

UPCATET General Studies Sample Paper-12

Duration: 10 Minutes**Maximum Marks: 80**

Instructions

- This paper contains **20** Multiple Choice Questions.
- Each correct answer carries **+4** mark. Incorrect answer: **-1** marks. Only **one** correct option.
- Unattempted questions carry **0** marks.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.

Q1. Which of the following historical monuments, built by Emperor Akbar to honor Sufi saint Salim Chishti, is located in the Agra district of Uttar Pradesh?

- (A) Bara Imambara
- (B) Fatehpur Sikri
- (C) Buland Darwaza at Jaunpur
- (D) Tomb of Itmad-ud-Daulah

Q2. Acid rain is primarily caused by the atmospheric emission of which of the following pairs of gases?

- (A) Carbon dioxide and Carbon monoxide
- (B) Sulfur dioxide and Nitrogen oxides
- (C) Methane and Ozone
- (D) Chlorofluorocarbons and Hydrogen sulfide

Q3. Who acts as the ex-officio Chairman of the Rajya Sabha in the Indian Parliament?

- (A) The President of India
- (B) The Prime Minister of India



- (C) The Vice-President of India
- (D) The Speaker of the Lok Sabha

Q4. In computer networking, what does the acronym URL stand for?

- (A) Uniform Resource Locator
- (B) Universal Radio Link
- (C) United Resource Language
- (D) User Routing Log

Q5. The famous Kathak exponent Pandit Birju Maharaj belonged to which of the following traditional dance gharanas of Uttar Pradesh?

- (A) Banaras Gharana
- (B) Lucknow Kalka-Bindadin Gharana
- (C) Kirana Gharana
- (D) Agra Gharana

Q6. Which soil type covers the largest geographical area in Uttar Pradesh and is highly favorable for agriculture?

- (A) Alluvial Soil
- (B) Red Soil
- (C) Black Cotton Soil
- (D) Laterite Soil

Q7. The Green Revolution in India, launched in the late 1960s, primarily focused on introducing high-yielding varieties (HYV) of which two main cereal crops?

- (A) Rice and Maize
- (B) Wheat and Rice
- (C) Barley and Millet
- (D) Wheat and Sugarcane



- Q8.** Which of the following non-volatile memory types is permanently programmed during the manufacturing stage and cannot be easily modified by the user?
- (A) RAM
 - (B) ROM
 - (C) Cache Memory
 - (D) EEPROM
- Q9.** The 'Five Year Plans' system in India was officially replaced by which of the following policy think-tanks of the Government of India in 2015?
- (A) National Development Council
 - (B) Finance Commission of India
 - (C) NITI Aayog
 - (D) National Statistical Office
- Q10.** Deficiency of Vitamin C in the human diet leads to which of the following diseases, characterized by bleeding gums and weakness?
- (A) Rickets
 - (B) Beriberi
 - (C) Scurvy
 - (D) Pellagra
- Q11.** Which river is known as the 'Sorrow of Bihar' due to its frequent and devastating floods, heavily impacting neighboring regional borders?
- (A) Ghaghara River
 - (B) Kosi River
 - (C) Son River
 - (D) Gandak River
- Q12.** Which of the following malicious software types appears legitimate but is designed to trick users into downloading it to gain unauthorized access to their system?



- (A) Computer Worm
- (B) Trojan Horse
- (C) Spyware
- (D) Ransomware

Q13. Under the Indian Constitution, the 'Directive Principles of State Policy' (DPSP) are borrowed from the constitution of which country?

- (A) United States of America
- (B) United Kingdom
- (C) Ireland
- (D) Australia

Q14. Which phenomenon of light is primarily responsible for the brilliant, twinkling appearance of stars in the night sky?

- (A) Total Internal Reflection
- (B) Atmospheric Refraction
- (C) Diffuse Scattering
- (D) Optical Interference

Q15. India won its historic first-ever Olympic gold medal in track and field athletics during the Tokyo 2020 Games. Who achieved this milestone?

- (A) Abhinav Bindra
- (B) Neeraj Chopra
- (C) PV Sindhu
- (D) Ravi Kumar Dahiya

Q16. Which city in Uttar Pradesh is globally renowned for its traditional brassware industries and is popularly nicknamed 'Pital Nagari'?

