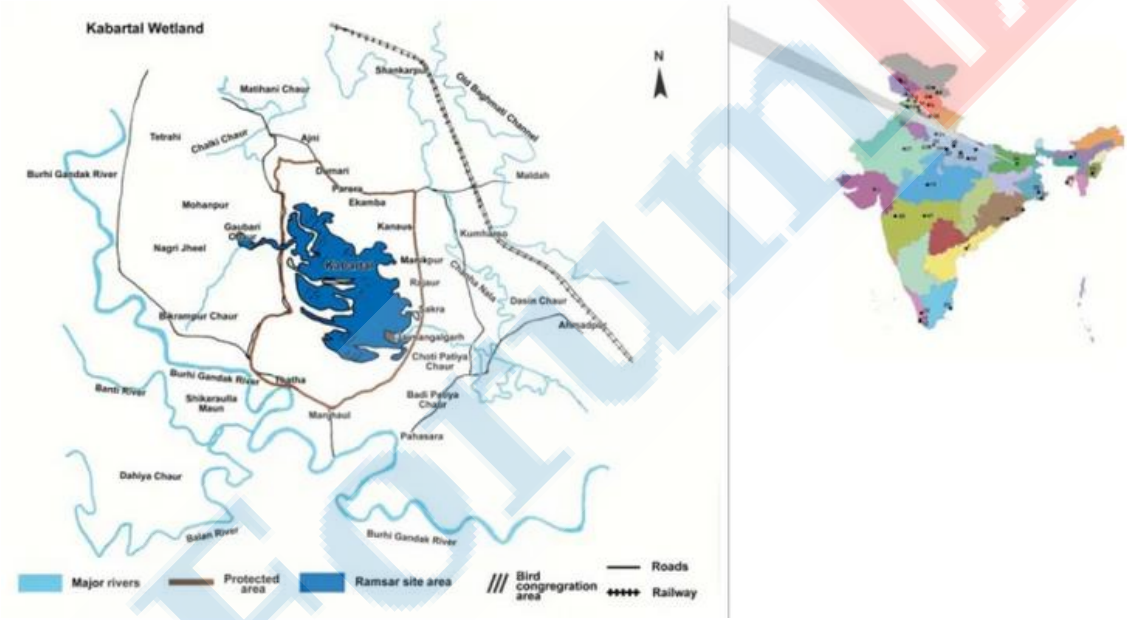
Which of the following is described in the above statement?

a) Bakhira Wildlife Sanctuary
b) Kabartal Wetland
c) Sur Sarovar Lake wetland
d) Lonar Lake Wetland

ANS: B

Explanation: About Kabartal Wetland:

- It is also known as KanwarJheel. It covers 2,620 hectares of the Indo-Gangetic plains in the Begusarai district of Bihar.



Location: It is located Begusarai district of the state of Bihar. It is formed in the depression between River BurhiGandak and the paleochannel of River Bagmati.

Fauna: It is home to species such as white-rumped vulture (Critically Endangered), red-headed vulture (Critically Endangered), and two waterbirds, the sociable lapwing and Baer's pochard.

Biodiversity: Significant biodiversity is present in the wetland. It is also an important stopover along the Central Asian Flyway for migratory waterbirds.

Significance: It acts as a vital flood buffer for the region besides providing livelihood opportunities to local communities.

Source: Protected areas

Q.6) Consider the following statements about Ramsar Sites:
1. Brazil has the largest area under wetland protection.
2. The countries with the most Ramsar Sites is the United Kingdom.
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

ANS: B
Explanation:
Ramsar Sites globally and in India

- The countries with the most Ramsar Sites are the **United Kingdom** (175) and **Mexico** (142). **Bolivia** has the largest area under wetland protection.
- India has a total of 49 designated sites spread over 18 states and two Union Territories. Of the 49 sites, 10 are in UP, 6 in Punjab, 4 each in Gujarat and Jammu, and Kashmir among others.

Source: Protected areas

Q.7) Basai Wetland, recently seen in news is located at which of the following state/UT?

a) Punjab
b) Delhi
c) Haryana
d) Rajasthan

ANS: C
Explanation: About Basai Wetland:

Located in: Gurgaon, Haryana.

Flora and Fauna: It houses 20,000 birds of over 280 species including migratory birds and endangered birds.

Threats: Due to the accelerated expansion of Gurugram, the wetland continues to disappear under newly laid roads, modern housing constructions, and other infrastructure development.

Moreover, an upcoming expressway cutting through the terrain of the wetland has majorly impacted the flyway of thousands of migratory birds from Europe and Central Asia.

Significance:

- Recognized as a key biodiversity area by the IUCN and the Wildlife Institute of India
- Recognized globally as an Important Bird Area (IBA) by BirdLife International.
- The wetland lies in one of the paleochannels of the Sahibi River. It is a tributary of the Yamuna which originates from the Aravalli range in Rajasthan and flows through west and South Haryana into Delhi where it is also known as the Najafgarh drain.

Note: The Basai Wetlands have not yet been declared a protected wetland by the Government of Haryana.
Source: Protected areas

Q.8) Consider the following statements about Indian Pangolin:

1. They have large, protective keratin scales covering their skin and they are the only known mammals with this feature.
2. It is protected under Schedule I of WPA, 1972.
3. It is Critically Endangered under IUCN.

