

ForumIAS

F

Prelims Marathon

23rd to 29th January 2023

*HISTORY
ECONOMICS
POLITY
SCIENCE AND TECHNOLOGY
GEOGRAPHY AND ENVIRONMENT*

FORUMIAS



Science & Technology

Q.1) Consider the following statements regarding “blockchain technology”:

1. It is a distributed or decentralized ledger technology which is an amalgamation of various technologies.
2. It provides efficient distributed ledger storage mechanism.

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: Blockchain is a distributed or decentralized ledger technology which is an amalgamation of various technologies such as distributed systems, cryptography, etc.

- Data and transactions stored in blocks are secured against tampering using cryptographic hash algorithms and are validated and verified through consensus (consensus protocols) across nodes of the Blockchain network.
- Blockchain technology provides efficient distributed ledger storage mechanism.
- Blockchain technology brings transparency and efficiency along with increasing processing speed and reducing cost.

Source: FORUMIAS

Q.2) Which of the following statements is/are correct about Non-Fungible Tokens (NFTs)?

1. It is a digital asset that exists on a blockchain.
2. Each NFT has a unique digital signature.
3. It can also be used to represent people’s identities, property rights, and more.

Choose the correct answer from below given codes:

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

ANS: D

Explanation: An NFT is a digital asset that exists on a blockchain. The blockchain serves as a public ledger, allowing anyone to verify the asset's authenticity and ownership.

- So unlike most digital items which can be endlessly reproduced, each NFT has a unique digital signature, meaning it is one of a kind.
- NFTs are usually bought with the cryptocurrency Ether or in dollars and the blockchain keep a record of transactions.
- While anyone can view the NFTs, the buyer has the status of being the official owner - a kind of digital bragging rights.
- All kinds of digital objects - images, videos, music, text and even tweets - can be turned into an NFT.

PRELIMS MARATHON COMPILATION FOR THE MONTH OF JANUARY. [FOURTH WEEK] 2023

- Digital art has seen some high-profile sales, while in sports; fans can collect and trade NFTs relating to a particular player or team.
- For instance, on the National Basketball Association's Top Shot platform, enthusiasts can buy collectible NFTs in the form of video highlights of moments from games.
- While these highlights can be seen for free on other platforms such as YouTube, people are buying the status as the owner of a particular NFT, which is unique due to the digital signature.

Source: FORUMIAS

Q.3) Consider the following statements regarding Virtual Private Network (VPN):

1. It is an encrypted connection over the Internet from a device to a network in real time.
2. It prevents unauthorized people from eavesdropping on the traffic and allows the user to conduct work remotely.

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: VPN is an encrypted connection over the Internet from a device to a network in real time.

- This prevents unauthorized people from eavesdropping on the traffic and allows the user to conduct work remotely.
- VPN provides encrypted connection in real time. With the help of this online activities are hidden even on public networks.
- VPN services connect to private servers and use encryption methods to reduce the risk of data leakage. This allows user to send and receive information online without the risk of anyone but user and the VPN provider seeing it.
- VPN prevent from leaving traces, in the form of internet history, search history and cookies and prevents third parties from gaining access to confidential information.
- Sudden interruption in VPN connection interrupts secure connection terminate preselected programs, reducing the likelihood that data is compromised.

Source: FORUMIAS

Q.4) Consider the following statements regarding “Gaganyaan Programme”:

1. It envisages undertaking the demonstration of indigenous capability to undertake human spaceflight to Low Earth Orbit (LEO).
2. Under the programme two unmanned missions and two manned mission will be carried out.

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: The word ‘Gaganyaan’ is derived from Sanskrit, meaning ‘sky-vehicle’.

Programme envisages undertaking the demonstration of indigenous capability to undertake human spaceflight to Low Earth Orbit (LEO).

PRELIMS MARATHON COMPILATION FOR THE MONTH OF JANUARY. [FOURTH WEEK] 2023

As part of this programme, two unmanned missions and one manned mission will be carried out. The major new technologies required for Gaganyaan programme are as follows:

- Human rated launch vehicle
- Crew escape systems
- Habitable orbital module
- Life support system
- Crew selection and training and associated crew management activities

Source: FORUMIAS

Q.5) The “ChaSTE and ILSA” are related to which of the following?

- a) Chandrayaan
- b) Gaganyaan
- c) Shukrayaan
- d) Mangalyaan

ANS: A

Explanation: Chandrayaan-3 is a follow-on mission to **Chandrayaan-2** and is meant to demonstrate lunar landing and roving capability.

Chandrayaan-3 will carry only a modified lander and rover and will use the orbiter of the **Chandrayaan 2** mission to communicate with the earth.

Scientific payloads that are being carried on-board are:

- Lander: Langmuir probe, Chandra's Surface Thermo Physical Experiment (ChaSTE) and Instrument for Lunar seismic activity (ILSA).
- Rover payloads are Alpha Particle X-Ray Spectrometer (APXS) and Laser Induced Breakdown spectroscopy (LIBS).

Source: FORUMIAS

Q.6) The Prime Minister inaugurated the country's first liquid nano urea plant at which of the following state?

- a) Andhra Pradesh
- b) Tamil Nadu
- c) Gujarat
- d) Maharashtra

ANS: C

Explanation: Prime Minister inaugurated the country's first liquid nano urea plant at Kalol (Gujarat).