- (A) Aligarh



- (B) Firozabad
- (C) Moradabad
- (D) Khurja

Q17. The Indian Space Research Organisation (ISRO) created history on August 23, 2023, with the successful soft landing of the Chandrayaan-3 spacecraft on the lunar surface. This milestone achievement made India the fourth nation in the world to master the technology of soft-landing on the Moon, following the Soviet Union, the United States, and China. More remarkably, India became the first nation to land successfully near the rugged and unexplored lunar south pole. The mission comprised a lander module named 'Vikram' and a robotic rover named 'Pragyan'. The primary objectives included demonstrating safe, soft landing capabilities, roving on the lunar terrain, and conducting in-situ scientific experiments to analyze the chemical composition of the lunar soil and investigate water-ice deposits. The landing site was officially designated as 'Shiv Shakti Point' to commemorate the historic engineering feat.

Which country became the first in the world to successfully land a spacecraft near the lunar south pole?

- (A) United States
- (B) Soviet Union
- (C) China
- (D) India

Q18. The Indian Space Research Organisation (ISRO) created history on August 23, 2023, with the successful soft landing of the Chandrayaan-3 spacecraft on the lunar surface. This milestone achievement made India the fourth nation in the world to master the technology of soft-landing on the Moon, following the Soviet Union, the United States, and China. More remarkably, India became the first nation to land successfully near the rugged and unexplored lunar south pole. The mission comprised a lander module named 'Vikram' and a robotic rover named 'Pragyan'. The primary objectives included demonstrating safe, soft landing capabilities, roving on the lunar terrain, and conducting in-situ scientific



experiments to analyze the chemical composition of the lunar soil and investigate water-ice deposits. The landing site was officially designated as 'Shiv Shakti Point' to commemorate the historic engineering feat.

What is the specific name given to the robotic rover component of the Chandrayaan-3 mission?

- (A) Vikram
- (B) Pragyan
- (C) Dhruv
- (D) Aditya

Q19. Which of the following application layer protocols is primarily used to securely transfer files over a network by utilizing a Secure Shell (SSH) data stream?

- (A) SFTP
- (B) FTP
- (C) HTTP
- (D) SMTP

Q20. In computer systems, which of the following acts as a high-speed volatile storage mechanism located directly inside or closest to the CPU to hold frequently accessed instructions?

- (A) Secondary Storage
- (B) Solid State Drive
- (C) Optical Disk
- (D) Cache Memory



Detailed Solutions**Q1.****Solution****Concept:**

Medieval architectural history in India highlights the strategic cultural monuments constructed during the Mughal Empire. Emperor Akbar developed specific complexes near Agra to combine defensive fortifications, administrative headquarters, and spiritual retreats that honored influential Sufi saints of the Chishtiya order, whose spiritual guidance he regularly sought.

Solution:

- (a) Emperor Akbar constructed the grand palace city complex of Fatehpur Sikri near Agra during the early 1570s. This monumental project served as his imperial capital for over a decade before being abandoned due to local water supply failures.
- (b) Within the sacred complex of Fatehpur Sikri, Akbar ordered the building of a magnificent white marble mausoleum dedicated explicitly to the esteemed Sufi saint Sheikh Salim Chishti, who had correctly predicted the birth of Akbar's heir, Prince Salim.
- (c) Bara Imambara is located in Lucknow, far from Agra, and was commissioned much later by Asaf-ud-Daula.
- (d) The Buland Darwaza is the massive gateway located at Fatehpur Sikri itself rather than Jaunpur, while the intricate Tomb of Itmad-ud-Daulah was commissioned during Emperor's reign by Empress Nur Jahan.
- (e) Therefore, Fatehpur Sikri stands out as the correct historic regional site containing the tomb of Salim Chishti.

Final Answer: Fatehpur Sikri.

Answer: (B)

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Q2.

Solution**Concept:**

Environmental atmospheric chemistry studies the transformation of industrial pollutants into secondary environmental hazards. Industrial emissions interact with atmospheric moisture, solar radiation, and oxygen, altering the pH of precipitation and threatening terrestrial ecosystems, aquatic life, public infrastructure, and historic structures.