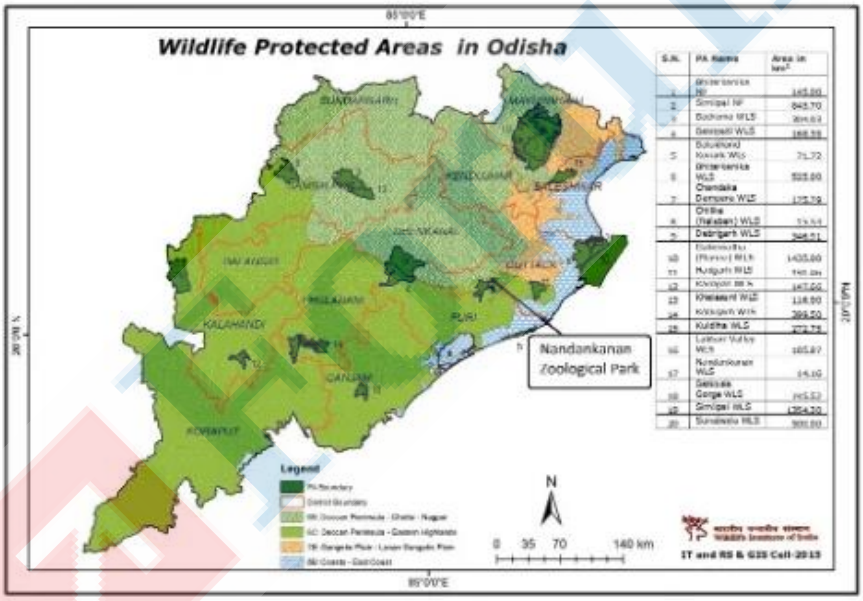
Which of the statements given above is/are correct?

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

ANS: A

Explanation: About Nandankanan Zoological Park (NZP):

- Unlike other zoos in the country, Nandankanan is built right inside the forest and set in a completely natural environment.



Source: Wildlife Institute of India

Location: It is located in Bhubaneswar, Odisha.

Flora: A diverse variety of plants, orchids, creepers, cacti, palms, and 750 species of plants are seen here.

Fauna: Nandankanan has been internationally acclaimed for its highest collection of white tigers in the world. Besides, gharials and white tigers, leopards, pangolin, mouse deer, lions, ratel and vultures are also bred here. It is recognized as a leading zoo for the breeding of the Indian pangolin and white tiger.

Significance:

- It is the first zoo in the World to breed White tiger and Melanistic tiger and it is the only conservation breeding center of Indian Pangolins in the world.
- First captive breeding center for endangered Gharials in the year 1980.
- Kanjia Lake – A wetland of National importance (2006).
- It is the only zoological park in India to become an institutional member of World Association of Zoos and Aquarium (WAZA).
- It is the only zoo in India after which an express train Puri-New Delhi express has been named as **"**Nandankanan Express**"**.

- It is the first zoo in India where endangered Ratel was born in captivity.

Source: Protected areas

Q.9) Consider the following statements about Indian star tortoise:
1. Star tortoises are carnivores.
2. Indian star tortoise is a diurnal animal that is mostly active in the morning and late in the afternoon.
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

ANS: B
Explanation: About Indian star tortoise:
It is a species of tortoise found in dry areas and scrub forests of India, Pakistan and Sri Lanka. It is accustomed to monsoon seasons. These tortoises are easily recognizable by their star-patterned shells.

Conservation Status:

- **IUCN Status:** Vulnerable
- **CITES:** Appendix I
- **Wild Life Protection Act 1972:** Schedule IV

Habitat: Star tortoises come from a wide distribution in India, where they live in semi-desert grasslands and moist deciduous forest. They are also found on sand dunes, in scrub forests, humid jungles and in human-altered habitats.

Characteristics:

- Indian star tortoise has medium-sized head, hooked beak, and short, thick legs covered with tubercles of various sizes and shapes. Males have a long tail, while females have short and stubby tails. Indian star tortoise is a diurnal animal that is mostly active in the morning and late in the afternoon.
- **Behaviour and Temperament:** Indian star tortoises do not like being handled. They can get stressed out and get ill if handled frequently.
- **Food Habits:** Star tortoises are herbivores. They need plenty of fresh and dark leafy greens and grasses.

Threats: It is the single most confiscated species of freshwater tortoise in the world. It faces threats such as loss of habitat to agriculture and illegal harvesting for the pet trade.

Source: Species and Biodiversity

Q.10) Consider the following statements about Asiatic Lion:

1. Asiatic lions are slightly larger than African lions.
2. Similar to African Lion, Asiatic Lion has a longitudinal fold of skin running along its belly.

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

ANS: D

Explanation: About the Species:

There are only several hundred Asiatic lions in the wild, and they only live in the Gir Forest, India, in an area that is smaller than Greater London.

Conservation Status:

- **IUCN Status**: Endangered
- **CITES:** Appendix I
- **Wildlife (Protection) Act, 1972**: Schedule I

Habitat: They are confined to the Gir National Park and wildlife sanctuary and its surrounding environments in Gujarat's Saurashtra district.

Characteristics:

- Asiatic lions are slightly smaller than African lions.
- In contrast to African Lion, Asiatic Lion has a longitudinal fold of skin running along its belly.
- The fur ranges in colour from ruddytawny, heavily speckled with black, to sandy or buff-grey, sometimes with a silvery sheen in certain lights.
- Males have only moderate mane growth at the top of the head so that their ears are always visible.