- It is a patented chemical nitrogen fertiliser developed by IFFCO's Nano Biotechnology Research Centre at Kalol with nano nitrogen particles (from 20-50 nm).
- It is world's first nano urea (liquid) plant. It is sprayed directly on the leaves of plants and gets absorbed by the stomata- pores found on the epidermis of leaves.

Source: FORUMIAS

Q.7) Consider the following statements regarding “stem cells”:

1. Stem cells are special human cells that are able to develop into many different cell types.

2. Stem cells are classified as Somatic Stem Cells and Embryonic Stem Cells.

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: Stem cells are special human cells that are able to develop into many different cell types. Stem cells provide new cells for the body as it grows and replaces specialized cells that are damaged or lost.

Based on the cell type/tissue of origin, stem cells are classified as:

- Somatic Stem Cells (SSCs) also known as Adult Stem Cells: They have limited capacity of differentiation and may be multipotent or unipotent.
- Embryonic Stem Cells' (ESCs) are pluripotent, which mean they can change into any cell in the body.

Source: FORUMIAS

Q.8) The “Codex Alimentarius Commission (Codex)” is related to which of the following?

- a) Food standards
- b) Solar energy
- c) Internet of Things
- d) Nano Technology

ANS: A

Explanation: Codex Alimentarius Commission (Codex): It is the joint FAO/WHO intergovernmental body responsible for developing the standards, codes of practice, guidelines and recommendations that constitute the Codex Alimentarius, meaning the international food code.

Source: FORUMIAS

Q.9) The WHO Director-General laid the foundation stone for world's first and only Global Centre for Traditional Medicine (GCTM) at?

- a) Tamil Nadu
- b) Andhra Pradesh
- c) Kerala
- d) Gujarat

ANS: D

Explanation: Recently, WHO Director-General laid the foundation stone for world's first and only Global Centre for Traditional Medicine (GCTM) at Jamnagar in Gujarat.

- It is the sum total of the knowledge, skill, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness.
- Major traditional and complementary medicines (T&CM) in India include: Ayurveda, Yoga, Siddha, Unani, Sowa-Rigpa, Naturopathy etc.

Source: FORUMIAS

Q.10) Consider the following statements regarding malaria:

1. It is a life-threatening mosquito borne blood disease caused by plasmodium parasites.
2. It is preventable as well as curable.

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: Malaria is a life-threatening mosquito borne blood disease caused by plasmodium parasites and spread through the bites of infected female Anopheles mosquitoes. It is preventable as well as curable.

Source: FORUMIAS

Science & Technology

Q.1) Consider the following statements regarding “Nuclear Fusion”:

1. It is the process by which two light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy.
2. It takes place in a state of matter called plasma.

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: Nuclear fusion is the process by which two light atomic nuclei (for example tritium and deuterium) combine to form a single heavier (Helium) one while releasing massive amounts of energy.

- Fusion reactions take place in a state of matter called plasma a hot, charged gas made of positive ions and freemoving electrons with unique properties distinct from solids, liquids, or gases.
- Strong repulsive electrostatic forces between the positively charged nuclei prevent them from getting close enough together to collide and for fusion to occur.

Source: FORUMIAS

Q.2) United Nations Office of Outer SPACE Affairs and which of the following country jointly organized the World Space Forum (WSF) 2022?

- a) Switzerland
- b) Austria
- c) Germany
- d) France

ANS: B

Explanation: United Nations Office of Outer SPACE Affairs and government of AUSTRIA organized World Space Forum (WSF) 2022 under theme “Sustainability in Space for sustainability on Earth”.

- World Space Forum is a platform to promote discussions on the role of space science and technology in global sustainable development.
- It brings together stakeholders from broader space community, including from governmental institutions, international intergovernmental organizations, and NGOs, as well as industry, private sector and academia.

Source: FORUMIAS

Q.3) Which of the following country is going to conduct a space docking experiment called as “SPADEX”?

- a) Russia
- b) China
- c) India
- d) Japan

ANS: C

Explanation: To provide in-orbit servicing, ISRO is developing a space docking experiment called ‘SPADEX’. It looks at docking a satellite on an existing satellite, offering support in re-fuelling and other in-orbit services while enhancing the capability of a satellite.

Source: FORUMIAS

Q.4) Consider the following statements regarding “Surface Water and Ocean Topography (SWOT) Mission”:

1. It is first satellite mission that will measure height of water in freshwater bodies and ocean on more than 90% of Earth’s surface.
2. It is a collaborative effort between NASA and ISRO with contributions from French and UK Space Agencies.

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: The international Surface Water and Ocean Topography (SWOT) Mission is a collaborative effort between NASA and French space agency with contributions from Canadian and UK Space Agencies.

- SWOT is first satellite mission that will measure height of water in freshwater bodies and ocean on more than 90% of Earth’s surface.
- SWOT will cover the entire Earth’s surface between 78 degrees south and 78 degrees north latitude at least once every 21 days.

Source: FORUMIAS

Q.5) The “Perseverance rover mission” is related to which of the following?

- a) NASA
- b) French Space Agency
- c) JAXA
- d) Roscosmos

ANS: A

Explanation: Perseverance rover mission is part of NASA’s Mars Exploration Program, a long-term effort of robotic exploration of Mars.