Solution:

- (a) The primary causes of acid rain are the combustion of fossil fuels in vehicular engines, thermal power plants, and heavy smelting industries, which release enormous quantities of gaseous byproducts into the troposphere.
- (b) The chemical precursors responsible for this phenomenon are sulfur dioxide and various oxides of nitrogen. Once airborne, these gases undergo oxidation reactions with atmospheric water vapor to synthesize dilute solutions of sulfuric acid and nitric acid.
- (c) These secondary acids precipitate alongside normal rain, depressing the pH of rainfall significantly below the standard threshold.
- (d) Alternative gas pairings like carbon dioxide and carbon monoxide generate mild carbonic acid or cause direct toxic asphyxiation rather than heavy acid rain. Methane, ozone, and chlorofluorocarbons act primarily as potent greenhouse gases or ozone-depleting substances.
- (e) Consequently, sulfur dioxide and nitrogen oxides remain the definitive components driving severe acid deposition globally.

Final Answer: Sulfur dioxide and Nitrogen oxides.

Answer: (B)

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Q3.

Solution**Concept:**

Indian Constitutional law prescribes a parliamentary form of government featuring a bicameral legislature. The system uses a framework of ex-officio designations where an official holding a primary executive branch office is constitutional designated to automatically lead a specific legislative chamber without undergoing a separate internal legislative election.

Solution:

- (a) Article 64 and Article 89 of the Constitution of India mandate that the Vice-President of India shall serve automatically as the ex-officio Chairman of the Rajya Sabha, which represents the Upper House of Parliament.
- (b) In this legislative capacity, the Vice-President regulates the daily proceedings of the Upper House, maintains parliamentary discipline, manages legislative debates, and interprets the internal rules of the chamber.
- (c) The President of India serves as the executive head of the entire republic but does not preside over either legislative house.
- (d) The Prime Minister acts as the head of government and leader of the ruling party in the Lok Sabha.
- (e) The Speaker of the Lok Sabha is elected internally by the members of the Lower House to preside over that chamber exclusively, making the Vice-President the sole official fulfilling the ex-officio role for Rajya Sabha.

Final Answer: The Vice-President of India.

Answer: (C)

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Q4.

Solution**Concept:**

Information and Communication Technology relies on standardized web naming protocols to manage the vast global network of digital infrastructure. To access information across the internet, every individual webpage, document, image, or service must possess a distinctive, standardized network address that web browsers can instantly parse and locate.

Solution:

- (a) The complete acronym URL stands for Uniform Resource Locator, which serves as a global address mechanism for referencing information assets distributed across the World Wide Web.
- (b) A standard URL contains a protocol prefix like HTTP or HTTPS, an authenticated domain name or IP address, and an optional hierarchical file path pointing to the specific directory containing the target asset.
- (c) Distractors such as Universal Radio Link or United Resource Language are technical-sounding fabrications that do not correspond to any valid internet architectural protocols.
- (d) User Routing Log refers to administrative tracking files rather than resource addressing structures.
- (e) Because the primary design intention of a URL is to create an unchanging, uniform method for locating specific resources anywhere on the internet, Uniform Resource Locator is the correct designation.

Final Answer: Uniform Resource Locator.

Answer: (A)

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Q5.

Solution**Concept:**

The cultural heritage of Uttar Pradesh features prominent performing arts, notably Kathak, a major classical Indian dance form. The stylistic evolution of Kathak is organized into distinct lineages known as gharanas, which developed under local royal patronage, preserving unique rhythmic structures, expressions, and technical innovations across generations.

Solution:

- (a) The legendary classical dancer Pandit Birju Maharaj was the torchbearer and direct descendant of the Lucknow Kalka-Bindadin Gharana, an artistic lineage famous for emphasizing dramatic expression, grace, and bhava.
- (b) This specific gharana flourished within the royal courts of Awadh under Nawab Wajid Ali Shah, who was an ardent patron of classical music, poetry, and expressive Kathak compositions.
- (c) The Banaras Gharana is a separate lineage that focuses heavily on powerful footwork and energetic pirouettes, distinct from the Lucknow school.
- (d) The Kirana Gharana and Agra Gharana are premier vocal music lineages of Hindustani classical traditions and do not represent primary institutional lineages of Kathak dance.
- (e) Thus, the Lucknow Kalka-Bindadin Gharana is historically tied to the legacy of Pandit Birju Maharaj.