Food Habits: Asiatic Lions are mainly dependent on Chital, Nilgai, Sambhar, Buffaloes and Goats for food. Sometimes they hunt smaller animals and if the need arises they kill the livestock or camel found in the neighbouring areas of Gir National Park.

Threats:

- Poaching
- Habitat fragmentation
- Lions die by falling into the unguarded wells around the Gir Protected Area.
- The threat of genetic inbreeding arises from a single population in one place.

Conservation Initiatives

- WWF supported barricading of 180 wells with local partners and Gujarat Forest Department.
- This initiative led to doubling the subsidy by the Gujarat government, and many farmers barricaded the wells with government support.
- To strengthen the efforts of Gir Protected Area towards managing conflict and poaching, WWF provided need-based support.
- WWF-India conducted a study to assess habitat change over a period of 20 years.

Source: Species and Biodiversity

Environment and Ecology

Q.1) Consider the following statements about Devi River:
1. It is one of the principal tributaries of Mahanadi.
2. The mouth of devi river is nesting site for olive ridley turtles.
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

ANS: B
Explanation: About the mass tagging project:
Launched: It is a collaborative project of the **Zoological Survey of India** in association with the Odisha Forest and Environment Department.
Nesting Sites Covered: The project of tagging the Olive Ridleys is being carried out at three mass nesting sites — Gahirmatha, Devi River mouth, and Rushikulya. The project is being undertaken after a span of about 25 years.
Purpose: The tagging of the turtles will help in finding the extent of travel and location of the turtles after congregation, nesting, etc for further research on turtle behaviour.
The tags on the turtles are also uniquely numbered, containing details such as the name of the organisation, country code and email address. If researchers in other countries come across the tagged turtles, they will email their location in longitude and latitude.
Moreover, the **metal tags attached to turtles are non-corrosive,** and they do not harm their body. It can be removed later.
Note:
Rushikulya River: It is one of the major rivers in the state of Odisha. The River originates in the Daringbadi hills of the Eastern Ghats range. The place from where the river originates, Daringbadi is called the '**Kashmir of Odisha**'. The river meets the Bay of Bengal at Puruna Bandha in Ganjam.
Devi River: It is one of the principal distributaries of Mahanadi. It flows through Jagatsinghpur district and Puri district across Odisha state in India and joins the Bay of Bengal.
Source: Important Environmental Initiatives – International and Domestic

Q.2) Consider the following statements:
1. The Gharial reintroduction in the Beas Conservation Reserve is an ambitious programme of the Himachal Government.
2. The Beas Conservation reserve hosts the only known population in India of the endangered Indus River dolphin.
Which of Statements given above is/are correct?
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

ANS: B
Explanation: About Gharial Reintroduction in Beas River

The Gharial reintroduction in the Beas Conservation Reserve is an ambitious programme of the Punjab government. The reptiles were commonly sighted in the Beas River till the 1960s, but later became extinct.

Now, as part of the programme, 94 gharials have been released in the reserve since 2017.

Reason behind their extinction in Beas River

Gharials may have gone extinct due to **a)** change in the hydrology due to the construction of dams and barrages **b)** significantly reduced water flow **c)** rapid land-use change of floodplains and **d)** rampant overfishing that slowly led to the extinction of the gharial from the Beas.

About Beas Conservation Reserve

It is located in Punjab and spreads over a 185-km stretch of the Beas River. The reserve has been notified as a Ramsar Site in January 2020.

The reserve hosts the only known population in India of the endangered Indus River dolphin *(Platanista gangetica minor).*

Further, threatened species in the reserve include the endangered masheer *(Tor putitora)* and hog deer *(Axis porcinus)* as well as the vulnerable smooth-coated otter *(Lutrogale perspicillata).*
Source: Important Environmental Initiatives – International and Domestic

Q.3) Consider the following pairs:

Operation	Related to
1. **Operation Clean Art**	illegal trade in Shahtoosh shawls
2. Operation Softgold	illegal wildlife trade in Mongoose hairbrushes
3. Operation Freefly	illegal trade of live birds

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

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

ANS: C

Explanation: Operations conducted by WCCB against illegal wildlife trade

- **Operation Save Kurma:** It focuses on the poaching, transportation and illegal trade of live turtles and tortoises.
- **Operation Turtshield:** It was taken up to tackle the illegal trade of live turtles.
- **Operation Softgold:** To tackle illegal trade in Shahtoosh shawls (made from Chiru wool).
- **Operation Lesknow**: To bring the attention of the enforcement agencies within the country to the illegal wildlife trade in lesser-known species such as Deer, Wild Boar, Jackal, Mongoose, Monitor Lizard, Sea cucumber, and Pangolin.
- **Operation Clean Art:** To drag the attention of enforcement agencies towards the illegal wildlife trade in Mongoose hairbrushes.
- **Operation Thunderbird:** It concentrated mainly on illegal trade in species such as Tigers and other Asian big cats, Bears, Pangolins, Reptiles, Red Sanders, Sea-cucumber, and seahorses.
- **Operation Birbil:** To curb illegal trade in wild cat and wild bird species.
- **Operation Wildnet:** It was aimed to draw the attention of the enforcement agencies within the country to focus their attention on the ever-increasing illegal wildlife trade over the internet using social media platforms.
- **Operation Freefly:** It was conducted to check the illegal trade of live birds.
- **Operation Wetmark**: It was taken up to ensure the prohibition of the sale of meat of wild animals in wet markets across the country.

