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PRE-Mix

(Compilations of the Multiple Choice Questions)

For the 1st Week

Of

July 2021

(5th July to 10th July)

Table of Contents

1. History & Art - Culture

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1. **Raja Parba, a 3-day festival to honour womanhood, is celebrated in which one of the following states?**

   A. Karnataka

   B. Jharkhand

   C. Odisha

   D. Kerala

Answer: C

Explanation

Type: Factual

Difficulty: Easy

- Apart from the world-famous Ratha Yatra, which takes place in June, Odia people also celebrate a unique festival called Raja.
- During this period, it is believed that Mother Earth menstruates and prepares herself for future agricultural activities with the arrival of monsoon.
- The festivities begin a day before Mithuna Sankranti and conclude two days after that.
- Primarily, it is a time for the unmarried girls to prepare for their matrimony.
- They follow various customs related to the festival by consuming nutritious food like Podapitha, not walking barefoot, taking a bath on the first day, and merrily swinging on ropes attached to a tree.

2. **Which are true in the context of Culture in "Vijayanagar rule"?**

   1. **The chief characteristics of the Vijayanagara architecture were the construction of tall Raya Gopurams.**
   2. **Many Amman shrines were added to the already existing temples.**
   3. **The bull was the most common animal to be depicted on the pillars.**

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. All of the above

Answer: A

Explanation

Type: Factual

Difficulty: Medium

- The chief characteristics of the Vijayanagara architecture were the construction of tall Raya Gopurams or gateways and the Kalyanamandapam with carved pillars in the temple premises.
- The sculptures on the pillars were carved with distinctive features.
- The horse was the most common animal found in these pillars.
- Large mandapams contain one hundred pillars as well as one thousand pillars in some big temples.
- These mandapams were used for seating the deity on festival occasions.
- Also, many Amman shrines were added to the already existing temples during this period.

3. With reference to Manipuri Sankirtana, consider the following statements: (2017)

1. It is a song and dance performance.

2. Cymbals are the only musical instruments used in the performance.

3. It is performed to narrate the life and deeds of Lord Krishna.

Which of the statements given above is/are correct?

A. 1, 2 and 3.

B. 1 and 3 only

C. 2 and 3 only

D. 1 only

Answer: B

Explanation

Type: Factual

Difficulty: Medium-Hard

- The Sankirtana is a ritual dance and music form of Manipur.
- Sankirtana practices centre on the temple, where performers narrate the lives and deeds of Krishna through song and dance.
- In a typical performance, two drummers and about ten singer-dancers perform in a hall or domestic courtyard encircled by seated devotees.

- The performing space is a square which faces the east and the performance itself is executed in a circle.
- This unique cultural heritage of Manipur was inscribed in the Representative List of the Intangible Cultural Heritage of Humanity of the UNESCO in 2013.
- It is a vibrant practice promoting an organic relationship with people: the whole society is involved in its safeguarding, with the specific knowledge and skills traditionally transmitted from mentor to disciple.

4. What is/are common to the two historical places known as Ajanta and Mahabalipuram?

1. **Both were built in the same period.**
2. **Both belong to the same religious denomination.**
3. **Both have rock-cut monuments.**

Select the correct answer using the code given below.

A. 1 and 2 only

B. 3 only

C. 1 and 3 only

D. None of the statements given above is correct

Answer: B

Explanation

Type: Conceptual

Difficulty: Easy-Medium

Ajanta Caves

- Ajanta Caves, Buddhist rock-cut cave temples and monasteries, located near Ajanta village, north-central Maharashtra state, western India, that are celebrated for their wall paintings.
- The group of some 30 caves was excavated between the 1st century BCE and the 7th century CE and consists of two types, caityas ("sanctuaries") and viharas ("monasteries").
- Although the sculpture, particularly the rich ornamentation of the caitya pillars, is noteworthy, it is the fresco-type paintings that are the chief interest of Ajanta.
- These paintings depict colorful Buddhist legends and divinities with an exuberance and vitality that is unsurpassed in Indian art. The caves were designated a UNESCO World Heritage site in 1983.
- The paintings and sculptures of Ajanta, considered masterpieces of Buddhist religious art, have had a considerable artistic influence.

Mahabalipuram

- Mahabalipuram is a temple town situated along the shores of the Bay of Bengal about 60 kms from the south Indian city of Chennai. There are several famous temples at Mahabalipuram; Shore Temple and 'Ratha' Cave Temples are the most famous amongst them.

Shore Temple

- The Shore Temples at Mahabalipuram, a coastal village 50 km south of Madras, was built in the 7th century, during the reign of Rajasimha, and they depict the final flowering of Pallava art.
- The temple with its beautiful polygonal dome enshrines Lord Vishnu and Shiva.
- These beautiful temples, ravaged by wind and sea have been declared world heritage by UNESCO.

'Ratha' Cave Temple

- The magnificent 'Ratha' cave temples of Mahabalipuram was built by the Pallava king Narsimha in the 7th and 8th centuries.
- The beauty of the rock-cut sculpture of the temple is reflective of the artistic tastes of the erstwhile Pallava rulers.
- It is known especially for its rathas (temples in the form of chariots), mandapas (cave sanctuaries), giant open-air reliefs such as the famous 'Descent of the Ganges', and the temple of Rivage, with thousands of sculptures to the glory of Shiva.

5. Consider the following statements about Bhakti tradition.

1. Saguna bhakti focused on the worship of an abstract form of God.

2. Nirguna bhakti focused on the worship of incarnations of Vishnu.

Which of the above statements is/are incorrect?

A. 1 Only

B. 2 Only

C. Both 1 and 2

D. Neither 1 nor 2

Answer: C

Explanation

Type: Conceptual

Difficulty: Medium

- Historians of religion often classify bhakti traditions into two broad categories: Saguna (with attributes) and Nirguna (without attributes).
- The formerly included traditions that focused on the worship of specific deities such as Shiva, Vishnu and his avatars (incarnations) and forms of the goddess or Devi, all often conceptualised in anthropomorphic forms.

- Nirguna bhakti, on the other hand, was the worship of an abstract form of god.
- During their travels the Alvars and Nayanars identified certain shrines as abodes of their chosen deities. Very often large temples were later built at these sacred places. These developed as centres of pilgrimage.
- Singing compositions of these poet saints became part of temple rituals in these shrines, as did worship of the saints' images.