It aims to look for signs of past microbial life, prepare for future human exploration and collect samples of rock and regolith (broken rock and soil) for possible return to Earth.

Source: FORUMIAS

Q.6) The “GLASS report” is often seen in news is related to which of the following?

- a) Antimicrobial Resistance
- b) Space Debris
- c) Global Warming
- d) Artificial Intelligence

ANS: A

Explanation: Recently, WHO released Global Antimicrobial Resistance and Use Surveillance System (GLASS) report. GLASS was launched in 2015. GLASS-AMR provides a standardized approach to the collection, analysis and sharing of AMR data by countries.

Source: FORUMIAS

Q.7) The “2Africa Pearls” is often seen in news is related to which of the following?

- a) Internet Connectivity
- b) Diamond mining
- c) Sustainable agriculture
- d) Renewable energy

ANS: A

Explanation: Facebook parent Meta will partner with Bharti Airtel to expand 2Africa Pearls to India.

- 2Africa Pearls is one of world’s longest subsea cable systems that will ultimately interconnect countries in Africa, Asia, and Europe.
- Once completed, the system will provide connectivity to total of 3 billion people. 2Africa Pearls will improve connectivity of fixed-line broadband internet in India.

Source: FORUMIAS

Q.8) Consider the following statements regarding “Indian Biological Data Center (IBDC)”:

1. It is the first national repository for life science data in India.
2. It is located at Salem, Tamil Nadu.

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: IBDC is the first national repository for life science data in India. It is envisaged to emerge as a major data repository for all life science data emerging from India.

- Also, as per the Biotech-PRIDE guidelines, released last year, IBDC is mandated to archive all life science data generated from publicly funded research in India.
- It is being established at Regional Centre of Biotechnology (RCB), Faridabad in collaboration with National Informatics Centre (NIC).

Source: FORUMIAS

Q.9) Consider the following statements regarding “Mission Prarambh”:

1. It is India’s first private space mission.
2. Vikram-S, India’s first privately built rocket under this mission.

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: Vikram-S, India’s first privately built rocket was launched recently from Sriharikota, Andhra Pradesh. Named ‘Mission Prarambh’, it is India’s first private space mission. The rocket has been developed by Hyderabad-based Skyroot Aerospace, a company that was started in 2018.

Source: FORUMIAS

Q.10) The “Artemis 1 mission” often seen in news is related to which of the following?

- a) NASA
- b) French Space Agency
- c) European Space Agency
- d) JAXA

ANS: A

Explanation: NASA’s Artemis 1 mission successfully lifted off from the Kennedy Space Centre.

- It will be the first in a series of increasingly complex missions to build a long-term human presence at the Moon for decades to come.
- It will be an un-crewed flight test that will provide a foundation for human deep space exploration.

Source: FORUMIAS

Science & Technology

Q.1) Consider the following statements regarding “James Webb Space Telescope”:

1. It was formerly known as the Next Generation Space Telescope (NGST).
2. It is an international collaboration between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).

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: Also called JWST or Webb, it is NASA’s largest and most powerful space science telescope. JWST is more powerful than its predecessors.

- It will be able to see further into space to discover distant planets in far-off galaxies. It will build on the legacy of the Hubble Space Telescope.
- It is an international collaboration between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).
- It was formerly known as the "Next Generation Space Telescope" (NGST).
- The multipurpose observatory launched in December 2021 on an Ariane 5 rocket from Europe’s Spaceport in French Guiana on the north-eastern coast of South America.

Source: FORUMIAS

Q.2) Consider the following statements regarding Nobel Prize for Physiology:

1. The prize was awarded for discoveries concerning the genomes of extinct hominins and human evolution.
2. It was awarded to Swedish geneticist Svante Pääbo.

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: The Nobel Prize for Physiology or Medicine awarded for: discoveries concerning the genomes of extinct hominins and human evolution. Awardee: Prize was given to Swedish geneticist Svante Pääbo.

Source: FORUMIAS

Q.3) The term “Denisovians” is often seen in news is related to which of the following?

- a) Extinct dinosaurs
- b) Extinct archaic humans
- c) Deep sea micro organisms
- d) Tropical corals

ANS: B

Explanation: The Denisovans or Denisova hominins are an extinct species or subspecies of archaic human that ranged across Asia during the Lower and Middle Paleolithic. Denisovans are known from few physical remains and consequently, most of what is known about them comes from DNA evidence.

Source: FORUMIAS

Q.4) Which of the following agencies is/are part of “One Health Joint Plan of Action (2022-2026) (OH JPA)”?

1. World Bank
2. Food and Agriculture Organization
3. World Health Organization

Choose the correct answer from below given codes:

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

ANS: C

Explanation: Recently, four multilateral agencies have launched a One Health Joint Plan of Action (2022-2026) (OH JPA). About One Health Joint Plan of Action (2022-2026) (OH JPA). It was launched by the ‘Quadripartite’ comprising:

- United Nations (UN) Food and Agriculture Organization (FAO),
- UN Environment Programme (UNEP),
- World Health Organization (WHO)
- World Organisation for Animal Health.

The plan is valid from 2022-2026 and is aimed at mitigating the health challenges at global, regional, and country levels.

