UPCATET General Studies Sample Paper-10

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. The famous Revolt of 1857 in Uttar Pradesh initially broke out at Meerut. Which of the following statements is historically accurate regarding the subsequent expansion of the revolt within the state?

(A) Begum Hazrat Mahal led the forces from Varanasi with the active assistance of Kunwar Singh.

(B) Nana Sahib assumed leadership of the uprising in Kanpur and proclaimed himself as the Peshwa.

(C) Khan Bahadur Khan established a highly centralized parallel administration from Jhansi.

(D) Maulvi Ahmadullah concentrated his anti-British rebellious operations primarily around the Gorakhpur region.

Q2. Consider the unique physiography of Uttar Pradesh. The narrow, porous, boulder-strewn tract running along the foothills of the Himalayas where rivers disappear underground is known as which of the following geographic zones?

(A) Bhangar Region

(B) Khadar Region

(C) Terai Belt

(D) Bhabar Tract

Q3. During the ancient Mahajanapada period, several powerful states were located entirely or partially within modern-day Uttar Pradesh. Which Mahajanapada was situated around the modern Allahabad (Prayagraj) region with its capital at Kausambi?

(A) Vatsa

(B) Kosala

(C) Malla

(D) Panchala

Q4. The dynamic seasonal weather pattern of Uttar Pradesh is significantly influenced by global and local climatic factors. Which of the following phenomena is primarily responsible for causing winter rainfall in the western plains of the state?

(A) Tropical Cyclones originating in the Bay of Bengal

(B) Western Disturbances originating over the Mediterranean Sea region

(C) The sudden onset of the Southwest Monsoon currents

(D) Retreation of the Northeast Monsoon winds

Q5. With reference to mineral resources and minor mining zones in Uttar Pradesh, which district is widely recognized for possessing notable reserves of non-plastic fireclay, glass-sand, and low-grade bauxite?

(A) Sonbhadra

(B) Chitrakoot

(C) Lalitpur

(D) Shankargarh (Prayagraj)

Q6. Eutrophication is an ecological process that occurs when a water body becomes overly enriched with nutrients, particularly compounds of phosphorus and nitrogen. This enrichment accelerates the growth of cyanobacteria and algae, leading to massive algal blooms. As these blooms die off, aerobic bacteria consume vast amounts of dissolved oxygen to decompose the organic matter,

resulting in severe hypoxia. This degradation kills fish and other aquatic organisms, severely disrupting local biodiversity.

what is the immediate biochemical cause behind the mass mortality of fish and macroinvertebrates during an advanced algal bloom event?

(A) Excessive accumulation of atmospheric nitrogen gas in water molecules

(B) Sharp depletion of dissolved oxygen caused by aerobic decomposition

(C) Direct toxic ingestion of inorganic phosphorus salts by bottom feeders

(D) Rapid reduction in water temperature due to blocked sunlight penetration

Q7. Photochemical smog is a hazardous type of air pollution prevalent in urban industrial basins. It forms when primary pollutants, chiefly nitrogen oxides (NO_x) and volatile organic compounds ($VOCs$), undergo chemical transformations in the presence of solar ultraviolet radiation. This complex sequence of reactions generates secondary pollutants such as ozone (O_3) and peroxyacetyl nitrate (PAN), which act as potent respiratory irritants and can severely stunt agricultural crop yields.

which of the following atmospheric components can be specifically classified as a secondary pollutant formed via solar-driven chemical pathways?

(A) Volatile Organic Compounds ($VOCs$)

(B) Nitric Oxide (NO)

(C) Peroxyacetyl Nitrate (PAN)

(D) Sulfur Dioxide (SO_2)

Q8. In human physiological systems, when a person suffers from a severe deficiency of Vitamin D (Calciferol) over an extended duration, which biological process is most directly impaired, leading to skeletal deformities like rickets?

(A) Synthesis of hemoglobin molecules within red bone marrow

(B) Intestinal absorption of dietary calcium and phosphorus ions

(C) Cellular respiration and ATP generation inside muscle fibers

(D) Renal filtration rate of nitrogenous metabolic wastes

Q9. Leghemoglobin is a critical biochemical component found natively within the specialized root nodules of leguminous agricultural plants. What primary evolutionary function does this molecule serve during the nitrogen fixation process?