Final Answer: Lucknow Kalka-Bindadin Gharana.

Answer: (B)

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Q6.**Solution****Concept:**

Agricultural geography in northern India is deeply influenced by the extensive river drainage systems emerging from the Himalayas. The continuous deposition of mineral-rich river sediments over thousands of years has shaped the agricultural landscape of Uttar Pradesh, making soil distribution a key factor in regional crop productivity.

Solution:

- (a) Alluvial soil covers the vast majority of the geographical area of Uttar Pradesh, blanketing the extensive Indo-Gangetic plain. It is formed by the continuous deposition of silt carried by major rivers like the Ganga and Yamuna.
- (b) This soil type is rich in potash, phosphoric acid, and organic humus, which provides the high soil fertility required to sustain intense cultivation of demanding crops like wheat, rice, and sugarcane.
- (c) Red soil is limited to the southern hilly tracts of the Bundelkhand region.
- (d) Black cotton soil occurs only in small pockets along the southwestern borders of the state.
- (e) Laterite soil requires intense tropical leaching and high rainfall, conditions that are absent in Uttar Pradesh, making alluvial soil the dominant and most agriculturally favorable choice.

Final Answer: Alluvial Soil.

Answer: (A)

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Q7.

Solution**Concept:**

Post-independence economic development in India prioritized food security through agricultural modernization. Faced with chronic food deficits in the mid-1960s, planners adopted high-yielding crop varieties and heavy chemical inputs, focusing on specific regional belts and staple crops to achieve self-sufficiency.

Solution:

- (a) The Green Revolution in India was launched under the leadership of agricultural scientists like Dr. M.S. Swaminathan. It relied heavily on introducing imported semi-dwarf, high-yielding varieties of wheat and rice.
- (b) These specific crop varieties responded well to nitrogenous fertilizers and controlled irrigation systems, which led to a historic surge in grain production across Punjab, Haryana, and western Uttar Pradesh.
- (c) While industrial cash crops like sugarcane and coarse grains like maize or millet were cultivated widely, they were not the primary focus of this initial technology package.
- (d) The dramatic increase in food grain yields was primarily driven by the success of wheat and rice crops.
- (e) Therefore, the combination of wheat and rice remains the defining staple crop pair of India's Green Revolution.

Final Answer: Wheat and Rice.

Answer: (B)

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Q8.

Solution**Concept:**

Computer hardware engineering categorizes internal memory systems based on data persistence and write accessibility. Certain memory units are engineered to hold static, fundamental boot instructions that must remain completely secure from user modification or accidental power loss, ensuring the system can initialize reliably every time it boots.

Solution:

- (a) ROM, or Read-Only Memory, is a non-volatile memory chips that is hardwired with permanent software instructions during the physical manufacturing process.
- (b) This factory-programmed data includes critical low-level startup routines, such as the computer's basic input/output system (BIOS), which cannot be modified or erased by standard application software.
- (c) RAM is a volatile memory storage medium that loses all its active data immediately when electrical power is disconnected.
- (d) Cache memory consists of high-speed static hardware registers used to store temporary processor instructions.
- (e) EEPROM can be erased and reprogrammed electronically by the user through special tools, unlike standard ROM chips which remain permanently unalterable after fabrication.

Final Answer: ROM.**Answer:** (B)[Go Back to Question 8](#)

Q9.**Solution****Concept:**

The evolution of economic planning in India mirrors a shift from a centralized command economy model to a decentralized, collaborative policy framework. This institutional change was designed to foster cooperative federalism by replacing old administrative planning bodies with a modernized, expert-driven policy advisory board.