Source: FORUMIAS

Q.5) Consider the following statements regarding “Flex Fuel Vehicles”:

1. Like traditional vehicles, flex fuel vehicles does not have an internal combustion engine.
2. Unlike electric hybrid vehicles, no bulky parts need to be added to the basic gasoline vehicle architecture.

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: Like traditional vehicles, flex fuel vehicles have an internal combustion engine, but instead of regular petrol, it can run on blended fuel — petrol with ethanol or methanol.

PRELIMS MARATHON COMPILATION FOR THE MONTH OF JANUARY. [FOURTH WEEK] 2023

- The ethanol mix can vary between 20% and 85%.
- The vehicle has additional sensors and different programming of the engine control module to assess the blend of the fuel and adjust accordingly.

Unlike electric hybrid vehicles, no bulky parts need to be added to the basic gasoline vehicle architecture. Upgrading existing vehicles to run on high blend of ethanol fuel, however, is possible but expensive and not considered feasible.

Source: FORUMIAS

Q.6) Which of the following mission/s is/are related to mars planet?

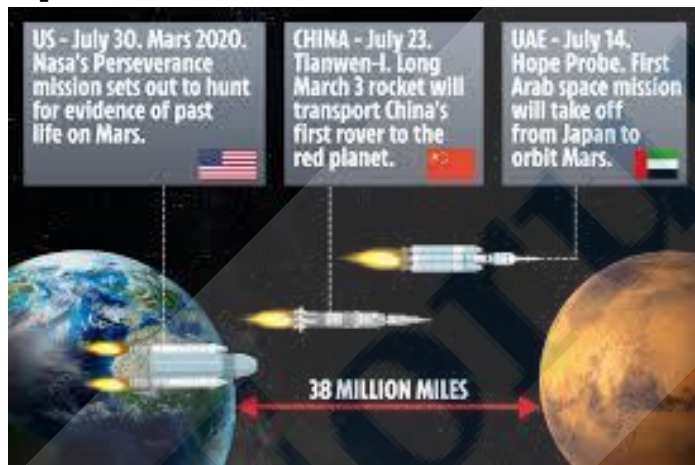
1. Perseverance
2. Hope Mission
3. Tianwen 1

Choose the correct answer from below given codes:

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

ANS: C

Explanation:



Source: The Hindu

Q.7) Which of the following is/are part of Global Lighthouse Network?

1. Cipla's Indore facility
2. Dr Reddy's Laboratories' Hyderabad facility
3. The Mondelez facility in Sri City

Choose the correct answer from below given codes:

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

ANS: C

Explanation: Recently, World Economic Forum announced the addition of three factories to its Global Lighthouse Network

PRELIMS MARATHON COMPILATION FOR THE MONTH OF JANUARY. [FOURTH WEEK] 2023

- Cipla's Indore facility,
- Dr Reddy's Laboratories' Hyderabad facility and
- The Mondelez facility in Sri City, Chennai.

The Global Lighthouse Network is a World Economic Forum initiative in collaboration with McKinsey & Company.

Source: FORUMIAS

Q.8) Which of the following country has successfully cloned a wild Arctic wolf for the first time in the world?

- a) USA
- b) China
- c) Russia
- d) Canada

ANS: B

Explanation: Recently, China has successfully cloned a wild Arctic wolf for the first time in the world.

- The Arctic wolf (white wolf or polar wolf) is native to the High Arctic tundra of Canada's Queen Elizabeth Islands.
- This cloning is considered a milestone achievement in conserving rare and endangered species through cloning technology.

Source: FORUMIAS

Q.9) In which of the following place, India's first lithium cell plant manufacturing facility will be launched?

- a) Indore
- b) Kandla
- c) Tirupathi
- d) Mangalore

ANS: C

Explanation: India's first lithium cell plant manufacturing facility will be launched in Tirupati, Andhra Pradesh.

- With an installed capacity of 270 Mwh the plant can produce 60% of India's present requirement.
- These cells are used for Mobile Phones, hearable and wearable devices.
- Currently, India imports complete requirements of lithium-ion cells primarily from China, South Korea, Vietnam and Hong Kong.

Source: FORUMIAS

Q.10) The Double Asteroid Redirection Test (DART) mission is often seen in news is launched by?

- a) NASA
- b) European Space Agency
- c) French Space Agency
- d) JAXA

ANS: A

Explanation: Recently, NASA crashed its \$344 million the Double Asteroid Redirection Test (DART) mission on binary asteroid system Didymos and moonlet to test a kinetic impactor technology.

The Double Asteroid Redirection Test (DART) is a first-of-its-kind spacecraft, which has been designed to test a unique method to deflect an asteroid to change its motion in space through kinetic impact and save the Earth from an incoming asteroid.

Source: FORUMIAS

Science

Q.1) The “No Money for Terror (NMFT)” initiative was started by which of the following?

- a) Australia
- b) France
- c) Austria
- d) New Zealand

ANS: B

Explanation: The 3rd ministerial ‘Countering Financing of Terrorism - No Money for Terror (NMFT)’ conference was hosted by the Ministry of Home Affairs in New Delhi.

The NMFT started in 2018 as an initiative of the French government. It offers a platform for participating nations and organizations to deliberate on the effectiveness of the current international regime on Counter Financing of Terrorism.