(A) It acts as an oxygen scavenger to protect the sensitive nitrogenase enzyme.

(B) It synthesizes complex carbohydrates to nourish symbiotic Rhizobium cells.

(C) It directly cleaves the triple covalent bond of atmospheric nitrogen gas.

(D) It actively pumps excess sodium ions out of the root cortex into outer soil.

Q10. The Panchayati Raj system was constitutionally institutionalized in India via the landmark 73rd Constitutional Amendment Act. Which of the following schedules was specifically added to the Constitution of India to delineate the functional powers and duties of these rural local bodies?

(A) Ninth Schedule

(B) Tenth Schedule

(C) Eleventh Schedule

(D) Twelfth Schedule

Q11. The National Institution for Transforming India (NITI Aayog) replaced the decades-old Planning Commission. Which of the following core organizational philosophies fundamentally distinguishes NITI Aayog's strategy from the earlier Planning Commission models?

(A) Strict top-down centralized command financial planning

(B) A bottom-up approach focusing on cooperative federalism and policy inputs

(C) Direct allocation of statutory central plan expenditures to individual states

(D) Mandatory constitutional legislative jurisdiction over national public sector banks

Q12. The historic "Green Revolution" launched in India during the late 1960s transformed the country's food security matrix. Which of the following combinations of inputs served as the core technological pillars of this agrarian strategy?

(A) Organic bio-fertilizers, dryland farming practices, and indigenous seeds

(B) High-Yielding Variety (HYV) seeds, chemical fertilizers, and assured irrigation infrastructure

(C) Mandatory crop rotation, manual weed eradication, and rainfed cultivation

(D) Genetic engineering of cash crops, cooperative collectivization, and manual tilling

Q13. Under the provisions of the Indian Constitution, which official or body is explicitly vested with the supreme authority to cause the Union Budget (Annual Financial Statement) to be laid before both Houses of Parliament every financial year?

(A) The Union Finance Minister

(B) The Prime Minister of India

(C) The Comptroller and Auditor General

(D) The President of India

Q14. The iconic Kathak classical dance form is deeply intertwined with the cultural heritage of Uttar Pradesh. Which specific princely court or lineage played a monumental historical role in nurturing and patronizing the Lucknow Gharana of Kathak during the 19th century?

(A) Court of Nawab Wajid Ali Shah

(B) Court of Raja Chet Singh of Varanasi

(C) Court of Nawab Asaf-ud-Daula

(D) Court of Bundela rulers of Orchha

Q15. In international multi-sport arenas, the Major Dhyan Chand Khel Ratna Award represents India's highest sporting honor. Who among the following legendary personalities was the inaugural recipient of this prestigious national accolade?

(A) Sachin Tendulkar (Cricket)

(B) Viswanathan Anand (Chess)

(C) Geet Sethi (Billiards)

(D) Abhinav Bindra (Shooting)

Q16. Uttar Pradesh has recently made substantial strides in expanding its transport connectivity infrastructure. Which of the following expressways is currently designated as the longest operational expressway running entirely through the geography of Uttar Pradesh?

(A) Yamuna Expressway

(B) Agra-Lucknow Expressway

(C) Purvanchal Expressway

(D) Bundelkhand Expressway

Q17. The "One District One Product" (ODOP) flagship scheme initiated by the Government of Uttar Pradesh aims to preserve and promote unique local crafts. Which of the following district-to-product mappings is completely accurate under this national framework?

(A) Kannauj — Brassware Handicrafts

(B) Bhadohi — Handmade Carpets and Dari

(C) Moradabad — Attar and Indigenous Perfumes

(D) Aligarh — Wooden Toys and Terracotta

Q18. In computer architecture and memory hierarchy design, how does Cache memory structurally function to optimize the overall processing speed of the Central Processing Unit (CPU)?

(A) It acts as an expansive secondary magnetic backup storage for non-volatile files.

