Agniveer Army GD 8th June 2026 (Shift 1) Memory-Based Paper (Previous Year Paper)

Army GD Agniveer • 2026 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. Where was the final match of the ICC T20 World Cup 2026 played?

(a) Narendra Modi Stadium, Ahmedabad
(b) Wankhede Stadium, Mumbai
(c) Eden Gardens, Kolkata
(d) M. Chinnaswamy Stadium, Bengaluru

Q2. India played its historic 500th Test match against which country?

(a) West indies
(b) Australia
(c) New zealand
(d) England

Q3. In which year was the Indian National Congress (INC) founded?

(a) 1920
(b) 1857
(c) 1885
(d) 1905

Q4. Who along with Mahatma Gandhi supported the Non - cooperation movement?

(a) Shaukat Ali
(b) Muhammad Ali Jinnah
(c) Khalifa
(d) Mansoor Ali

Q5. How many seats are reserved for women candidates in rural and urban local bodies?

(a) two-quarters
(b) One-third
(c) one-fourth
(d) Two-thirds

Q6. Which of the following city is nearest to the Tropic of Cancer?

(a) Bhopal
(b) Jabalpur
(c) Bhuj
(d) Ranchi

Q7. Who is the highest ranked commissioned officers in Indian Navy?

(a) General
(b) Air Chief Marshal
(c) Admiral

(d) Sub-Lieutenant

Q8. Which mountain range acts as a natural boundary between the Northern Plains and the Deccan Plateau?

(a) Satpuras
(b) Aravallis
(c) Himalayas
(d) Vindhyas

Q9. How many types of writs can be issued by the Supreme Court to protect the Fundamental Rights of Indian citizens?

(a) Six
(b) Four
(c) Five
(d) Seven

Q10. Which lake located on the eastern coast of India is an important geographical structure?

(a) Chilka Lake
(b) Vembanad Lake
(c) Dal Lake
(d) Wular Lake

Q11. Palk strait separates India from which country?

(a) Pakistan
(b) Sri Lanka
(c) Maldives
(d) Mauritius

Q12. Which transport aircraft supported the Indian Air Force (IAF) contingent during Exercise Garuda 25?

(a) Boeing 737
(b) C-130J Super Hercules
(c) C-17 Globemaster III
(d) IL-76 Gajraj

Q13. Which of the following words is mentioned in the preamble of the Indian constitution regarding 'Justice'?

(a) Secular
(b) Socialist
(c) Sovereign
(d) Economic

Q14. What method did the Moderates primarily use to achieve their aims?

(a) Boycott and Satyagraha
(b) Passive resistance
(c) Petitions and speeches
(d) Armed rebellion

Q15. Consider the following statements regarding National Maritime Day 2026 and identify the correct one (s):

Statement I: It was celebrated on 5th April 2026 with the theme "Maritime India — Empowering Progress".

Statement II: The day commemorates the 1919 maiden voyage of the SS Loyalty, the first Indian-owned ship, from Mumbai to London.

(a) Statement I is correct but Statement II is incorrect
(b) Statement II is correct but Statement I is incorrect
(c) Both Statement I and Statement II are correct
(d) Both Statement I and Statement II are incorrect

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GENERAL SCIENCE

Q16. In which parts of the plant photosynthesis takes place?

(a) Branches and trunk
(b) Roots and root sap
(c) Leaf and other chloroplast bearing parts
(d) Leaf and stem

Q17. We get energy directly from?

(a) Ocean
(b) The sun
(c) Space
(d) Atmosphere

Q18. The process of conversion of water vapour into liquid is called:

(a) Sublimation
(b) Condensation
(c) Melting
(d) Fusion

Q19. In Goitre, there is swelling of the _____.

(a) Eyes
(b) Jaw's
(c) Stomach
(d) Thyroid gland

Q20. The number of chromosomes become half in a daughter cell by the process of:

(a) binary fission
(b) meiosis
(c) mitosis
(d) amitosis

Q21. Wilting of plants occurs due to excessive

(a) Transpiration
(b) Absorption
(c) Respiration
(d) Guttation

Q22. Which of the following diseases is caused by a parasite?

(a) Malaria
(b) Goitre
(c) Pneumonia
(d) Plague

Q23. Base changes the colour of the red litmus to _____.

(a) blue
(b) purple
(c) pink
(d) yellow

Q24. Which method is commonly used to separate salt from water?

(a) Condensation
(b) Evaporation
(c) Filtration
(d) Sedimentation

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Q25. Naphthalene on complete combustion produces—

(a) CO only
(b) CO_2 and H_2O
(c) SO_2
(d) CH_4

Q26. The most pure form of carbon among the options is–

(a) Anthracite
(b) Wood Charcoal
(c) Graphite
(d) None of the given options

Q27. Why is good nutrition necessary for good health?

(a) Postural deformities
(b) Development
(c) Instant replies
(d) Good habits

Q28. When an empty plastic bottle with an airtight stopper is pushed deeper into a bucket of water, the increasing upward force that resists the downward push is known as _____.

(a) buoyant force (or upthrust)
(b) gravitational force
(c) surface tension
(d) atmospheric pressure

Q29. What are the problems caused by forest fires?

(a) Global warming
(b) Depletion of ozone layer
(c) Degradation of catchment area
(d) All the above

Q30. Potential difference is—

(a) Heat per unit mass
(b) Work done to move 1 C charge
(c) Charge stored per unit area
(d) Energy of electrons

MATHEMATICS

Q31. What should come in place of question mark in the following question?