Source: FORUMIAS

Q.2) Consider the following statements regarding “Submersible Platform for Acoustic Characterization & Evaluation (SPACE)”:

1. It is a state-of-the-art testing and evaluation facility for sonar systems developed for use by Indian navy.
2. It is one-of-a-kind facility in the world with specially designed submersible platform, which can be lowered up to depths of 1000 meters.

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: Submersible Platform for Acoustic Characterization & Evaluation (SPACE) is a state-of-the-art testing and evaluation facility (launched by DRDO) for sonar systems developed for use by Indian navy.

- Sonar (Sound Navigation and Ranging) is helpful for exploring and mapping ocean because sound waves travel farther in water than do radar and light waves.
- SPACE is one-of-a-kind facility in the world with specially designed submersible platform, which can be lowered up to depths of 100 meters.

Source: FORUMIAS

Q.3) The “Indo-Pacific Endeavour 2022” maritime partnership exercise is conducted between India and?

- a) Australia
- b) USA
- c) Japan
- d) Taiwan

ANS: A

Explanation: Indo-Pacific Endeavour 2022: It is a Maritime Partnership Exercise involving Royal Australian Navy and Indian Navy.

Source: FORUMIAS

Q.4) Which of the following has teamed up with the Indian Institute of Science (IISc) for Project Vanni?

- a) Google
- b) Apple
- c) Facebook
- d) Twitter

ANS: A

Explanation: Google India has teamed up with the Indian Institute of Science (IISc) for this initiative.

- It aims to build an artificial intelligence/machine learning (AI/ML) model to collect language samples from 773 districts across India.
- It will be an AI-based language model that can understand diverse Indian languages and dialects.
- Potential use of such datasets is in building apps in areas such as health, agriculture, and financial inclusion.

Source: FORUMIAS

Q.5) Which of the following state has unveiled Asia's first drone delivery hub?

- a) Tamil Nadu
- b) Punjab
- c) Meghalaya
- d) Assam

ANS: C

Explanation: Asia's first drone delivery hub was unveiled by Meghalaya government in partnership with startup TechEagle.

It aims to deliver vital supplies like drugs, diagnostic samples, vaccines quickly and safely to different regions of state using a dedicated drone delivery network.

Q.6) Which of the following is the India's first indigenously designed and built aircraft carrier?

- a) INS Aditya
- b) INS Vikramaditya
- c) INS Vikrant
- d) INS Trishul

ANS: C

Explanation: Vikrant is the largest warship ever been built in the maritime history of India.

- It is also the first indigenously designed and built aircraft carrier for Indian Navy.
- It is designed by Indian Navy's in-house Warship Design Bureau (WDB) and built by Cochin Shipyard Limited, a Public Sector Shipyard under Ministry of Ports, Shipping & Waterways.
- The only operational aircraft carrier with Indian Navy at present is INS Vikramaditya, which had served in erstwhile Soviet and, thereafter, Russian navy as Admiral Gorshkov before being inducted by India in 2013.

Source: FORUMIAS

Q.7) The famous “Exercise Kakadu” conducted by which of the following country?

- a) India
- b) Thailand
- c) Australia
- d) Japan

ANS: C

Explanation: Exercise Kakadu: It is Australia's naval exercise hosted biennially. Navies of more than 14 countries (including India) participated in this exercise recently.

Source: FORUMIAS

Q.8) The “Exercise Synergy” was recently in news is related to which of the following?

- a) Cyber Security
- b) Revenue intelligence
- c) Money Laundering
- d) Coastal Surveillance

ANS: A

Explanation: The Indian Computer Emergency Response Team (CERT-In) hosted ‘Synergy’- a cyber security exercise in collaboration with Cyber Security Agency of Singapore. It was conducted as part of the International Counter Ransomware Initiative- Resilience Working Group, led under the leadership of National Security Council Secretariat (NSCS).

Source: FORUMIAS

Q.9) The famous “Brahmos” missile is a joint venture between India and?

- a) Kazakhstan
- b) Russia
- c) Japan
- d) Australia

ANS: B

Explanation: Brahmos is a joint venture of India and Russia, and its name is derived from Brahmaputra and Moskva rivers. It can be launched from land, air, sea, and underwater.

Source: FORUMIAS

Q.10) The “Surya Kiran” joint training exercise is conducted between India and?

- a) Nepal
- b) Bhutan
- c) Bangladesh
- d) Thailand

ANS: A

Explanation: Surya Kiran: It is the joint training exercise between India and Nepal.

Source: FORUMIAS

Science

Q.1) Consider the following statements regarding “New Space India Limited (NSIL)”:

1. It is country's first public sector undertaking in the space sector and commercial arm of ISRO.
2. It enables better collaboration with start-ups and private sector players without the hassle of government intervention.

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: New Space India Limited (NSIL) is country's first public sector undertaking in the space sector and commercial arm of ISRO aimed at production and marketing of space-based services, also empowered to own the operational launch vehicles and space assets of ISRO. It enables better collaboration with start-ups and private sector players without the hassle of government intervention.

Source: FORUMIAS

Q.2) Consider the following statements regarding “green hydrogen”:

1. It is produced by renewable energy through electrolysis of water.
2. Alkaline, polymer electrolyte membrane (PEM) and Solid Oxide Electrolysers are commercially available technologies for green hydrogen production.