(B) It is a high-speed volatile storage space that holds frequently accessed program data between the CPU and RAM.

(C) It permanently burns core operating system configurations into the silicon motherboard architecture.

(D) It translates human-readable assembly instructions into raw binary machine executable blocks.

Q19. With network architectural designs extending across varying geographical distances, which network classification scheme is specifically optimized to interconnect nodes distributed within a broad metropolitan area or a continuous urban municipal region?

(A) Local Area Network (LAN)

(B) Personal Area Network (PAN)

(C) Metropolitan Area Network (MAN)

(D) Wide Area Network (WAN)

Q20. In internet protocols and data communication paradigms, what primary structural service does a Domain Name System (DNS) server provide to web clients across the World Wide Web?

(A) It encrypts private credit card transactions during secure banking checkouts.

(B) It translates human-friendly alphanumeric domain names into machine-routable numerical IP addresses.

(C) It blocks malicious incoming malware scripts before they infiltrate local firewalls.

(D) It compresses heavy multimedia video feeds to minimize localized bandwidth strain.

Detailed Solutions

Q1.

Solution

Concept:

The Revolt of 1857 was a major turning point in colonial Indian history, spreading rapidly across northern India, particularly through modern-day Uttar Pradesh. Different regions established unique leadership structures to challenge British East India Company rule, asserting localized administrative authority.

Solution:

(a) Nana Sahib assumed active leadership of the anti-British uprising in Kanpur, where he formally proclaimed himself as the Peshwa, reviving the Maratha political legacy.

(b) Begum Hazrat Mahal led the revolutionary forces in Lucknow (Awadh), not Varanasi, and she received notable assistance from local talukdars rather than Kunwar Singh, who focused on Bihar.

(c) Khan Bahadur Khan led the rebellion from Bareilly (Rohilkhand region), establishing an organized administration there, whereas Rani Laxmibai led the historic struggle from Jhansi.

(d) Maulvi Ahmadullah, a key strategist of the revolt, concentrated his rebel military operations primarily around Faizabad and Awadh, rather than the Gorakhpur region.

Final Answer: Nana Sahib assumed leadership of the uprising in Kanpur and proclaimed himself as the Peshwa.

Answer: (B)

Go Back to Question 1

Q2.

Solution

Concept:

The physiography of Uttar Pradesh is structurally divided into distinct transitional geographic zones south of the Shiwalik hills. These belts are characterized by varying soil permeability, rock composition, and distinct drainage patterns formed by Himalayan rivers.

Solution:

(a) The Bhabar tract is a narrow, porous belt running parallel to the Shiwalik foothills, composed of boulders, pebbles, and heavy gravel accumulated by descending rivers.

(b) Due to the highly porous nature of this boulder-strewn terrain, smaller streams and rivers sink and disappear underground, flowing unseen beneath the coarse surface.

(c) South of the Bhabar lies the Terai belt, a marshy, damp zone where these hidden rivers resurface, creating dense forests and rich, swampy alluvial soils.

(d) The Bhangar region comprises older, elevated alluvial plains that sit safely above regular flood levels, whereas the Khadar region consists of newer, fertile low-lying floodplains.

Final Answer: Bhabar Tract

Answer: (D)

Go Back to Question 2

Q3.

Solution

Concept:

During the 6th century BCE, the Indian subcontinent was divided into sixteen powerful territorial states known as the Mahajanapadas. Several of these kingdoms flourished within the fertile plains of modern Uttar Pradesh, developing major political capitals.

Solution:

(a) The Vatsa Mahajanapada was strategically situated around the modern Prayagraj (Allahabad) region, with its powerful capital established at Kausambi along the Yamuna River.

(b) The Kosala Mahajanapada occupied the prosperous Awadh region, containing famous ancient urban centers such as Shravasti and Ayodhya as its administrative cores.

(c) The Malla Mahajanapada was a prominent republican confederacy located further east in the modern Deoria and Kushinagar districts of Uttar Pradesh.

(d) The Panchala Mahajanapada spanned the upper Ganga plains of western Uttar Pradesh, divided into northern and southern halves with capitals at Ahichchhatra and Kampilya.