Solution:

- (a) The Government of India formally dissolved the 65-year-old Planning Commission of India and replaced it on January 1, 2015, with a new policy think-tank named NITI Aayog (National Institution for Transforming India).
- (b) This change shifted the policy focus from a top-down model of allocating state funds to a bottom-up approach that involves state governments in designing long-term strategic and technical policies.
- (c) The National Development Council was historically responsible for approving the old five-year plans but did not replace the planning system itself.
- (d) The Finance Commission is a constitutional body that manages fiscal center-state tax sharing relations.
- (e) The National Statistical Office manages data collection rather than macro-level policy formulation, leaving NITI Aayog as the correct successor.

Final Answer: NITI Aayog.

Answer: (C)

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Q10.**Solution****Concept:**

Human nutritional biochemistry requires regular dietary intake of essential water-soluble organic compounds that the body cannot synthesize internally. These micronutrients serve as vital cofactors for metabolic pathways, collagen synthesis, tissue repair, and immune system defense, and their absence can trigger specific deficiency disorders.

Solution:

- (a) Vitamin C, or ascorbic acid, is a critical cofactor for enzymes that cross-link collagen fibers. Collagen is the primary structural protein found in connective tissues, blood vessels, skin, and bones.
- (b) A chronic deficiency of Vitamin C disrupts normal collagen synthesis, leading to scurvy. This condition is characterized by weak blood vessels, bleeding gums, loose teeth, poor wound healing, and extreme physical fatigue.
- (c) Rickets is a bone-weakening childhood disorder caused by a deficiency of Vitamin D.
- (d) Beriberi is caused by a lack of Thiamine (Vitamin B1), which affects the nervous and cardiovascular systems.
- (e) Pellagra results from a deficiency of Niacin (Vitamin B3), meaning scurvy is the only disease directly caused by a lack of Vitamin C.

Final Answer: Scurvy.

Answer: (C)

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Q11.

Solution**Concept:**

Regional physical geography in India highlights dynamic river systems that exit the high Himalayas and traverse vast plains. Due to high sediment loads and low gradients in downstream zones, certain unstable rivers naturally oscillate across flat floodplains, creating catastrophic seasonal disasters that displace extensive rural populations and damage agricultural infrastructure across states.

Solution:

- (a) The Kosi River is a major transboundary river flowing through Nepal and India, recognized extensively as one of the most volatile rivers in the entire Indian subcontinent.
- (b) This river carries immense quantities of coarse silt and gravel from its mountainous catchments, which deposits rapidly upon entering the flat plains of Bihar, elevating the riverbed and choking its natural channels.
- (c) Consequently, the river frequently breaches its embankments and shifts its course laterally, causing immense destruction to human life, livestock, standing crops, and regional infrastructure over vast agrarian districts.
- (d) The Ghaghara, Son, and Gandak are also large tributaries of the Ganga river system, but their channels remain structurally more stable and predictable than the erratic paths carved by the Kosi during the peak monsoon.
- (e) For this reason, the Kosi River has earned the specific, tragic historical moniker of the Sorrow of Bihar across regional and national geographic studies.

Final Answer: Kosi River.

Answer: (B)

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Q12.

Solution**Concept:**

Cybersecurity principles evaluate how malicious digital actors deploy social engineering and technical deception to compromise consumer systems. Computer systems are frequently targeted by malicious software that relies on mimicry, hiding inside innocent-looking code packages to bypass the initial security suspicion of computer users.

Solution:

- (a) A Trojan Horse is a specific category of malicious software that relies entirely on structural camouflage by presenting itself to a user as a legitimate, harmless, or useful utility program.
- (b) Once a user is deceived into downloading, installing, and executing this misleading application, the hidden malicious payload activates silently in the background, opening secret backdoors for unauthorized external data access.
- (c) A computer worm differs significantly because its primary mechanism is autonomous self-replication across data networks without requiring human execution or disguise.
- (d) Spyware focuses on silent monitoring of keystrokes and data theft, while ransomware utilizes robust encryption algorithms to lock file systems for extortion purposes.
- (e) Because the defining characteristic of this software is leveraging an innocent facade to infiltrate a host machine, the Trojan Horse remains the definitive answer.

Final Answer: Trojan Horse.

Answer: (B)

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Q13.