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: Green hydrogen is produced by renewable energy through electrolysis of water. Electrolyser technology is central to the green hydrogen production process. Alkaline, polymer electrolyte membrane (PEM) and Solid Oxide Electrolysers are commercially available technologies for green hydrogen production.

Source: FORUMIAS

Q.3) Which of the following organization releases the “State Food Safety Index (SFSI)”?

- a) FAO
- b) NITI Aayog
- c) Food Safety and Standards Authority of India
- d) Ministry of Agriculture

ANS: C

Explanation: Food Safety and Standards Authority of India (FSSAI) released the State Food Safety Index (SFSI) 2021-22.

- The SFSI is released annually and this is the fourth edition since its inception in 2018-19.
- Index is aimed at encouraging states and UTs to improve their performance and work towards establishing a proper food safety ecosystem in their jurisdiction.

Source: FORUMIAS

Q.4) India’s first and Asia’s largest liquid-mirror telescope commissioned at which of the following state?

- a) Himachal Pradesh
- b) Uttarakhand
- c) Tamil Nadu
- d) Arunachal Pradesh

ANS: B

Explanation: LMT, India’s first and Asia’s largest liquid-mirror telescope is commissioned at the Devasthal Observatory of Aryabhata Research Institute of Observational Sciences (ARIES) in Nainital (Uttarakhand).

Source: FORUMIAS

Q.5) The famous “Artemis Accords” is related to which of the following?

- a) Space agreement
- b) Nuclear agreement
- c) Agricultural research
- d) Solar agreement

ANS: A

Explanation: France is set to sign a U.S.-led multilateral agreement called the Artemis Accords. The program aims to return humans to the moon’s surface by 2025 with the help of U.S. allies and private companies.

The accords are built on broader principles of the 1967 Outer Space Treaty. It includes an array of principles designed to promote peaceful uses of space, from establishing safety zones around future moon bases to sharing scientific data with other countries.

Source: FORUMIAS

Q.6.)The “CRISPR Cas – 9” is often seen in news is related to which of the following?

- a) Genetic modification
- b) Outer space planet
- c) Hybrid vehicle technology
- d) Soil less farming

ANS: A

Explanation: CRISPR is a genetic code or sequence found in bacteria. These are formed due to the activity of the previous bacteriophages that had infected them.

- Bacteria use CRISPR sequence to remember each specific virus that attacks them. They do this by incorporating the virus’ DNA into their own bacterial genome.
- This method then gives the bacteria protection or immunity when a specific virus tries to attack again. Cas 9 are the genes that are always located nearby.

Source: FORUMIAS

Q.7) India’s first Saline Water Lantern Roshini, which uses sea water as electrolyte between specially designed electrodes to power the LED lamps was developed by?

- a) National Institute of Ocean Technology (NIOT), Chennai
- b) Indian Institute of Science, Bangalore
- c) Indian Institute of Technology, Madras
- d) Indian Institute of Technology, Bombay

ANS: A

Explanation: Roshini is India’s first Saline Water Lantern which uses sea water as electrolyte between specially designed electrodes to power the LED lamps.

It is developed by National Institute of Ocean Technology (NIOT), Chennai.

Source: FORUMIAS

Q.8) Consider the following statements regarding “Small modular reactors (SMRs)”:

1. SMRs are advanced nuclear reactors that have a power capacity of up to 300 MW(e) per unit.
2. SMRs can be sited on locations not suitable for larger nuclear power plants.

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: Small modular reactors (SMRs) are advanced nuclear reactors that have a power capacity of up to 300 MW(e) per unit, which is about one-third of the generating capacity of traditional nuclear power reactors.

- SMRs can be sited on locations not suitable for larger nuclear power plants. Prefabricated units of SMRs can be manufactured and then shipped and installed on site.
- This makes them more affordable to build than large power reactors, which are often designed for a particular location, sometimes leading to construction delays.
- SMRs offer savings in cost and construction time, and they can be deployed incrementally to match increasing energy demand.

Source: FORUMIAS

Q.9) Consider the following statements regarding “Agni – 5 Missile”:

1. It is an ingeniously built advanced surface-to-air ballistic missile.
2. It is developed under the Integrated Guided Missile Development Programme (IGMDP).

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: Agni-5 is an ingeniously built advanced surface-to-surface ballistic missile developed under the Integrated Guided Missile Development Programme (IGMDP).

- It is a fire-and-forget missile, which cannot be stopped without an interceptor missile.
- The missile has the capability of hitting targets beyond the range of 5000 km and is crucial for India's self-defense systems.

Source: FORUMIAS

Q.10) The “Shakti exercise” is conducted between India and which of the following country?

- a) France
- b) Russia
- c) Bangladesh
- d) Mongolia

ANS: A

Explanation: Shakti Exercise is a bilateral exercise between the armies of India and France. It is a biennial exercise that takes place between Indian and French armies, alternately in the two countries.

Source: FORUMIAS

Science & Technology

Q.1) Which of the following is/are the benefit/s of CRISPR?

1. It can help in faster and efficient diagnosis of rare genetic diseases.
2. It can make farming more efficient and robust by creating resilient crops which are impervious to droughts and other environmental impacts.
3. It generated knowledge base would also help in speeding up the traditional drug discovery process.

Choose the correct answer from below given codes:

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

ANS: D

Explanation: Predictive and Preventive Healthcare: This can help in faster and efficient diagnosis of rare genetic diseases.