Final Answer: Vatsa

Answer: (A)

Go Back to Question 3

Q4.

Solution

Concept:

The winter climate of northern India is affected by non-monsoonal weather patterns originating far outside the subcontinent. These atmospheric disturbances travel along high-altitude jet streams to bring vital precipitation to the agricultural plains.

Solution:

(a) Western Disturbances are low-pressure extratropical storms that originate over the Mediterranean Sea region and travel eastward across Southwest Asia to enter India.

(b) Driven by the sub-tropical westerly jet stream, these moisture-laden winds bring essential winter rainfall to the western plains of Uttar Pradesh and northern India.

(c) This winter precipitation is highly beneficial for temperate winter crops, particularly wheat, which forms the backbone of the region's agricultural economy.

(d) Tropical cyclones affect the eastern coast during autumn, while the Southwest Monsoon dominates summer rainfall, and the Northeast Monsoon primarily waters southeastern India.

Final Answer: Western Disturbances originating over the Mediterranean Sea region

Answer: (B)

Go Back to Question 4

Q5.

Solution

Concept:

The southern margins of Uttar Pradesh intersect the mineral-rich Vindhyan rock formations and plateau fringes. Specific administrative districts contain localized sedimentary deposits holding valuable industrial minerals, refractory clays, and metal ores.

Solution:

(a) The Shankargarh region located within the Prayagraj district is historically celebrated for high-grade glass-sand deposits and associated minor minerals like fireclay and low-grade bauxite.

(b) Sonbhadra district is principal for major energy minerals, hosting massive coal fields alongside substantial reserves of limestone essential for regional cement production industries.

(c) Lalitpur district is unique for hosting specialized mineral reserves, including notable deposits of rock phosphate, iron ore, and traces of platinum group elements.

(d) Chitrakoot district features modest mineral deposits but lacks the specialized, intensive commercial extractions of non-plastic fireclay and industrial glass-sand found in Prayagraj.

Final Answer: Shankargarh (Prayagraj)

Answer: (D)

Go Back to Question 5

Q6.

Solution

Concept:

Eutrophication highlights how nutrient overloading disrupts aquatic equilibrium. The influx of chemical elements triggers rapid biological growth, which paradoxically leads to an extreme crisis of life-supporting gases within the aquatic environment.

Solution:

(a) Runoff rich in nitrogen and phosphorus triggers rapid algal blooms, which eventually deplete available resources, leading to the mass death of the algae.

(b) Aerobic bacteria immediately decompose this massive volume of dead organic matter, consuming vast amounts of dissolved oxygen during the process.

(c) This high biological oxygen demand causes severe hypoxia, depleting the dissolved oxygen necessary for the survival of fish and macroinvertebrates.

(d) The passage notes this sharp oxygen depletion as the direct biochemical cause of mortality, rather than nitrogen accumulation, direct salt poisoning, or temperature drops.

Final Answer: Sharp depletion of dissolved oxygen caused by aerobic decomposition

Answer: (B)

Go Back to Question 6

Q7.

Solution

Concept:

Air pollutants are categorized based on their origin. Primary pollutants are emitted directly from sources, while secondary pollutants form in the atmosphere through chemical reactions between primary pollutants and environmental factors like sunlight.

Solution:

(a) Primary pollutants like nitrogen oxides and volatile organic compounds are emitted directly from industrial smoke-stacks and vehicular exhaust pipes into the air.

(b) When exposed to solar ultraviolet radiation, these primary compounds undergo complex photochemical reactions that synthesize entirely new chemical compounds in the atmosphere.

(c) Peroxyacetyl Nitrate and ground-level ozone are classic secondary pollutants produced by these solar-driven chemical pathways, as detailed in the passage text.

(d) Sulfur dioxide and nitric oxide are categorized as primary pollutants because they enter the atmosphere directly from the combustion of fossil fuels.

Final Answer: Peroxyacetyl Nitrate (PAN)

Answer: (C)

Go Back to Question 7

Q8.