2. Polity & Governance

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1. **Consider the following statements with respect to Privilege Motion.**
   1. **In the Lok Sabha, the Speaker nominates a committee of privileges which consists of 15 members of political parties other than ruling party.**
   2. **Privilege committee in Rajya Sabha is headed by the deputy chairperson of the Rajya Sabha.**
   3. **The parliamentary privileges extend to the President of India.**

Which of the above statements is/are correct?

A. 1 only

B. 1 and 2 only

C. 2only

D. 2 and 3 only

Answer: C

Explanation

Type: Conceptual

Difficulty: Medium-Hard

- Members of Parliament (MPs) enjoy certain parliamentary privileges which are bestowed on them collectively and individually so that they can discharge their duties and functions effectively.
- In the case that any of these immunities or rights are disregarded by any MP, the act is regarded as a 'breach of privilege' and is a punishable offence under Laws of Parliament.

Procedure

- The first level of scrutiny that a privilege motion has to go through is that of the Speaker, in case the motion is moved in the Lok Sabha, and that of the Chairperson when a motion is moved in the Rajya Sabha.
- The Speaker/Chairperson may decide on the privilege motion at their own discretion or they may refer it to a parliamentary committee.
- If the Speaker/Chairperson admits the motion, then the concerned member is given an opportunity to explain themselves by making a short statement.
- In the Lok Sabha, the Speaker nominates a committee of privileges which consists of 15 members proportionate to the strengths of various political parties in the Lower House of Parliament.
- They prepare a report which is then presented before the House for its consideration. The Speaker may allow a half-an-hour debate on the report before she/he passed the final orders.

- The Speaker can also direct that the report be tabled before the House and a resolution may be unanimously passed on the breach of privilege. Currently, Congress MP PC Chacko is the chairperson of the privilege committee.
- The process is similar in the Upper House, except that the privilege committee consists of 10 members and is headed by the deputy chairperson of the Rajya Sabha.

2. Paving the way "for a strong institutional system for redressing grievances while placing accountability and responsibility on the broadcasters and their self-regulating bodies", the government through the I&B Ministry amended the Cable Television Network Rules, 1994. Consider the following statements with respect to this amendment.

1. **Inter-Departmental Committee will be set up under the Oversight Mechanism to resolve the grievances of a Viewer.**
2. **This amendment is not applicable to OTT platforms.**

Which of the above statement(s) is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

Type: Factual

Difficulty: Easy-Medium

- The Central Government issued a notification amending the Cable Television Network Rules, 1994 thereby providing a statutory mechanism for redressal of grievances/complaints of citizens relating to content broadcast by television channels in accordance with the provisions of the Cable Television Network Act, 1995.
- At present, there is an institutional mechanism by way of an Inter- Ministerial Committee to address grievances of citizens relating to violation of the Programme/Advertising Codes under the Rules.
- Similarly, various broadcasters have also developed their internal self- regulatory mechanism for addressing grievances. However, a need was felt to lay down a statutory mechanism for strengthening the grievance redressal structure.
- Some broadcasters had also requested for giving legal recognition to their associations/bodies.
- In the aforementioned background, the Cable Television Network Rules have been amended to provide for this statutory mechanism, which would be transparent and benefit the citizens. At the same time, self-regulating bodies of broadcasters would be registered with the Central Government.

- At present there are over 900 television channels which have been granted permission by the Ministry of Information and Broadcasting all of which are required to comply with the Programme and Advertising Code laid down under the Cable Television Network Rules.
- The above notification is significant as it paves the way for a strong institutional system for redressing grievances while placing accountability and responsibility on the broadcasters and their self-regulating bodies.

3. Consider the following statements with respect to Unmanned Aircraft System Rules, 2021.

1. No license or permit is needed to fly Small drones.

2. A Remote Pilot License can be renewed for another 10 years once expired.

3. There are no limitations on the altitude and speed at which drones can be flown.

Which of the above statement(s) is/are correct?

A. 1 and 2 only

B. 2 only

C. 1 and 3 only

D. 3 only

Answer: B

Explanation

Categories of Drones

	Weight	License Required	Area Restrictions	Altitude Restrictions	Speed Restrictions
Nano	< 250 Gms	No	Yes	No	No
Micro	250 Gms - 2 Kgs	UAS Operator Permit-I	Yes	Upto 60	25 m/s
Small	2 Kgs - 25 Kgs	UAS Operator Permit-I	Yes	Upto 120 mtrs	25 m/s
Medium	25 - 150 Kgs	UAS Operator Permit-II	Yes	conditions as per the Operator Permit	conditions as per the Operator Permit
Large	> 150 Kgs	UAS Operator Permit-II	Yes	conditions as per the Operator Permit	conditions as per the Operator Permit

4. **Consider the following statements with respect to Ranked Choice Voting.**

   1. **More than 50% of total votes casted are needed to win an election under Ranked Choice Voting system.**
   2. **The system of. Ranked ChoiceVoting is yet to be introduced in India.**

Select the correct code.