Source: Important Environmental Initiatives – International and Domestic

Q.4) Consider the following statements about Global Methane Initiative (GMI):
1. It is an international public-private initiative launched in 2004.
2. It is currently hosted by the U.S. Environmental Protection Agency.
3. India has been one of the members since its inception.
Which of the statements given above are correct?

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

ANS: D
Explanation:

About the Global Methane Initiative (GMI)

GMI is an international public-private initiative launched in 2004.

Aim: To achieve a global reduction in anthropogenic methane emission through a partnership among developed and developing countries having economies in transition.

Members: It is a voluntary Government and an informal international partnership having members from 45 countries including the United States and Canada. India has been one of the members since its inception.

Secretariat: It is currently hosted by the U.S. Environmental Protection Agency.

Current Chairperson: Canada

Vice-Chairmanship: India has taken up Vice-Chairmanship for the first time in the Steering Leadership along with the USA.
Source: Important Environmental Initiatives – International and Domestic

Q.5) Consider the following statements about Project RE-HAB:
1. It is a sub-mission of KVIC's National Honey Mission.
2. This project can prevent Elephant – Human Conflicts.
Which of Statements given above is/are correct?

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

ANS: C
Explanation: About Project RE-HAB

- Under this Project, "Bee-fences" are created by setting up bee boxes in the passageways of elephants to block their entrance to human territories.
- The boxes are connected with a string so that when elephants attempt to pass through, a tug or pull causes the bees to swarm the elephant herds and dissuade them from progressing further.

- It was earlier launched in Kodagu district of Karnataka in March 2021. In just 6 months, this project has reduced elephant attacks by over 70%.
- It is a sub-mission of KVIC's National Honey Mission.

Significance of this Project

- Firstly, this project is a cost-effective way of reducing human-wild conflicts without causing any harm to the animals.
- Secondly, it is scientifically recorded that elephants are annoyed by the honey bees. Elephants also fear that the bee swarms can bite their sensitive inner side of the trunk and eyes. Hence, this project will force elephants to return and prevent Elephant – Human Conflicts.

Source: Important Environmental Initiatives – International and Domestic

Q.6) Consider the following statements about Asian Waterbird Census:

1. It is a decadal exercise to count the water birds and monitor the wetlands for conservation of migratory birds along Central Asian Flyway.
2. In India, it is coordinated by the Wetlands International South Asia and the Bombay Natural History Society.

Which of Statements given above is/are not correct?

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

ANS: A

Explanation:

About Asian Waterbird Census

- Asian Waterbird Census (AWC) was started in 1987. It is an annual exercise to count the waterbirds and monitor the wetlands for conservation of migratory birds and their habitats along the Central Asian Flyway.
- **Conducted by:** Wetlands International
- In India, AWC is coordinated by the Wetlands International South Asia and the Bombay Natural History Society.
- **Significance:** It is part of a global waterbird monitoring program called the International Waterbird Census (IWC).

Source: Important Environmental Initiatives – International and Domestic

Q.7) Consider the following statements about Volatile Organic Compounds (VOC):
1. They are inorganic chemical compounds.
2. VOCs do not have origin naturally.
Which of Statements given above is/are correct?
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

ANS: D
Explanation:

About Volatile Organic Compounds (VOC)

They **are organic chemical compounds** whose composition makes it possible for them to evaporate under normal indoor atmospheric conditions of temperature and pressure.

Common examples of VOCs: Benzene, ethylene glycol, formaldehyde, methylene chloride, tetrachloroethylene, toluene and xylene.

Source of VOCs: VOCs are released by petrol and diesel vehicles. They impact air quality and human health. However, **VOCs can also have a natural origin**. Plants emit these chemicals to attract pollinators, defend themselves from pests and predators and adapt to environmental stress.

Effect of VOCs on Health: VOCs can irritate the eyes, nose, and throat, damage body organs, and cause cancer. Long-term exposure to VOCs is not good because the majority of the VOCs are carcinogenic (cancer-causing). It is also linked to medical conditions such as asthma and heart disease.

Note: Benzene, a chemical that induces cancer, is the only VOC included in the ambient air-quality standards.

Formation of Dangerous Pollutants: VOCs can drive the formation of other dangerous pollutants. For instance, they react with sunlight and nitrogen dioxide to form ground-level ozone.

VOCs also trigger the formation of Particulate Matter (PM2.5), a pollutant that reaches deep into the lungs, affecting their normal functioning. They also react in the air to produce secondary organic aerosols, minute particles suspended in the air.

How shifting to EVs will reduce VOCs?

The gases escaping out of a vehicle's exhaust account for 65-80% of an automobile's emissions. Hence, replacing all petrol, diesel, LPG, and CNG fuelled two- and three-wheelers with electric vehicles in 2030 will slash emissions of VOCs by 76%. Further, It could also lower the emissions of black carbon — a sooty black material coming from gas and diesel-powered vehicles — by 50%.
Source: Important Environmental Initiatives – International and Domestic

Q.8) With respect to biosphere reserves, which of the following statement is not correct?

a) UNESCO designated Mura-Drava-Danube (MDD) as the world's first 'five-country biosphere reserve.
b) MDD stretches across Austria, Slovenia, Croatia, Hungary and Serbia.
c) Nokrek Biosphere reserve covers jaintia hills of Meghalaya.
d) Manas Biosphere Reserve has tropical monsoon type of climate.