Solution

Concept:

Vitamins serve as critical cofactors and regulators for metabolic pathways in human physiology. Fat-soluble vitamins, such as Vitamin D, help regulate mineral homeostasis, which is essential for maintaining skeletal integrity.

Solution:

(a) Vitamin D (Calciferol) acts as a hormone precursor that stimulates the expression of transport proteins within the mucosal cells of the small intestine.

(b) These specialized transport channels are directly responsible for the active intestinal absorption of dietary calcium and phosphorus ions into the bloodstream.

(c) A severe deficiency in Vitamin D impairs mineral absorption, leaving the body unable to properly calcify bone matrices, which leads to rickets.

(d) Hemoglobin synthesis relies on iron, ATP generation depends on cellular respiration, and renal filtration is governed by kidney blood pressure and filtration barriers.

Final Answer: Intestinal absorption of dietary calcium and phosphorus ions

Answer: (B)

Go Back to Question 8

Q9.

Solution

Concept:

Biological nitrogen fixation requires a coordinated biochemical partnership between host plants and symbiotic bacteria. The key enzyme responsible for this conversion is highly sensitive to certain atmospheric gases, requiring a specialized regulatory molecule.

Solution:

(a) The conversion of atmospheric nitrogen into ammonia is catalyzed by the nitrogenase enzyme complex found within symbiotic Rhizobium bacterial cells.

(b) The nitrogenase enzyme is highly sensitive to free oxygen, which irreversibly denatures and inactivates its catalytic centers during chemical fixation.

(c) Leghemoglobin functions as an oxygen scavenger, binding to free oxygen within the root nodule to keep concentrations low enough to protect nitrogenase.

(d) Simultaneously, it delivers bound oxygen to the bacterial electron transport chain, supporting aerobic respiration without compromising the nitrogen-fixing enzymes.

Final Answer: It acts as an oxygen scavenger to protect the sensitive nitrogenase enzyme.

Answer: (A)

Go Back to Question 9

Q10.

Solution

Concept:

The 73rd Constitutional Amendment Act of 1992 institutionalized democratic decentralization in India by establishing rural local self-governing bodies. This amendment added structural provisions to formalize the powers and functions of these local administrations.

Solution:

(a) The 73rd Constitutional Amendment Act added the Eleventh Schedule to the Constitution of India, outlining the functional powers and duties of Panchayats.

(b) This schedule contains twenty-nine functional items, including agriculture, land improvement, minor irrigation, water management, small-scale industries, and rural housing.

(c) The Ninth Schedule protects specific laws from judicial review, while the Tenth Schedule contains anti-defection provisions for lawmakers.

(d) The Twelfth Schedule was added by the 74th Constitutional Amendment Act to define the eighteen functional duties of urban municipal bodies.

Final Answer: Eleventh Schedule

Answer: (C)

Go Back to Question 10

Q11.

Solution

Concept:

The shift from the traditional Planning Commission to NITI Aayog represents a fundamental paradigm change in India's economic governance. It transitions the nation from a centralized command economy model toward an interactive framework that redefines the institutional relationship between the central government and individual states.

Solution:

(a) NITI Aayog operates on the core philosophy of cooperative federalism, recognizing that strong states collectively build a strong nation. This approach replaces the old centralized command model with institutionalized collaboration.

(b) It implements a strategic bottom-up policy framework, ensuring that local development priorities and regional inputs directly inform the formulation of national macroeconomic strategies and developmental goals.

(c) Unlike the older Planning Commission models, NITI Aayog functions purely as a policy think tank. It does not possess any statutory authority to allocate central plan expenditures or state financial resources.

(d) The power to allocate financial resources and state plan funds was moved completely to the Ministry of Finance, eliminating top-down economic dependency and allowing states to plan flexibly.

Final Answer: A bottom-up approach focusing on cooperative federalism and policy inputs

Answer: (B)

Go Back to Question 11

Q12.

Solution

Concept:

The Green Revolution was a targeted agricultural transformation designed to overcome severe food deficits in India during the late 1960s. This modernization replaced traditional agrarian practices with a highly synchronized package of industrial inputs to boost crop yields.