- This will also help in determining epidemiology of genetic diseases to enable cost-effective genetic tests, enabling efficient diagnosis of heritable cancers, etc.
- Food security: It can have a major impact on addressing food insecurity around the world by engineering more waterefficient crops and high yielding varieties of plants and animals.
- As a corollary, it can make farming more efficient and robust by creating resilient crops which are impervious to droughts and other environmental impacts.
- Pharmaceutical and Biotechnology: CRISPR can bring customized and individualized therapies to market more quickly than was previously dreamed.
- The CRISPR generated knowledge base would also help in speeding up the traditional drug discovery process.

Source: FORUMIAS

Q.2) Which of the following act/s is/are applicable to governing genome editing in India?

1. Drugs and Cosmetic Act 1947
2. Seed Act, 1968
3. Disaster Management Act, 2005

Choose the correct answer from below given codes:

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

ANS: D

Explanation: Various applicable Laws, Acts, and Procedures governing genome editing in India

- Biological Diversity Act, 2006
- Drugs and Cosmetic Act 1947
- Seed Act, 1968

PRELIMS MARATHON COMPILATION FOR THE MONTH OF JANUARY. [FOURTH WEEK] 2023

- Protection of Plant Varieties and Farmers Rights (PPVFR), 2009
- Food Safety and Standards Act, 2006
- Disaster Management Act, 2005

Source: FORUMIAS

Q.3) The Genetic Engineering Appraisal Committee (GEAC) is functions under which of the following?

- a) Ministry of Agriculture
- b) Ministry of Consumer Affairs & Cooperation
- c) Ministry Of Environment Forests & Climate Change
- d) NITI Aayog

ANS: C

Explanation: Genetic Engineering Appraisal Committee (GEAC): It functions under the MOEF&CC and is responsible for approval of

- activities involving large scale use of hazardous microorganisms and recombinants in research and industrial production from environmental angle
- Proposals relating to release of genetically engineered organisms and products into the environment including experimental field trials.
- The GEAC or any person/s authorized by it shall have powers to take punitive action under the Environment (Protection) Act 1986.

Source: FORUMIAS

Q.4) Consider the following statements regarding “Food Safety and Standards Authority of India (FSSAI)”:

1. It has been established under Food Safety and Standards, 2006 and administered by Ministry of Health & Family Welfare.
2. It lays down science-based standards for food and to regulate their manufacture, storage, distribution, sale and import.

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: The FSSAI has been established under Food Safety and Standards, 2006 and administered by Ministry of Health & Family Welfare.

It lays down science-based standards for food and to regulate their manufacture, storage, distribution, sale and import.

Source: FORUMIAS

Q.5) The fifth generation of cellular networks (5G) is designed to improve network connections by addressing the legacy issues of?

1. Speed
2. Latency
3. Utility

Choose the correct answer from below given codes:

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

ANS: D

Explanation: 5G (the fifth generation of cellular networks) is designed to improve network connections by addressing the legacy issues of speed, latency and utility, which the earlier/current generation of mobile networks could not address.

- 5G operates at higher frequencies to offer a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.
- It will also have an enhanced throughput to handle more simultaneous connections at a time than current generation networks.

Source: FORUMIAS

Q.6) Consider the following statements regarding “Hyperloop system”:

1. It is a fifth mode of transportation other than road, rail, water and air.
2. It works on a technology that utilizes magnetic levitation in low-pressure 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: The Hyperloop is a fifth mode of transportation other than road, rail, water and air.

- It works on a technology that utilizes magnetic levitation in low-pressure tubes to transport both, goods and people at airplane-like speed up to 750 miles per hour.
- The working principle of hyperloop technology is built on the idea of the vacuum train to create a much more advanced and feasible model.

Source: FORUMIAS

Q.7) Consider the following statements regarding lithium:

1. It is currently produced from hard rock or brine mines.
2. Australia is the world's biggest supplier of Lithium.

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: Lithium is currently produced from hard rock or brine mines.

- Australia is the world's biggest supplier, with production of Lithium from hard rock mines, while Argentina, Chile and China are producing it from salt lakes.
- But global production and demand has so far not fulfilled due supply shortage of the metal.

Source: FORUMIAS

Q.8) The Global Innovation Index (GII) was published by which of the following?

- a) World Economic Forum
- b) World Intellectual Property Organization
- c) World Bank
- d) ADB

ANS: B

Explanation: The Global Innovation Index is an annual ranking of countries by their capacity for, and success in, innovation, published by the World Intellectual Property Organization. It was started in 2007 by INSEAD and World Business, a British magazine.

Source: FORUMIAS

Q.9) The "Sagittarius A*" is often seen in news is related to which of the following?

- a) Black Hole
- b) Nuclear reactor
- c) Electric Vehicle
- d) Solar Energy

ANS: A

Explanation: The first photograph of Sagittarius A*, a super-massive black hole about 26,000 light years from Earth and situated at the centre of the Milky Way, was revealed by astronomers of the Event Horizon Telescope (EHT).

Source: FORUMIAS

Q.10) Consider the following statements regarding GSLV Mk – III:

1. It uses three propulsion stages of solid, liquid, and cryogenic.
2. It is capable of launching four-tonne satellites in the Geosynchronous Transfer Orbit (GTO).