ANS: C

Explanation: World's first 5-country biosphere reserve

- UNESCO designated Mura-Drava-Danube (MDD) as the world's first 'five-country biosphere reserve.
- It stretches across Austria, Slovenia, Croatia, Hungary and Serbia.
- The total area of the reserve — a million hectares — in the so-called 'Amazon of Europe', makes it the largest riverine protected area on the continent.

- Source-WWF
- Rivers-The biosphere reserve covers 700 kilometres of the Mura, Drava and Danube rivers.
- Fauna:
  - It is home to continental Europe's highest density of breeding white-tailed eagle, as well as endangered species such as the little tern, black stork, otters, beavers and sturgeons.
  - it is also an important annual resting and feeding place for more than 250,000 migratory birds, according to WWF.

Significance of the reserve:

- The reserve is inhabited by almost 900,000 people.
- It is home to floodplain forests, gravel and sand banks, river islands, oxbows and meadows.
- The biosphere "represented an important contribution to the European Green Deal (climate action plan) and contributed to the implementation of the EU Biodiversity Strategy in the Mura-Drava-Danube region."
- The strategy's aim is to revitalise 25,000 km of rivers and protect 30% of the European Union's land area by 2030.

Nokrek Biosphere Reserve

- Location: Meghalaya (part of Garo Hills)

- Rivers: Ganol, Dareng and Simsang
- Details:
  - Climate: Tropical- High humidity, Monsoon Rains, High Temperature
  - Flora:
  - Forest Type: Evergreen and semi-evergreen deciduous forests
  - Endemic Flora: Grand rasamala, White meranti, Lali, Chempaka, Wild lemon
  - Endemic Fauna: Stump tailed macaque, Pig-tailed macaque, Giant flying squirrel
  - Protected areas: Nokrek National Park

Manas biosphere reserve

- Location: Assam
- Rivers: Manas-Beki
- Details:
  - Climate: Tropical Monsoon
  - Flora: The monsoon forests of Manas lie in the Brahmaputra Valley semi-evergreen forests ecoregion.
  - Main Forest types: semi-evergreen forests mixed moist and dry deciduous forests, alluvial grasslands, creeper swamp forest, Eastern seasonal Swamp Forest, Cane and bamboo brakes
  - Endemic Flora: Catechu tree, Sissoo, White siris
  - Endemic Fauna: Pygmy hog, Golden lungur , Assam roofed turtle

Source: List of Biosphere Reserves in India

Q.9) Consider the following statements about Gulf of Mannar Biosphere Reserve:

1. It is latest marine Biosphere Reserve in India.
2. It falls within the Indo-Malayan realm.

Which of Statements given above is/are correct?

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

ANS: B

Explanation: Gulf of Mannar

- Location: Tamil Nadu (Indian part of Gulf of Manna)
- Details:
  - Ecosystem types: Tropical Dry Broad-leafed forest, seaweed communities, sea grass communities, coral reefs, salt marshes, and mangrove forests.
  - Endemic Flora: Endemic Flora: Morning glory, Jatropha, Halophila grass
  - Fauna: Sea Cow, Sea Anemone, Sea fans
  - Protected areas: Gulf of Mannar Marine National Park
- Note:
  - First marine Biosphere Reserve in India
  - Falls within the Indo-Malayan realm

Source: List of Biosphere Reserves in India

Q.10) Consider the following statements about Agasthyamalai:
1. River Tambraparani flows through it.
2. Peppara Wildlife sanctuary is a part of Agasthyamalai biosphere reserve.
Which of Statements given above is/are correct?

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

ANS: C
Explanation: Agasthyamalai

- Location: Kerala, Tamil Nadu
- Rivers: Tambraparani
- Details:
  - Climate: Tropical Monsoon
  - Flora:
    - ✓ Forest Types: thorn, moist deciduous and semi-evergreens
    - ✓ Endemic Flora: Rudraksha tree, Black plums, Gaub tree, Wild dhaman
  - Endemic Fauna: Lion-tailed macaque, Slender loris, Great pied hornbill
  - Protected areas:
    1. Neyyar Wildlife Sanctuary
    2. Peppara Wildlife sanctuary
    3. Shendumey wildlife Sanctuary
    4. KalakadMundanthurai Tiger Reserve.

Source: List of Biosphere Reserves in India

International Relations

Q.1) Consider the following statements about International Court of Justice:
1. It is only principal UN organ not located in New York.
2. The Court has no jurisdiction to deal with applications from individuals, non-governmental organizations, corporations, or any other private entity.
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

ANS: C
Explanation: About ICJ:

- It was established under UN Charter 1945 (which also established UNSC) to act as a principal judicial organ of the UN. It acts as a Civil court.
- As it is the UN principal judicial organ it is called as "world court".

Headquarters: Hague, The Netherland (Only principal UN organ not located in New York)

Cases that ICJ Handles

- ICJ Settles legal disputes between Nations only. ICJ settles disputes on issues of Sovereignty, trade, treaty violations, and interpretations, etc.
- The Court has **no jurisdiction to deal with applications from individuals, non-governmental organizations, corporations,** or any other private entity. It cannot provide them with legal advice or help them in their dealings with national authorities.
- The Court can only hear a dispute in the case of a request by one or more States. It cannot deal with a dispute on its own initiative. It is also not permitted to investigate and rule on acts of sovereign States.

Member Countries: Members of UN automatically becomes the member of ICJ.