Solution**Concept:**

The structural framework of the Indian Constitution is a product of comprehensive comparative analysis by its framing committee. To establish a welfare state, the authors adapted advanced constitutional features from international democracies, incorporating governance guidelines that direct administrative authorities to enact socially equitable public policies.

Solution:

- (a) The Directive Principles of State Policy, contained within Part IV of the Indian Constitution, serve as non-justiciable guidelines meant to guide the legislative and executive actions of governance.
- (b) The primary inspiration for including these fundamental principles of governance was drawn directly from the historic constitution of Ireland, which had integrated similar non-enforceable social policy guidelines.
- (c) The United States provided the basic framework for fundamental rights and judicial review, while the United Kingdom influenced the parliamentary form of executive governance.
- (d) Australia contributed to the structure of the concurrent list and rules regulating interstate commerce.
- (e) Therefore, Ireland stands out as the historical constitutional source for the inclusion of these non-justiciable social welfare ideals within the Indian Republic.

Final Answer: Ireland.

Answer: (C)

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Q14.**Solution****Concept:**

Wave optics and atmospheric physics describe how light waves interact with shifting mediums of varying densities. When light travel from interstellar space into the complex, dynamic envelope of gases surrounding a planet, its path experiences continuous alterations due to local thermodynamic fluctuations.

Solution:

- (a) The twinkling of stars in the night sky is caused by the phenomenon of atmospheric refraction, where starlight must pass through multiple layers of the atmosphere before reaching human eyes.
- (b) These atmospheric layers are characterized by varying temperatures, densities, and changing refractive indices that fluctuate continuously due to wind currents and localized heating.
- (c) As the narrow beam of starlight passes through these moving layers, it bends continuously, causing its apparent position and brightness to change rapidly.
- (d) Total internal reflection relies on light passing through a dense medium to a rarer medium at specific critical angles, which is not the case here.
- (e) Diffuse scattering explains the blue color of the daytime sky, and optical interference involves overlapping coherent waves, leaving atmospheric refraction as the true cause of stellar twinkling.

Final Answer: Atmospheric Refraction.

Answer: (B)

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Q15.

Solution**Concept:**

The history of Indian sports tracks the evolution of the nation's athletic performances on the global stage. While India historically dominated field hockey for decades, securing a gold medal in track and field athletics remained a major challenge until modern training methodologies produced a breakthrough performance.

Solution:

- (a) During the Tokyo 2020 Olympic Games, which were held in 2021, star athlete Neeraj Chopra secured a historic gold medal for India in the men's javelin throw final.
- (b) This performance marked the first time an Indian track and field athlete won an Olympic gold medal since the country began participating in the modern Olympic Games.
- (c) Abhinav Bindra won India's first individual Olympic gold medal, but his achievement was in the 10-meter air rifle shooting event at the Beijing 2008 Games.
- (d) PV Sindhu secured a silver and a bronze medal across different Olympic editions in badminton, while Ravi Kumar Dahiya won a silver medal in freestyle wrestling at Tokyo.
- (e) Thus, Neeraj Chopra remains the individual who achieved this historic milestone for Indian track and field athletics in Tokyo.

Final Answer: Neeraj Chopra.

Answer: (B)

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Q16.

Solution**Concept:**

The industrial landscape of Uttar Pradesh is defined by specialized clusters of traditional cottage industries that have flourished in specific urban centers for centuries. These manufacturing sectors form the backbone of regional economic exports, with individual cities earning popular titles based on their specific craft traditions.

Solution:

- (a) The city of Moradabad, situated along the Ramganga River in western Uttar Pradesh, is celebrated globally for its high-quality brassware manufacturing and metal handicraft industries.
- (b) This concentration of traditional metalworking artisans has led to the city being universally referred to as Pital Nagari, which translates directly to the Brass City.
- (c) Aligarh is famous for its lock manufacturing and hardware industries, rather than large-scale brass handicrafts.
- (d) Firozabad is the hub for glass blowing and colorful bangle production, while Khurja, located in Bulandshahr, is recognized for its ceramic pottery work.
- (e) Therefore, Moradabad is the unique urban center associated with the brassware industry and the title Pital Nagari.

Final Answer: Moradabad.

Answer: (C)

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Q17.