A. **1 only**

B. **2 only**

C. **Both 1 and 2**

D. **None of the above**

Answer: A

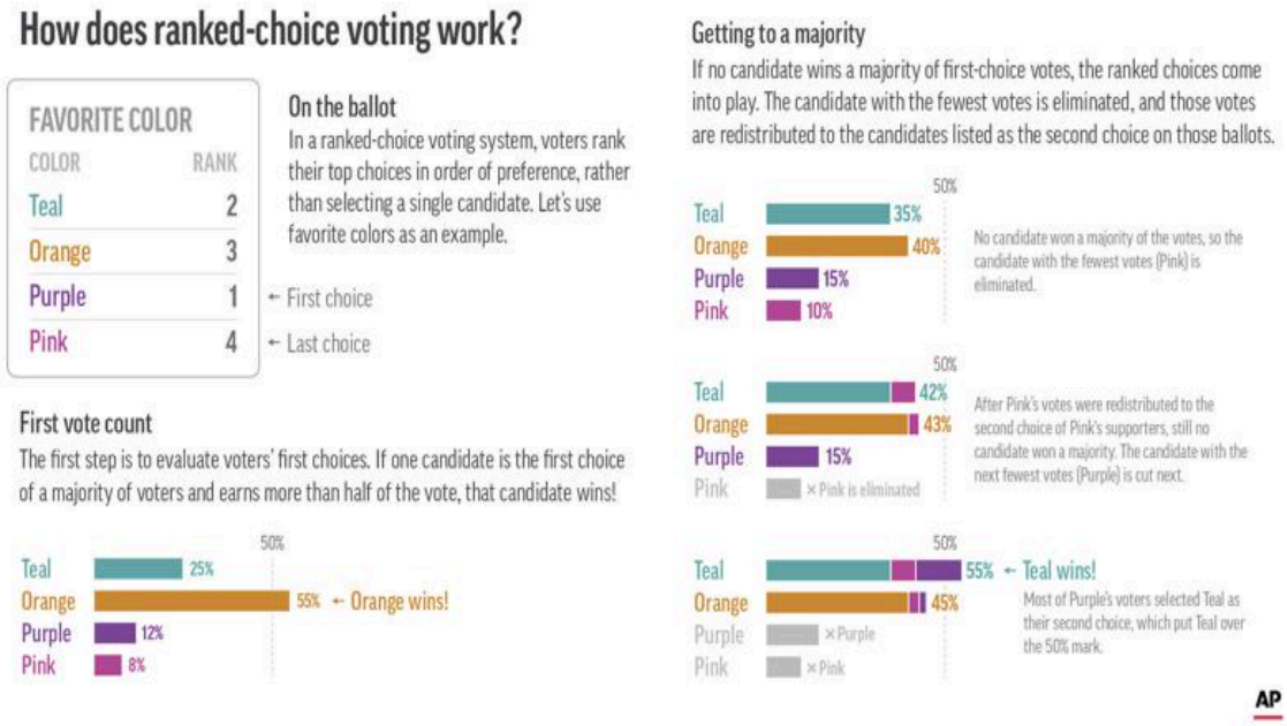
Explanation

Type: Conceptual

Difficulty: Easy-Medium

Ranked-choice Voting System (RCV)

- A ranked-choice voting system (RCV) is an electoral system in which voters rank candidates by preference on their ballots.
- One benefit of the system is that nobody "wastes" their vote by picking an unpopular candidate as their first choice.



- A candidate could get the largest share of first-choice votes, but still lose to someone who is the second or third choice of a large number of people.
- The system is tough to grasp. It requires voters to do a lot more research. It also makes races less predictable.
- Ranked Choice Voting is also known as Single Transferrable Voting (PR) and is used in elections for President, Vice-President and Rajya Sabha.

5. The Rules related to Recusal of Judges from a case are mentioned in which of the following?

A. Judicial Officers Protection Act, 1850

B. Judges Inquiry Rule – 1969

C. The Delhi High Court Act, 1966

D. None of the above

Answer: D

Explanation

Type: Factual

Difficulty: Easy-Medium

- When there is a conflict of interest, a judge can withdraw from hearing a case to prevent creating a perception that she carried a bias while deciding the case. The conflict of interest can be in many ways — from holding shares in a company that is a litigant to having a prior or personal association with a party involved in the case.

Process For Recusal

- The decision to recuse generally comes from the judge herself as it rests on the conscience and discretion of the judge to disclose any potential conflict of interest.
- In some circumstances, lawyers or parties in the case bring it up before the judge. If a judge recuses, the case is listed before the Chief Justice for allotment to a fresh Bench.
- Once a request is made for recusal, the decision to recuse or not rests with the judge. While there are some instances where judges have recused even if they do not see a conflict but only because such an apprehension was cast, there have also been several cases where judges have refused to withdraw from a case.
- There are no formal rules governing recusals, although several Supreme Court judgments have dealt with the issue.
- In Ranjit Thakur v Union of India (1987), the Supreme Court held that the tests of the likelihood of bias is the reasonableness of the apprehension in the mind of the party.
- Since there are no formal rules governing the process, it is often left to individual judges to record reasons for recusal. Some judges disclose the reasons in open court; in some cases, the reasons are apparent.

3. Economy

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Infrastructure

4. Consider the following statements with respect to Petroleum Industry in India.

1. **India is the second largest oil refiner in Asia.**
2. **Tamil Nadu, Gujarat and Rajasthan account for more than 95% of oil production in India.**
3. **Indian Crude Basket is weighted average of Dubai and Oman (sour) and the Brent Crude (sweet) crude oil prices.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: C