Composition: 15 members elected for 9 years. Of the 15 judges, the composition is mandated to be as follows –

- 3 from Africa
- 2 from Latin America and the Caribbean
- 3 from Asia
- 5 from Western Europe and other states
- 2 from Eastern Europe

Qualification and conditions for appointments

- To get elected candidate has to get absolute majority in UNGA and UNSC
- 5 Judges are elected for 3 years once
- No two Judges can be of the same nationality
- Members can be re-elected
- The President and Vice-President are elected by secret ballot to hold office for 3 years.
- The P5 members of the UNSC always have a judge on the Court. The exception was China, which did not have a judge on the Court from 1967 to 1985 because it did not put forward a candidate. More recently Britain too lost an election to India thereby failing to get even a single judge in ICJ in 2017.

India is a member of the UN so it is also a member of ICJ. Indian Judge Dalveer Bhandari was re-elected in 2018.

Rulings:

- Once the country accepts UN intervention then the judgment is binding.
- Judgments given in contentious cases between states are also binding in nature
- Court also gives advisory opinions to the Council, the General Assembly and other authorized bodies on legal questions referred to it by these entities.
- Judgments are final and without appeal. The only possibility is filing an application for any Issue related to the scope and interpretation of the judgment before the Court for interpretation.

Source: important United Nations Organisations

Q.2) Consider the following statements about institutions of World Bank Group:
1. The International Finance Corporation (IFC) provides insurance against certain types of risk, including political risk, primarily to the private sector.
2. The International Development Association (IDA) provides various forms of financing without sovereign guarantees, primarily to the private sector.
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

ANS: D
Explanation: About World Bank group:
The World Bank Group With 189 member countries is one of the world's largest sources of funding and knowledge for developing countries. It consists of 5 institutions that share a commitment to **reducing poverty, increasing shared prosperity, and promoting sustainable development**.

Its five institutions:

- **The International Bank for Reconstruction and Development (IBRD):** IBRD is a global development cooperative owned by 189-member countries and it is the largest development bank in the world. It is headquartered in Washington, D.C. It was established in 1944 with the mission of financing the reconstruction of European nations devastated by World War II. IBRD finances investments across all sectors and provides technical support and expertise at each stage of a project.
- **The International Development Association (IDA):** It was established in 1960. It aims to reduce poverty by providing loans (called "credits") and grants for programs that boost economic growth, reduce inequalities, and improve people's living conditions.
- **The International Finance Corporation (IFC):** It was established in 1956. It provides various forms of financing without sovereign guarantees, primarily to the private sector
- **The Multilateral Investment Guarantee Agency (MIGA):** MIGA was established in 1988. It provides insurance against certain types of risk, including political risk, primarily to the private sector.
- **The International Centre for Settlement of Investment Disputes (ICSID):** It was established in 1966. It works with governments to reduce investment risk by providing settlement of disputes.

Members:

- To become a member of IBRD, a country must first join the International Monetary Fund (IMF).
- Only the members of IBRD are allowed to join other institutions within the Bank such as IDA, IFC, MIGA, and ICSID.
- At present, there are 189 member countries that are shareholders in the IBRD

UN and World Bank Group – IBRD, IFC, and IDA are Specialized Agencies of the UN. ICSID and MIGA are not Specialized Agencies

- While five institutions have their own country membership, governing boards, and articles of agreement, they work as one to serve the partner countries.
- The IBRD and IDA provide loans at preferential rates to member countries, as well as grants to the poorest countries.
- IFC, MIGA, and ICSID focus on strengthening the private sector in developing countries by providing financing, technical assistance, political risk insurance, and settlement of disputes to private enterprises, including financial institutions.

India and the World Bank Group

- India is a member of four of the five constituents of the World Bank Group except for ICSID.
- India is one of the founder members of IBRD, IDA, and IFC.

World Bank

- IBRD and IDA are collectively known as the World Bank. WB provides loans to countries for capital programs.

- They were created at the 1944 Bretton Woods Conference, along with the International Monetary Fund (IMF).

Objective: Currently, the aim of the World Bank is to end extreme poverty, reducing the share of the global population that lives in extreme poverty to 3 percent by 2030. Further, it aims to promote shared prosperity by increasing the incomes of the poorest 40 percent of people in every country and Provide sustainable development.

Structure:

- The World Bank is like a cooperative, made up of 189 member countries.
- These member countries, or shareholders, are represented by a Board of Governors, who are the ultimate policymakers at the World Bank.
- The governors are member countries' ministers of finance or ministers of development.
- They meet once a year at the Annual Meetings of the Boards of Governors of the World Bank Group and the International Monetary Fund.

Headquarters: Washington, D.C., United States

Member Countries:

- There are 189 member countries that are shareholders in the IBRD, the primary arm of the WBG.

Shareholdings: The size of the World Bank's shareholders, like that of the IMF's shareholders, depends on the size of a country's economy. Thus, the cost of a subscription to the World Bank is a factor of the quota paid to the IMF.

Reports Published by World Bank:

- Ease of Doing Business
- World Development Report
- Global Economic Prospect Report
- Remittance Report
- Ease of Living Index
- India Development Update
- Global Financial Development Report
- Energy Efficiency Implementation Readiness
- Human Capital Index
- Logistics Performance Index

Functions:

- World Bank Group is affiliated with the United Nations (UN) and designed to finance projects that enhance the economic development of member states.
- The World Bank is the **largest source of financial assistance** to developing countries.