Solution**Concept:**

Reading comprehension in competitive examinations requires evaluating explicit historical facts and achievements directly stated within an informative passage. This task requires isolating specific geographical data and geopolitical milestones achieved by space agencies without incorporating outside knowledge.

Solution:

- (a) The provided text details the historic achievement of the Indian Space Research Organisation during the successful execution of the Chandrayaan-3 lunar mission on August 23, 2023.
- (b) The passage explicitly states that this milestone achievement made India the first nation in the world to successfully execute a soft landing near the rugged and unexplored lunar south pole.
- (c) While the United States, the Soviet Union, and China are mentioned as nations that mastered soft-landing technology earlier, their missions targeted equatorial lunar zones.
- (d) The passage isolates India as the sole pioneering nation to successfully land a spacecraft near the south pole region.
- (e) Therefore, based strictly on the text provided, India is the correct country that achieved this space exploration milestone.

Final Answer: India.

Answer: (D)

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Q18.

Solution**Concept:**

Textual analysis requires identifying specific designations assigned to technical components within a complex mechanical system. Scientific missions often use separate names for their individual components, and these must be identified based on the functional definitions provided in the text.

Solution:

- (a) The passage provides a detailed breakdown of the components that made up the Chandrayaan-3 spacecraft configuration during its journey to the lunar surface.
- (b) According to the explicit wording of the text, the mission consisted of a stationary lander module named Vikram and a mobile, robotic rover named Pragyan.
- (c) The question asks for the name given to the robotic rover component of the mission.
- (d) Vikram refers to the lander module rather than the rover, while options like Dhruv or Aditya represent separate aerospace programs not mentioned in the passage.
- (e) Consequently, based on the clear details provided in the text, Pragyan is the correct name of the robotic rover.

Final Answer: Pragyan.

Answer: (B)

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Q19.**Solution****Concept:**

Network architecture uses application layer protocols to move digital assets across distributed computing setups. Standard transfer methods often broadcast data in unencrypted plaintext, forcing systems to implement secure cryptographic network protocols that encapsulate transmission streams to protect sensitive data from interceptors.

Solution:

- (a) SFTP, which stands for Secure File Transfer Protocol, is designed to run directly over a Secure Shell (SSH) session to provide a fully encrypted path for managing and moving files.
- (b) By operating over SSH, it ensures that both user authentication credentials and the actual data packets are securely encrypted while moving across public or private networks.
- (c) FTP stands for File Transfer Protocol, which is an older standard that transfers data in plain, unencrypted text, making it vulnerable to packet sniffing tools.
- (d) HTTP is the underlying protocol used to transmit web pages and hypermedia documents across the World Wide Web rather than managing direct system file modifications.
- (e) SMTP stands for Simple Mail Transfer Protocol, an application layer standard designed exclusively for routing email messages between servers, leaving SFTP as the secure file platform.

Final Answer: SFTP.**Answer:** (A)[Go Back to Question 19](#)

Q20.

Solution**Concept:**

Computer memory structure is organized in a hierarchy that balances storage capacity, manufacturing costs, and access speeds. Since main system memory runs much slower than modern microprocessor chips, engineering teams place tiny chunks of ultra-fast static memory units closer to the processing cores to prevent idle delay cycles.

Solution:

- (a) Cache memory is a high-speed hardware mechanism built out of static random-access memory (SRAM) chips located directly on or adjacent to the primary central processing unit.
- (b) It functions by temporarily holding copies of the most frequently used instructions and data blocks from the main memory, allowing the processing units to retrieve them almost instantly.
- (c) Secondary storage platforms represent high-capacity non-volatile architectures meant for long-term data preservation when system hardware is powered down.
- (d) Solid state drives utilize non-volatile flash memory to act as primary long-term mass storage devices, which operate far slower than central processor processing registers.
- (e) Optical disks are external media formats read via laser configurations, meaning cache memory remains the only internal microcircuitry capable of matching the speed demands of a CPU.

Final Answer: Cache Memory.

Answer: (D)

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Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	B	3	C	4	A	5	B
6	A	7	B	8	B	9	C	10	C
11	B	12	B	13	C	14	B	15	B
16	C	17	D	18	B	19	A	20	D