Solution:

(a) The strategy relied heavily on semi-dwarf, High-Yielding Variety seed packages developed by Dr. Norman Borlaug, which were introduced to maximize grain production per hectare.

(b) These specialized high-yielding seeds possessed high chemical responsiveness, requiring substantial inputs of synthetic chemical fertilizers and targeted chemical pesticides to reach their maximum genetic yield potential.

(c) Because these crops were highly sensitive to water stress, they required systematic irrigation infrastructure, making the strategy most successful in areas with assured canal networks and tubewells.

(d) This technological combination created an intensive input-driven cultivation ecosystem that dramatically increased food grain self-sufficiency across primary agricultural zones like Punjab, Haryana, and western Uttar Pradesh.

Final Answer: High-Yielding Variety (HYV) seeds, chemical fertilizers, and assured irrigation infrastructure

Answer: (B)

Go Back to Question 12

Q13.

Solution

Concept:

The presentation of the Union Budget involves a structured constitutional procedure that maintains legislative oversight over public finances. Specific provisions define the legal authority required to present state financial statements to Parliament.

Solution:

(a) Article 112 of the Indian Constitution stipulates that the Annual Financial Statement, commonly known as the Union Budget, must be presented for every financial year.

(b) The Constitution explicitly vests the supreme authority in the President of India to cause this financial statement to be laid before both Houses of Parliament.

(c) Although the Union Finance Minister physically prepares and delivers the budget speech in Parliament, they do so on behalf of and under the direction of the President.

(d) This legal arrangement ensures executive accountability, confirming that no public funds can be raised or spent by the government without formal presidential direction and subsequent parliamentary approval.

Final Answer: The President of India

Answer: (D)

Go Back to Question 13

Q14.

Solution

Concept:

The evolution of classical dance lineages, known as Gharanas, is closely linked to historical patterns of royal patronage. In northern India, the refined development of Kathak was shaped by the cultural tastes of princely courts during the 19th century.

Solution:

(a) The Lucknow Gharana of Kathak was established and refined under the direct patronage of Nawab Wajid Ali Shah, the final ruling monarch of the princely state of Awadh.

(b) The Nawab was a dedicated patron of the arts who integrated expressive romanticism, subtle emotional expressions, and intricate storytelling into the structured footwork of classical Kathak.

(c) Under this courtly influence, legendary dance masters like Thakur Prasadji developed a highly stylized artistic aesthetic that emphasized grace, expressive gestures, and dramatic presentation.

(d) This aristocratic patronage elevated Kathak from a traditional temple storytelling medium into a highly sophisticated, secular classical art form widely celebrated across the Indian subcontinent.

Final Answer: Court of Nawab Wajid Ali Shah

Answer: (A)

Go Back to Question 14

Q15.

Solution

Concept:

The Major Dhyan Chand Khel Ratna Award is India's highest sporting honor, presented annually to athletes for outstanding international performance. The history of this award reflects the recognition of excellence across diverse sporting disciplines.

Solution:

(a) The prestigious sporting accolade was instituted during the 1991-1992 financial year to honor exceptional sports personalities who achieved outstanding success at the highest international levels.

(b) Grandmaster Viswanathan Anand became the inaugural recipient of this national honor following his exceptional performances and pioneering achievements in international chess tournaments.

(c) Other iconic sports figures, including cricket legend Sachin Tendulkar, billiards champion Geet Sethi, and Olympic marksman Abhinav Bindra, received this high honor in subsequent years.

(d) Originally named the Rajiv Gandhi Khel Ratna Award, the accolade was renamed in 2021 to honor Major Dhyan Chand, celebrated as one of hockey's greatest historical icons.

Final Answer: Viswanathan Anand (Chess)

Answer: (B)

Go Back to Question 15

Q16.

Solution

Concept:

The development of high-speed road corridors across Uttar Pradesh has reshaped regional logistics and connectivity. Determining the longest corridor requires analyzing the operational lengths of routes running entirely within the state's borders.

Solution:

(a) The Purvanchal Expressway spans approximately 340.8 kilometers, making it the longest operational expressway running entirely through the geography of Uttar Pradesh.