- It also provides **technical assistance and policy advic**e. The World Bank also supervises on behalf of international creditors about the implementation of free-market reforms.
- Together with the International Monetary Fund (IMF) and the World Trade Organization, it plays a central role in overseeing economic policy and reforming public institutions in developing countries, and defining the global macroeconomic agenda.

Source: Important United Nations Organisations

Q.3) Consider the following statements about International Labour Organization (ILO):
1. ILO publishes Logistics Performance Index.
2. ILO became the first specialized agency associated with the UN in 1946.

Which of the statements given above is/are not correct?
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

ANS: A
Explanation: About:
The only tripartite U.N. agency, since 1919 the ILO brings together governments, employers, and workers of 187 member States. They together set labor standards, develop policies and devise programs promoting decent work for all women and men. After the demise of the League of Nations, the ILO became the first specialized agency associated with the UN in 1946.

Headquarters: Geneva, Switzerland

Objectives: The main aim of the ILO are to **promote rights at work**, **encourage decent employment opportunities**, e**nhance social protection and strengthen dialogue on work-related issues**.

Member Countries: 187 member states. India is a founding member of the ILO.

ILO functions through three main bodies

1. The **International labour Conference** sets the International labor standards and the broad policies of the ILO. It meets annually in Geneva. Often called an international parliament of labour.
2. The **Governing body** is the executive council of the ILO. It meets three times a year in Geneva.
3. Lastly, The **International Labour Office** is the permanent secretariat of the International Labour Organization.

Reports Published:

- World Employment and Social Outlook
- Global Wage Report

- World Social Protection Report

Significance:

- It received the **Nobel Peace Prize in 1969** for improving peace among classes, pursuing justice for workers, and for technical assistance to other developing nations.
- ILO designates some member countries as nations of "Chief Industrial Importance". The designated nations are Brazil, China, France, Germany, India, Italy, Japan, the Russian Federation, the United Kingdom, and the United States. The industrial population is the criteria for chief Industrial Importance.
- In 1988, the international labor conference adopted the "Declaration on Fundamental Principles and Rights at Work". The declaration aims to eliminate all forms of forced or compulsory labour, abolition of child labour, and elimination of discrimination in employment and occupation.

Source: Important United Nations Organisations

Q.4) Consider the following statements about the Humanitarian Trust Fund for Afghanistan:

1. The fund will be set up under the New Development Bank to channel aid to Afghanistan in coordination with other groups.
2. It aims to address the growing economic crisis in Afghanistan, which has left millions facing hunger over the winter.

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

ANS: B

Explanation: About the Humanitarian Trust Fund for Afghanistan:

The fund will be set up under the **Islamic Development Bank** to channel aid to Afghanistan in coordination with other groups.

Aim: To address the growing economic crisis in Afghanistan, which has left millions facing hunger over the winter.

Significance: This fund is crucial, as allowing Afghanistan access to financial resources would be pivotal to preventing economic collapse.

About Islamic Development Bank

It is a multilateral development finance institution that is focused on Islamic finance. It is located in Jeddah, Saudi Arabia. There are 57 shareholding member states with the largest single shareholder being Saudi Arabia.

About Organisaion of Islamic Cooperation

It is the second-largest intergovernmental organization after the United Nations.

Established: 1969

Aim: To safeguard and protect the interests of the Muslim world in the spirit of promoting international peace and harmony among various people of the world.

Members: 57 states.
Headquarters: Jeddah, Saudi Arabia
India is **not a member of the OIC.** However, India was invited as a guest of honor at the 46th Session of the Council of Foreign Ministers in 2019.
Source: international organizations, groupings, and initiatives

Q.5) Consider the following statements about Global Gateway Plan:
1. USA has announced an international infrastructure plan called Global Gateway Plan.
2. The plan aims to invest $340 billion globally in infrastructure, digital and climate projects by 2027.
3. The plan will require buy-ins from international institutions and the private sector.
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

ANS: C
Explanation: About the Global Gateway Plan:

- The plan aims to **invest €300 billion ($340 billion) globally in infrastructure, digital and climate projects by 2027.** This will help strengthen health, education, and research systems across the world.
- The investment will be made in projects that can be delivered with high standards, good governance, and transparency while ensuring financial sustainability at the same time.
- **Implementation of the Global Gateway Plan**
- The Plan will be implemented in a Team Europe approach that brings together funding from the EU, its Member States and European financial institutions.
- The plan will require buy-ins from international institutions and the private sector.

Significance of the Global Gateway Plan

- **Firstly,** the Plan is considered an offshoot of the Build Back Better World (B3W) Initiative.
- Secondly, the plan is being seen as a European effort to challenge China's Belt and Road Initiative which was launched in 2013 and funds infrastructure projects in the developing world.

Source: international organizations, groupings, and initiatives

Q.6) Consider the following statements about Asian Clearing Union (ACU):
1. It was established in 1974 at the initiative of the United Nations ESCAP.
2. It is headquartered in Colombo, Sri Lanka.
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

ANS: A
Explanation: About Asian Clearing Union (ACU):

Asian Clearing Union (ACU) was established in 1974 at the initiative of the United Nations Economic and Social Commission for Asia and Pacific (ESCAP).

Objective: To facilitate payments among member countries for eligible transactions on a multilateral basis, thereby economizing on the use of foreign exchange reserves and transfer costs, as well as promoting trade among the participating countries.

Members: The Central Banks and the Monetary Authorities of Bangladesh, Bhutan, India, Iran, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka are currently members of the ACU.

Headquarters: Tehran, Iran.