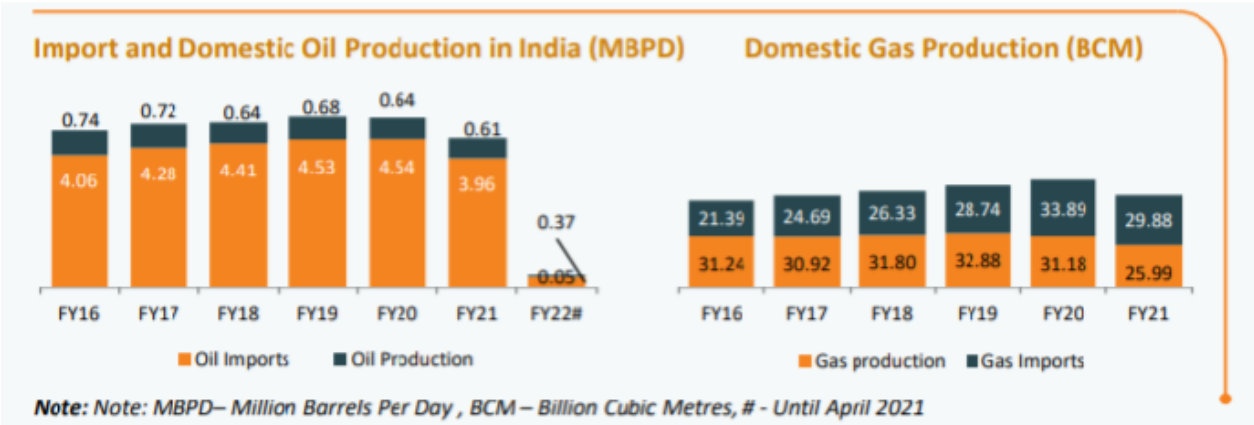
Explanation

Type: Factual

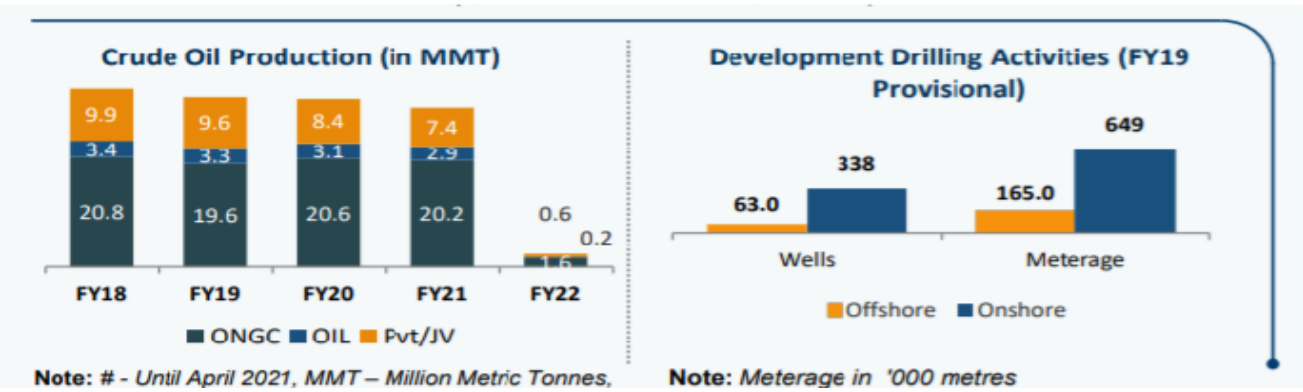
Difficulty: Hard

Indian Oil And Gas Industry Report (March, 2021)

- As of December 01, 2020, India's oil refining capacity stood at 259.3 million metric tonnes (MMT), making it the second-largest refiner in Asia.
- Private companies own about 35.29% of the total refining capacity in FY20.
- Assam, Gujarat and Rajasthan account for more than 96% of oil production in India



- According to IEA (India Energy Outlook 2021), primary energy demand is expected to nearly double to 1,123 million tonnes of oil equivalent, as the country's gross domestic product (GDP) is expected to increase to USD 8.6 trillion by 2040.



- The Indian Crude Basket is a weighted average of the prices of Oman and Dubai sour crude price benchmark; and the Brent sweet crude price benchmark.
- The crude oil price fluctuates on a daily basis in the international market. The average price of Indian Basket of crude oil and the quantum of crude oil purchased during last five years are given below:

Financial Year	Indian Basket of Crude Oil ($/bbl)	Import of crude oil ('000 Metric Tonnes)
2015-16	46.17	202850
2016-17	47.56	213932
2017-18	56.43	220433
2018-19	69.88	226498
2019-20	60.47	226955

2. Consider the following statements with respect to National Investment and Infrastructure Fund Limited (NIIFL).

1. It is a collaborative investment platform for Indian investors only.

2. The funds managed by NIIFL are registered as Alternative Investment Fund (AIF) with the Securities and Exchange Board of India (SEBI).

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: B

Explanation

Type: Conceptual

Difficulty: Medium

National Investment and Infrastructure Fund Limited (NIIFL)

- NIIFL invests across asset classes such as infrastructure, private equity and other diversified sectors in India, with the objective to generate attractive risk-adjusted returns for its investors.
- NIIF Limited manages over USD 4.5 billion of equity capital commitments across its three funds – Master Fund, Fund of Funds and Strategic Opportunities Fund, each with its distinct investment strategy.
- Unison Capital and the National Investment and Infrastructure Fund of India (NIIF) have today announced formation of NIIF/ Unison alliance to bridge long-term capital and Indian PE investment opportunities with strong emphasis on ESG and Digitalization.

3. The Green Energy Corridor Project aims at synchronizing electricity produced from renewable sources, such as solar and wind, with conventional power stations in the grid. This project is being implemented in which of the following states?

1. **Tamil Nadu**
2. **Rajasthan**
3. **Andhra Pradesh**
4. **Gujarat**
5. **Himachal Pradesh**

Select the correct code.

A. 1, 2, 3 and 5

B. 1, 2, 4 and 5

C. 2, 3, 4 and 5

D. 1, 2, 3, 4 and 5

Answer: D

Explanation

Type: Factual

Difficulty: Easy

Green Energy Corridors

- Green Energy Corridor is a comprehensive scheme for evacuation & integration of the renewable energy (RE) capacity addition of 32,713 MW during 12th Plan Period.

- Total fund requirement of Rs. 34141 Crore was initially assessed for the development of the transmission system and control infrastructure for the addition of RE capacity in the renewable rich States of Andhra Pradesh, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Maharashtra, Rajasthan, Madhya Pradesh and Tamil Nadu.
- The funding mechanism consists of 40% Government of India Grant (total Rs. 4056.67 crores), 20% state equity and 40% loan from KfW, Germany (500 million EUR).
- As part of efforts to strengthen the renewable energy sector, a green energy corridor is being developed for the first time in western Rajasthan to combine the solar and wind power production.

4. As per the LEADS Index 2019, the top-ranking state is Gujarat followed by Punjab and Andhra Pradesh. LEADS is an acronym for which of the following?

A. Logistics Ease Across Different States

B. Laws of Environment Assessment in Different States

C. Literate and Education Assessment in Different States

D. Legislators of Environment Across Different states

Answer: A

Explanation

Type: Factual

Difficulty: Easy

- The LEADS Index is an effort by the Commerce and Industry Ministry to establish the baseline of performance in the logistics sector, based on the perception of users and stakeholders at the state level.
- It provides the basis for stakeholder engagement, discussions and evolving action plan by various agencies.
- It is not an index of the performance of the state government but may be used to assess the status of logistics efficiency in each state.
- As per the LEADS Index 2019, the top-ranking state in the logistics sector is Gujarat followed by Punjab and Andhra Pradesh.
- Among the hilly eastern states, Tripura is the top performer and among Union Territories (UTs) Chandigarh was selected as the best performing UT.
- The State Logistics Performance Index is arrived at using a ranking methodology based on a series of meetings with stakeholders and online surveys in the key areas of the logistics, like infrastructure, services, time lines, traceability, competitiveness, security, operating environment and efficiency of regulation.