(b) This major corridor connects Chaudharpur in Lucknow district to Hydaria village in Ghazipur district, improving connectivity across the economically developing eastern districts of the state.

(c) The Agra-Lucknow Expressway extends across a total length of 302 kilometers, while the Bundelkhand Expressway covers 296 kilometers from Chitrakoot to Etawah.

(d) The Yamuna Expressway runs for 165 kilometers, connecting Greater Noida with Agra, serving as an older foundational corridor in the state's highway network.

Final Answer: Purvanchal Expressway

Answer: (C)

Go Back to Question 16

Q17.

Solution

Concept:

The One District One Product (ODOP) program is a specialized industrial initiative designed to revive traditional crafts and promote localized manufacturing across Uttar Pradesh. It maps distinct commercial products to specific districts based on historical expertise.

Solution:

(a) Bhadohi district is globally recognized for its historic hand-knotting traditions, and it is accurately mapped to handmade carpets and woven dari under the ODOP framework.

(b) Kannauj is famous for its traditional hydro-distillation industries, mapping it to traditional attar and essential perfumes rather than brassware handicrafts.

(c) Moradabad is known as the Brass City (Peeztal Nagari) and is mapped to brassware handicrafts, rather than the production of traditional perfumes. Aligarh is associated with precision engineering, locks, and hardware, while the craft of terracotta and clay

Final Answer: Bhadohi — Handmade Carpets and Dari

Answer: (B)

Go Back to Question 17

Q18.

Solution

Concept:

Memory hierarchy design optimizes computing systems by mitigating the speed differential between fast processors and slower main memory. High-speed intermediate storage layers are integrated close to the processor to reduce access latency.

Solution:

(a) Cache memory is a high-speed, volatile semiconductor storage space integrated directly into or close to the microprocessor architecture to minimize latency.

(b) It stores duplicates of frequently used program instructions and data blocks from the slower main Random Access Memory (RAM) for rapid retrieval.

(c) When the central processing unit requests data, it checks the fast cache layer first, reducing wait times and accelerating processing cycles.

(d) Permanent system configurations are stored in non-volatile Read-Only Memory (ROM), while secondary storage media like magnetic drives handle large-scale data backup.

Final Answer: It is a high-speed volatile storage space that holds frequently accessed program data between the CPU and RAM.

Answer: (B)

Go Back to Question 18

Q19.

Solution

Concept:

Telecommunication systems categorize computer networks based on their geographic scope and operational scale. Selecting an architecture depends on matching the distance requirements of the user nodes with the appropriate network type.

Solution:

(a) A Metropolitan Area Network (MAN) is optimized to span an entire municipal region, urban city, or corporate campus, covering distances up to several dozen kilometers.

(b) This network model combines aspects of local and wide-area architectures, using high-speed links like fiber-optic cables to support community data exchanges.

(c) Local Area Networks (LAN) are designed for confined spaces like individual buildings, while Personal Area Networks (PAN) handle short-range personal device connections.

(d) Wide Area Networks (WAN) cover vast geographic distances, connecting cities, states, or countries across continents, with the internet serving as the primary example.

Final Answer: Metropolitan Area Network (MAN)

Answer: (C)

Go Back to Question 19

Q20.

Solution

Concept:

Application layer protocols manage network address translations to make internet communication user-friendly. These distributed directories map human-readable identifiers to the numerical addressing schemes used by routing hardware.

Solution:

(a) The Domain Name System (DNS) server acts as an automated directory for internet infrastructure, resolving alphanumeric web addresses into machine-routable numerical IP addresses.

(b) Network hardware and routers require explicit numerical IP configurations to route data packets across the internet to their proper destinations.

(c) Without this translation layer, users would have to memorize complex numerical strings instead of using simple, memorable domain names to access websites.

(d) The directory does not manage cryptographic financial transactions, compress streaming media data, or operate as a firewall to block network security threats.

Final Answer: It translates human-friendly alphanumeric domain names into machine-routable numerical IP addresses.

Answer: (B)

Go Back to Question 20

Answer Key

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