About Currency Swap

A **currency swap** between the two countries is an **agreement or contract to exchange currencies** with predetermined terms and conditions.

As per the arrangements, both countries pay for import and export trade at the pre-determined rates of exchange, without bringing in third-country currency like the US Dollar. In such arrangements no third country currency is involved, thereby eliminating the need to worry about exchange variations.
Source: international organizations, groupings, and initiatives

Q.7) Consider the following statements about UN Security Council:
1. It has 10 elected members who have tenure of three years.
2. All permanent members have veto power whereas all the members have one vote.
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

ANS: B
Explanation: About UNSC:
The UN Security Council is **one of the UN's 6 main organs**. The other 5 organs are; the General Assembly, the Trusteeship Council, the Economic and Social Council, the

International Court of Justice, and the Secretariat. It is aimed at maintaining international peace and security. It held its first session on 17 January 1946 in Westminster, London.

Headquarters: New York, United States

Members Countries: The UNSC has 15 members consisting of permanent and non-permanent members.

- 5 members — US, UK, Russia, China, and France — are **permanent members**. These permanent members have veto rights.
- The other **10 elected or non-permanent members** have a **tenure of two years**. At present, the non-permanent members are Estonia, India, Ireland, Kenya, Mexico, Niger, Norway, Saint Vincent, and the Grenadines, Tunisia, and Vietnam.
- Initially, the strength of non-permanent members was six which was extended to ten in 1965.
- All permanent members have veto power whereas **all the members have one vote**. To decide on any matter in the UNSC, **9 votes out of 15 are required**. However, **if any of the 5 permanent members votes against** or veto the matter or resolution, it cannot be passed.
- Veto powers of P5 countries have been **used most frequently by Russia**, blocking more than 100 resolutions since the council's founding.
- A UN member, which is not a member of UNSC can participate in the UNSC discussion without any voting power. However, it is only possible if the matter in discussion will affect the interest of the country.

Presidency: The Presidency of the UNSC rotates alphabetically among 15 members every month.

Powers: Among all the United Nations Organisations, only UNSC has the **power to make binding decisions** on member states.

Objectives:

- **Maintain international peace** and security in accordance with the principles and purposes of the United Nations;
- **Investigate any dispute** or situation which might lead to international friction;
- Recommend methods of **adjusting such disputes** or the terms of settlement;
- **Formulate plans** for the establishment of a system to regulate armaments;
- Determine the **existence of a threat to the peace** or act of aggression and to recommend what action should be taken;
- **Call on Members to apply economic sanctions** and other measures not involving the use of force to prevent or stop aggression;
- Recommend to the General Assembly the appointment of the Secretary-General. The UNSC along with the Assembly it elects the Judges of the International Court of Justice(ICJ).

Reforms and associated organisations:

- **G4 Nations** – Established in 2005 it is a group of 4 countries bidding for permanent seats in the UNSC. They are Brazil, Germany, India, and Japan.
- **Uniting for Consensus (Coffee Club)** – This is the group of countries opposing the expansion of permanent seats in the UNSC under the leadership of Italy. It was

established in 1995 and includes – Italy, Spain, Malta, San Marino, Pakistan, South Korea, Canada, Mexico, Argentina, Colombia & Turkey.

Source: Important United Nations Organisations

Q.8) Consider the following statements:
1. Barbados removed Queen Elizabeth II as the head of the state.
2. Barbados will be the first former British colony in the Caribbean to become a republic.
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

ANS: A
Explanation: About Barbados

- Barbados first became an English colony when a ship arrived at the Caribbean in 1625.
- On November 30, 1966, Barbados gained its independence however Elizabeth II continued as the Queen of Barbados.
- Now it will become the world's newest republic. However, it will continue to be one of the 54 Commonwealth nations.
- Barbados will not be the first former British colony in the Caribbean to become a republic.
- Guyana took that step in 1970, less than four years after gaining independence from Britain. Trinidad and Tobago followed suit in 1976 and Dominica in 1978.

Note: Commonwealth of Nations is a loose association of former British colonies and current dependencies, along with some countries that have no historical ties to Britain.
Source: Defense Exercises

Q.9) Consider the following statements about Exercise Sea Dragon:
1. It is an annual China-led multinational exercise.
2. Participating countries include China, Pakistan, Russia, South Korea and Japan.
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

ANS: D
Explanation: About Exercise Sea Dragon:

It is an annual US-led multinational exercise.

Aim: To practice and discuss anti-submarine warfare tactics so as to operate together in response to traditional and non-traditional maritime security challenges in the Indo-Pacific region.

Participating Countries: United States, India, Australia, Canada, Japan and South Korea.

Note: India, Japan, Australia and America are also part of the Quad and also participate in the Malabar exercise.
Source: Defense Exercises

Q.10) Salami-slicing tactics of acquiring new territories, recently seen in news is being used by which of the following country?

a) Russia
b) Belarus
c) China
d) Afghanistan

ANS: C
Explanation: About the salami-slicing tactics:

- Salami slicing is described as a strategy that involves the divide and conquer process of threats and alliances to overcome opposition and acquire new territories.
- The term was coined by Stalinist dictator Mátyás Rákosi during the 1940s. He used the term to justify the actions of the Hungarian Communist Party to grab complete power in Hungary.
- The acquisition of Tibet, the capture of Aksai Chin and the annexation of Paracel Islands are some of the examples where China used salami-slicing tactics.

Source: Defense Exercises