5. **Consider the following with respect to Airport Infrastructure.**

   1. **There are seventeen international airports in India as on date.**
   2. **The 100th airport of India was inaugurated in Goa.**

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: A

Explanation

Type: Factual

Difficulty: Easy-Medium

- Prime Minister inaugurated the first airport in Sikkim; with this inauguration, the number of functional airports in the country went up to 100.
- The airport at Pakyong, about 30 km from Gangtok and surrounded by mountains, is a major boost to connectivity in the mountainous State.
- The DGCA is the Indian governmental regulatory body for civil aviation under the Ministry of Civil Aviation while the Airports Authority of India or AAI under the same ministry is responsible for creating, upgrading, maintaining and managing civil aviation infrastructure in India.

5. Environment

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1. Consider the following statements with respect to Heat Dome?

1. Heat dome occurs when the atmosphere traps hot ocean air like a lid or cap.

2. Heat dome is created over a water body only.

3. The heat domes can also act as fuel to wildfires.

Which of the above statements is/are correct?

A. 2 only

B. 1 and 3 only

C. 3 only

D. 1, 2 and 3

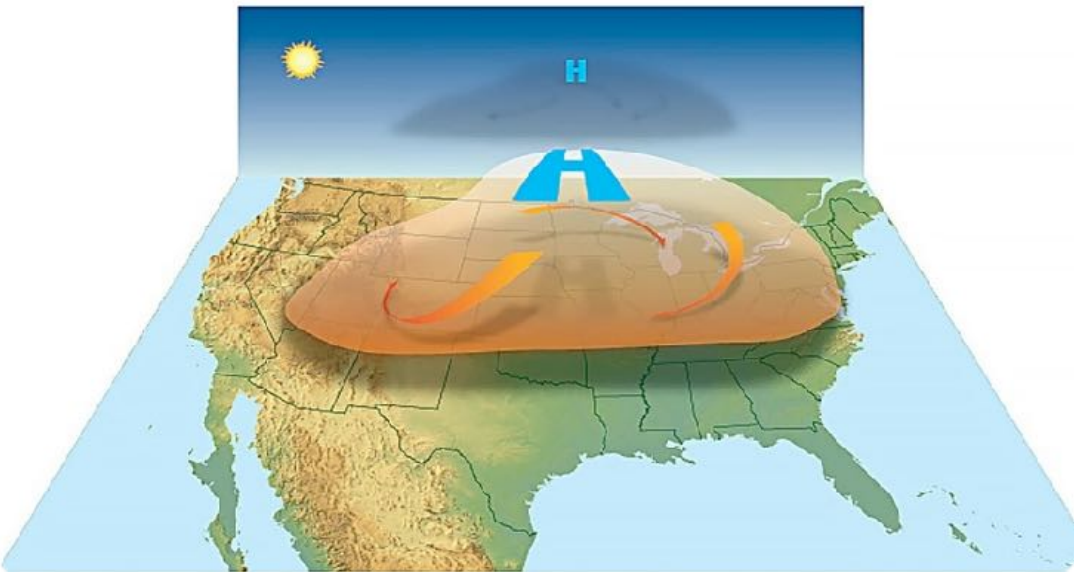
Answer: B

Explanation

Type: Conceptual

Difficulty: Medium-Hard

- According to National Oceanic and Atmospheric Administration (NOAA) of US department of commerce, a heat dome occurs when the atmosphere traps hot ocean air like a lid or cap.
- The phenomenon begins when there is a strong change (or gradient) in ocean temperatures. In the process known as convection, the gradient causes more warm air, heated by the ocean surface, to rise over the ocean surface, according to NOAA.
- Duration: Many weather scientists and organisations such as NOAA have studied these climatic changes and arrived at the conclusion that a heat dome typically lasts a week.
- Effect: Those living without an air conditioner see the temperatures of their homes rising to unbearably high, leading to sudden fatalities like those which are being reported in Canada and parts of the US.
  - ✓ The trapping of heat can also damage crops, dry out vegetation and result in droughts, according to weather experts.
- Climate change and heat domes: The weather scientists have been highlighting the effects of rising temperature (climate change) on more extreme heat waves.
  - ✓ According to a 2017 NOAA survey, average US temperatures have increased since the late 19th century.



2. Special Report on Global Warming of 1.5° C (SR1.5) has been released by

A. UNDP

B. UNEP

C. IPCC

D. WMO

Answer: C

Explanation

Type: Factual

Difficulty: Easy

- The Intergovernmental Panel on Climate Change (IPCC) made public a Special Report, Global Warming of 1.5° C, SR1.5, which was commissioned to specifically explore the scientific feasibility of the 1.5°C goal set in the Paris Agreement, on global warming.
- The report suggests that it has become extremely improbable to achieve the 1.5°C goal purely by reducing emission.
- As per the IPCC Report, at current rate of emissions, the world is set to breach the global warming limit of 1.5°C between 2030 and 2052.
- At present, the world is 1.2°C warmer compared to pre- industrial levels.
- It is a part of series of three reports on specific themes (Special Reports) that IPCC has published –

  ✓Global Warming of 1.5°

  ✓Ocean and Cryosphere in a Changing Climate- which underlined the dire changes taking place in oceans, glaciers, and ice-deposits on land and sea at the United Nations Climate Summit underway in the United States.

✓ Land and climate change- The report focuses on the contribution of land-related activities to global warming, that is, how the different uses of land affect the emission of greenhouse gases.

3. The World Leaders Summit at the 26th UN Climate Change Conference of the Parties (COP26) will be held in which of the following places?

A. Glasgow

B. Dublin

C. Belfast

D. None of the above

Answer: A

Explanation

Type: Factual

Difficulty: Easy

- The 26th session of the Conference of the Parties (COP 26) to the UNFCCC was originally scheduled to take place from 9-19 November 2020, in Glasgow, UK.
- The United Nations Framework Convention on Climate Change, or UNFCCC, was established in 1992 and ratified by 196 countries plus the European Union.
- It aims to develop cooperative strategies to reduce greenhouse gas concentrations to prevent the dangerous impacts of climate change.
- Each year, the UNFCCC meets at what's called the Conference of the Parties or COP to negotiate a range of issues, from global reporting on national climate change efforts to how to finance such efforts. It also allows parties to share knowledge and experiences.