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: The GSLV Mk-III uses three propulsion stages: Solid, Liquid, and Cryogenic. GSLV-Mk III is capable of launching four-tonne satellites in the Geosynchronous Transfer Orbit (GTO).

Source: FORUMIAS

Science - Revision

Q.1) The term “nixtamalisation” often seen in news is related to which of the following?

- a) Zero Budget Natural Farming
- b) Fortification of Maize
- c) Solar Energy
- d) Ocean acidification

ANS: B

Explanation: A study has thrown light on how Maya people fortified their maize with chemical process known as ‘nixtamalisation.

- Nixtamalisation is a method by which the ancient peoples of Mesoamerica (a term used to describe Mexico and Central America) like the Maya used to soak and cook their maize in an alkaline solution and make it more palatable, nutritious and non-toxic.
- Process ensures that maize contains amino acids, calcium and Vitamin B2, which can be utilized by the human body. It also eliminates certain mycotoxins present in maize.

Source: FORUMIAS

Q.2) Consider the following statements regarding steel slag:

1. It is a by-product of steel making, produced during the separation of the molten steel from impurities in steel-making furnaces.
2. It is also used in the agricultural sector due to its ability to correct soil acidity.

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: Steel slag is a by-product of steel making, produced during the separation of the molten steel from impurities in steel-making furnaces.

- A steel slag is also used in the agricultural sector due to its ability to correct soil acidity.
- It contains some nutrients for the plants and also as silicate fertilizer that is capable of providing silicon to the plants.

Source: FORUMIAS

Q.3) The term “CAPSTONE” is recently seen in news is related to which of the following?

- a) Satellite
- b) Cyber attacks
- c) Generic medicine
- d) Air pollution

ANS: A

Explanation: NASA launched CAPSTONE, a CubeSat that will fly in cislunar space, the orbital space near and around the Moon.

It is headed toward an orbit intended in the future for Gateway, a Moon-orbiting outpost (part of NASA's Artemis program).

Source: FORUMIAS

Q.4) The “Agni Warrior” is a bilateral exercise between Indian army and?

- a) Nepal
- b) USA
- c) Australia
- d) Singapore

ANS: D

Explanation: Agni Warrior: It is a bilateral exercise between Singapore & Indian Army.

Source: FORUMIAS

Q.5) Consider the following statements regarding “Crime And Criminal Tracking Network System (CCTNS):

1. It is a Mission Mode Project under National eGovernance Plan (NeGP).
2. It is aimed at creating a comprehensive and integrated system for enhancing efficiency and effectiveness of policing.

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: CCTNS is a Mission Mode Project under National eGovernance Plan (NeGP).

- It is aimed at creating a comprehensive and integrated system for enhancing efficiency and effectiveness of policing through adopting of principle of e-Governance.
- CCTNS has been implemented in 99% police stations. 100 percent FIRs are being registered directly in CCTNS.
- It was approved by Cabinet Committee on Economic Affairs in 2009.

Source: FORUMIAS

Q.6) The “Project-75” often seen in news is related to which of the following?

- a) Submarines
- b) Aircraft carriers
- c) Ballistic missiles
- d) Frigates

ANS: A

Explanation: Six Scorpene submarines are being built indigenously under Project-75 by Mazagon Dock Shipbuilders Limited (MDL) under technology transfer from Naval Group of France.

Source: FORUMIAS

Q.7) Consider the following statements regarding “Indian SARS-CoV-2 Genomics Consortium (INSACOG)”:

1. It is a consortium of 100 Laboratories to monitor genomic variations in the SARS-CoV-2.
2. It is jointly initiated by Ministry of Health and Department of Biotechnology (DBT) with Council for Scientific & Industrial Research and Indian Council of Medical Research.

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: Indian SARS-CoV-2 Genomics Consortium (INSACOG) is a consortium of 54 Laboratories to monitor genomic variations in the SARS-CoV-2.

- The network carries out whole genome sequencing of SARS-CoV 2 virus across the nation, aiding the understanding of how the virus spreads and evolves, and provide information to aid public health response.
- It is jointly initiated by Ministry of Health and Department of Biotechnology (DBT) with Council for Scientific & Industrial Research and Indian Council of Medical Research.

Source: FORUMIAS

Q.8) The “Vikram-S” often seen in news is related to which of the following?

- a) Super computer
- b) Rocket
- c) Telescope
- d) Submarine

ANS: B

Explanation: Vikram-S, India’s first privately built rocket was launched recently from Sriharikota, Andhra Pradesh.

Source: FORUMIAS

Q.9) The term “Kármán line” is related to which of the following?

- a) Interior of Earth
- b) Space boundary
- c) Ocean depth
- d) Intensity of Cyclone

ANS: B

Explanation: The Kármán line is a boundary that borders Earth's atmosphere and the beginning of space.

Source: FORUMIAS

Q.10) Consider the following statements:

1. Kuiper Belt is a donut-shaped region of icy bodies beyond orbit of Neptune.
2. Asteroid belt is a region of space between the orbits of Mars and Jupiter.

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: Kuiper Belt: A donut-shaped region of icy bodies beyond orbit of Neptune. It is a region of leftovers from the solar system's early history.

Asteroid belt: A region of space between the orbits of Mars and Jupiter where most of the asteroids in our Solar System are found orbiting the Sun.

Source: FORUMIAS