Important

- In 2015, at COP21 in Paris, 197 parties agreed to establish a legal instrument that would govern climate change mitigation and adaptation efforts.
- This became known as the Paris Agreement. It includes overarching goals to keep global temperature rise below 2° C, with efforts to limit warming to 1.5 °C, and increase countries' resilience to climate impacts. It also aims to ensure sufficient financing to achieve these targets.

4. Consider the following statements with respect to Brown to Green Report.

1. The Brown to Green Report is the world's most comprehensive review of BRICS climate action.

2. The report is been published by Climate Transparency.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: B

Explanation

Type: Factual

Difficulty: Easy-Medium

- The Brown to Green Report is the world's most comprehensive review of G20 climate action.
- It provides concise and comparable information on G20 country mitigation action, finance and adaptation.
- Developed by experts from 14 research organisations and NGOs from the majority of the G20 countries, the report covers 80 indicators. It informs policy makers and stimulates national debates.
- The Summary Report 2019 provides a comprehensive overview of all G20 countries, whether – and how well – they are doing on the journey to transition towards a net- zero emissions economy.
- The report draws on the latest emissions data from 2018 and covers 80 indicators on decarbonisation, climate policies, finance and vulnerability to the impacts of climate change. Providing country ratings, it identifies leaders and laggards in the G20.
- India's greenhouse gas (GHG) emissions are – per capita – far below the G20 average.

5. **Consider the following statements with respect to Decarbonizing Transport Project in India.**

   1. **Ministry of Environment, Forest & Climate Change and the International Transport Forum (ITF) of OECD jointly launched the 'Decarbonizing Transport in Emerging Economies' (DTEE) project in India**
   2. **The ambitious five-year project will help India develop a pathway towards a low-carbon transport system through the development of modelling tools and policy scenarios.**
   3. **Japan, India and Morocco are current participants of International Decarbonising Transport in Emerging Economies.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 only

C. 1 and 3 only

D. 1, 2 and 3

Answer: C

Explanation

Type: Factual

Difficulty: Hard

- NITI Aayog and the International Transport Forum (ITF) of OECD jointly launched the 'Decarbonizing Transport in Emerging Economies' (DTEE) project in India.
- !India, Argentina, Azerbaijan, and Morocco are current participants of International Decarbonising Transport in Emerging Economies.

Need

- The transport sector of India is the third most greenhouse gas (GHG) emitting sector, where the major contribution comes from the road transport sector. Out of the total carbon dioxide emissions in India, 13% come from the transport sector. These emissions have more than tripled since 1990.
- In India, CO2 emitted per inhabitant was just about a twentieth of that of an average OECD country, yet, India's transport CO2 emissions are likely to increase by almost 6% annually to 2030.
- The Decarbonizing Transport in India project will design a tailor-made transport emissions assessment framework for India.
- It will provide the government with a detailed understanding of current and future transport activity and the related CO2 emissions as a basis for their decision- making.
- The ITF project team will work in close cooperation and coordination with India's government agencies, local decision-makers, researchers, experts, and civil society organisations.
- Stakeholder workshops, training sessions, briefings for policymakers and mitigation action plans will support the development of policies beyond the duration of the project.

6. Science & Technology

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1. **Consider the following statements with respect to New Shepard.**
   1. **It is a rocket system meant to take tourists to space.**
   2. **It is named after astronaut Alan Shepard.**
   3. **It will be launched by SpaceX.**

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

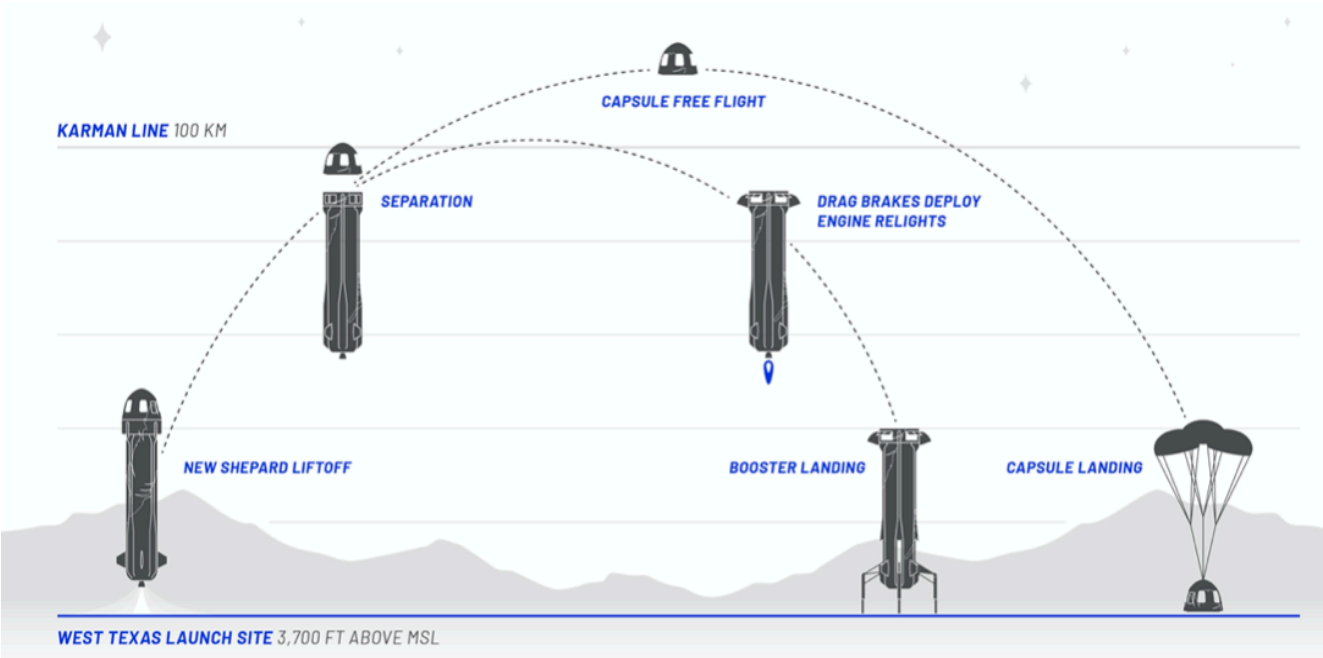
D. 1, 2 and 3

Answer: A

Explanation

Type: Factual Difficulty: Easy-Medium

- Named after Mercury astronaut Alan Shepard, the first American to go to space, New Shepard is our reusable suborbital rocket system designed to take astronauts and research payloads past the Kármán line – the internationally recognized boundary of space.
- The boundary between Earth's atmosphere and outer space is known as the Kármán line.
- It will also allow space tourists to experience microgravity by taking them 100 km above the Earth.



2. **Consider the following statements with respect to COVID-19 Variants.**

   1. **Earliest samples of Alpha variant were documented in South Africa.**
   2. **Variants of Interest are those that meets the definition of a Variant of concern and an increase in transmissibility has been demonstrated.**

Which of the above statements is/are incorrect?

A. 1 only

B. 2 only

C. Both 1 and 2

D. None of the above

Answer: C

Explanation

Variant of Interest	• The genetic changes involved are **predicted or known to affect** transmissibility, disease severity, or immune escape. • An **acknowledgement of the fact that the variant has caused significant community transmission** • These variants are monitored because they **can lead to an increase in positive cases**
Variant of Concern	• There is **evidence of an increase in transmissibility**, more severe disease (e.g., increased hospitalizations or deaths), **significant reduction in neutralization** by antibodies generated during previous infection or vaccination • Previously effective **treatments may not work**, and diagnostic tests might fail to detect the VOCs.
Variants of High Consequence (VOHC)	• This type of variant has the **same characteristics as the VOCs.** • In addition, there is **unquestionable proof that treatment and other efforts to treat and contain the disease are ineffective.** • **Vaccine efficacy against VOHC is very low**, and those impacted by these variants are more likely to **require hospitalization.**

Currently designated Variants of Interest:

WHO label	Pango lineages	GISAID clade	Nextstrain clade	Earliest documented samples	Date of designation
Eta	B.1.525	G/484K.V3	21D	Multiple countries, Dec-2020	17-Mar-2021
Iota	B.1.526	GH/253G.V1	21F	United States of America, Nov-2020	24-Mar-2021
Kappa	B.1.617.1	G/452R.V3	21B	India, Oct-2020	4-Apr-2021
Lambda	C.37	GR/452Q.V1	21G	Peru, Dec-2020	14-Jun-2021

Currently designated Variants of Concern:

WHO label	Pango lineages	GISAID clade	Nextstrain clade	Additional amino acid changes monitored*	Earliest documented samples	Date of designation
Alpha	B.1.1.7	GRY	20I (V1)	+S:484K +S:452R	United Kingdom, Sep-2020	18-Dec-2020
Beta	B.1.351 B.1.351.2 B.1.351.3	GH/501Y.V2	20H (V2)	+S:L18F	South Africa, May-2020	18-Dec-2020
Gamma	P.1 P.1.1 P.1.2	GR/501Y.V3	20J (V3)	+S:681H	Brazil, Nov-2020	11-Jan-2021
Delta	B.1.617.2 AY.1 AY.2	G/478K.V1	21A	+S:417N	India, Oct-2020	VOI: 4-Apr-2021 VOC: 11-May-2021

3. **Recently a spacecraft has detected an unusually high concentration of methane, along with carbon dioxide and dihydrogen, in the moons of a planet by flying through their plumes. What is the name of spacecraft and planet?**

   A. New Horizons ; Saturn

   B. Cassini ; Jupiter

   C. New Horizons ; Jupiter

   D. Cassini ; Saturn

Answer: D

Explanation

Type: Factual/Current Affairs

Difficulty: Easy-Medium

- NASA's Cassini spacecraft has detected an unusually high concentration of methane, along with carbon dioxide and dihydrogen, in the moons of Saturn by flying through their plumes.
- The spacecraft has found that Titan has methane in its atmosphere and Enceladus has a liquid ocean with erupting plumes of gas and water.

- An international research team has used new statistical methods to understand if methanogenesis or methane production by microbes could explain the molecular hydrogen and methane. The models combined geochemistry and microbial ecology to decode what possible processes could explain these observations.
- A paper published last month in Nature Astronomy concluded that there may be unknown methane-producing processes on Enceladus that await discovery.

4. Lidar technology can be used for which of the following?

1. Autonomous driving

2. Monitoring the floodplains

3. Detect pollutant particles

Select the correct answer using the code given below.

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

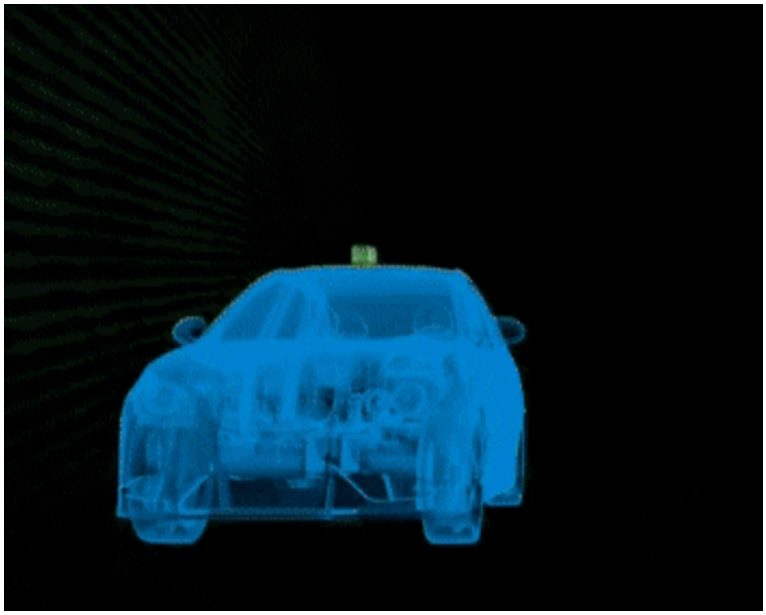
Answer: D

Explanation

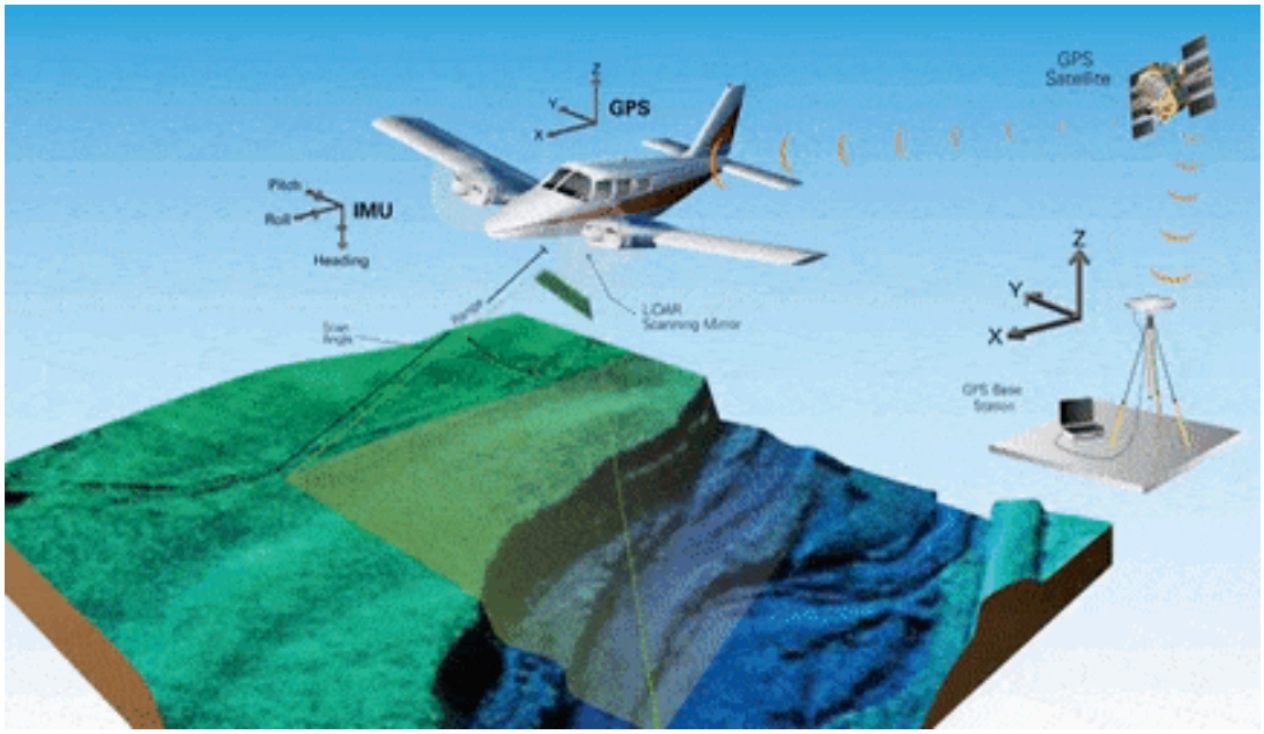
Type: Conceptual

Difficulty: Medium

- Lidar is a method for measuring distances (ranging) by illuminating the target with laser light and measuring the reflection with a sensor. Differences in laser return times and wavelengths can then be used to make digital 3-D representations of the target. It has terrestrial, airborne, and mobile applications.
- The term lidar was originally a portmanteau of light and radar. It is now also used as an acronym for "light detection and ranging and "laser imaging, detection, and ranging". Lidar sometimes is called 3-D laser scanning, a special combination of 3-D scanning and laser scanning.



- Lidar is commonly used to make high-resolution maps, with applications in surveying, geodesy, geomatics, archaeology, geography, geology, geomorphology, seismology, forestry, atmospheric physics, laser guidance, airborne laser swath mapping (ALSM), and laser altimetry. The technology is also used in control and navigation for some autonomous cars.
- Water penetrating green light of the LiDAR can be used to see things underwater and helps create a 3D model of the terrain. Underwater information of a river can help understand the depth, width, and flow of the water. It helps in monitoring the floodplains.
- Modeling Pollution:- LiDAR wavelength is shorter. It operates in the ultraviolet, visible region, or near-infrared. This helps to image the matter which is of the same size or larger than the wavelength.
  - ✓So LiDAR can detect pollutant particles of carbon dioxide, Sulphur dioxide, and methane. This information helps researchers to create a pollutant density map of the area which can be used for better planning of the city.



5. **Which of the following are generally affected in case of a chemical change?**

   A. Neutrons

   B. Protons

   C. Nucleus

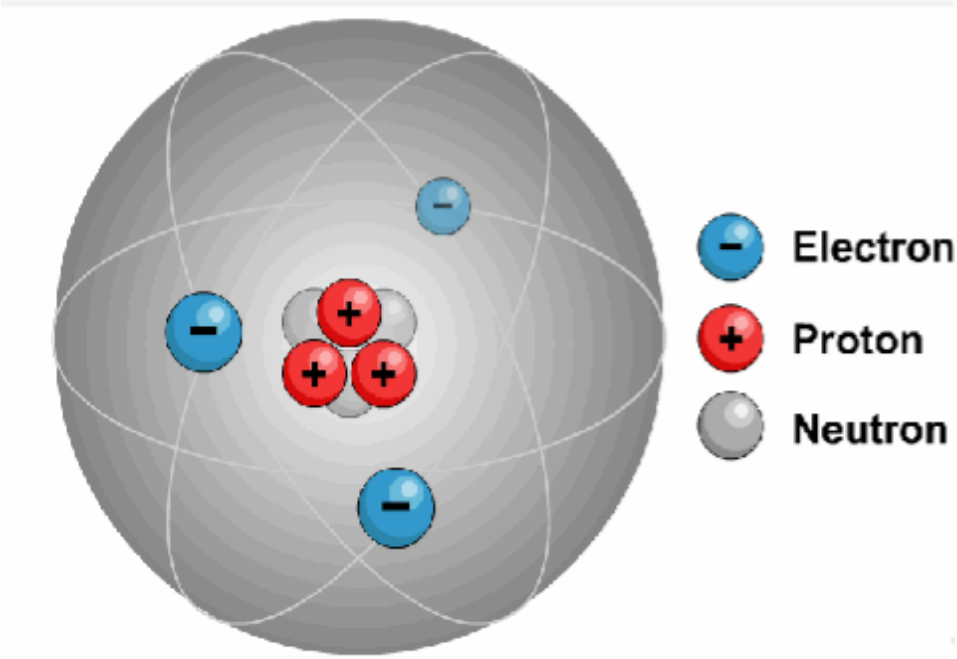
   D. Electrons

Answer: D

Explanation

Type: Conceptual

Difficulty: Easy



Example

- H_2O (l) + NaCl (aq) → HCl (aq) + NaOH (aq)