$4 – 1 + 5 \times 6 \div 2 – 1 = ?$

(a) 33
(b) -3
(c) 17
(d) 30

Q32. A shopkeeper sold a product for Rs. 140 and gained a profit of 10% on it. What is the cost price of the product?

(a) Rs. 1400/9
(b) Rs. 1400/11
(c) Rs. 1500/9
(d) Rs. 1500/11

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Q33. If Rs. 10,000 is invested at a simple interest rate of 5% per annum, what is the interest earned after 3 years?

(a) Rs. 2,500
(b) Rs. 1,500
(c) Rs. 3,000
(d) Rs. 2,000

Q34. In a triangle, the ratio of the angles is 1 : 2 : 3. Find the difference between the greatest and the smallest angle.

(a) 0°
(b) 30°
(c) 60°
(d) 45°

Q35. What is the sum of (3/8) + (5/12) ?

(a) 8/20
(b) 17/24
(c) 19/24
(d) 7/12

Q36. A man spends 72% of his salary and saves Rs. 5,740 per month. What is 10% of his annual salary (in Rs.)?

(a) Rs. 21600
(b) Rs. 24600
(c) Rs. 20500
(d) Rs. 28400

Q37. 75% of 1256 is

(a) 756
(b) 942
(c) 876
(d) 848

Q38. What is the length of a diagonal of a rectangle with length 24 cm and width 10 cm?

(a) 32 cm
(b) 28 cm
(c) 26 cm
(d) 24 cm

Q39. If, $x + y = 7$ and $xy = 10$ then the value of $x^2 + y^2$ is:

(a) 29
(b) 49
(c) 59
(d) 69

Q40. What is the square of 71?

(a) 4909
(b) 5025
(c) 5122
(d) 5041

Q41. A can do a piece of work in 20 days and B can do the same work in 30 days. Find in how many days both can do the work?

(a) 16 days
(b) 14 days
(c) 10 days
(d) 12 days

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Q42. Simplify:

26 + 126 × 3 + 78 × 3

(a) 394
(b) 862
(c) 638
(d) 648

Q43. The sides of a square are in the ratio 2 : 3 : 4 : 5 and its perimeter is 294 cm. Find its smallest side. (in cm)

(a) 43
(b) 42
(c) 41
(d) 44

Q44. Average score of a batsman in 10 innings is 32. How many runs must he score in the 11th innings to raise his average to 34?

(a) 54
(b) 60
(c) 56
(d) 50

Q45. A and B invested Rs. 20,000 and Rs. 30,000, respectively. The profit at the end of the year is Rs. 60,000. What is B's share of the profit?

(a) Rs. 25,000
(b) Rs. 30,000
(c) Rs. 36,000
(d) Rs. 40,000

LOGICAL REASONING

Q46. Among p persons seated in a row, Bob's position is m^(th) from the beginning and n^(th) from the end. Then which option is always true ?

(a) m + n - 1 = p
(b) m + n = p
(c) m + n + 1 = p
(d) m - n + 1 = p

Q47. Which of the following is odd one

(a) UNESCO
(b) BRICS
(c) UNICEF
(d) WHO

Q48. The position of how many letters will remain unchanged, if each of the letters in the word BOUNCED is arranged in alphabetical order?

(a) 3
(b) 4
(c) 2
(d) 1

Q49. In a code language, 'FINGER' is coded as GJOFDQ and 'KIDNEY' is coded as LJEMDX. How will 'MUSCLE' be coded in the same language?

(a) NVRBLD
(b) NVTBKD
(c) NUTCKD
(d) MURBKD

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Q50. Select the correct option that indicates the arrangement of the given words in a logical and meaningful order.

1. Toddler
2. Infant
3. Old
4. Teenage
5. Adult

(a) 3, 5, 1, 4, 2
(b) 1, 2, 4, 5, 3
(c) 2, 1, 4, 5, 3
(d) 3, 5, 4, 2, 1

ANSWER KEY

1	a	2	c	3	c	4	a	5	b	6	d	7	c	8	d	9	c	10	a
11	b	12	c	13	d	14	c	15	c	16	c	17	b	18	b	19	d	20	b
21	a	22	a	23	a	24	b	25	b	26	a	27	b	28	a	29	d	30	b
31	c	32	b	33	b	34	c	35	c	36	b	37	b	38	c	39	a	40	d
41	d	42	c	43	b	44	a	45	c	46	a	47	b	48	d	49	b	50	c

SOLUTIONS

Q1. Answer: (a) Narendra Modi Stadium, Ahmedabad

The correct answer is Narendra Modi Stadium, Ahmedabad.

In News

• The final of the ICC T20 World Cup 2026 was played at Narendra Modi Stadium in Ahmedabad, India.

Key Points

• Final Venue: Narendra Modi Stadium, Ahmedabad.
• It is the largest cricket stadium in the world.
• India played against New Zealand in the final match.
• India won the ICC T20 World Cup 2026 final at this venue.

Additional Information

• Narendra Modi Stadium
• Located in Ahmedabad, Gujarat.
• Seating capacity of over 132,000 spectators.
• Hosts major international cricket matches, including IPL and ICC events.
• T20 Cricket Format
• Each team plays 20 overs per match.
• Matches are fast-paced and usually finished in about 3 hours.
• India vs England Final
• India defeated England to win the 2026 ICC T20 World Cup.
• This match showcased top batting, bowling, and fielding performances.

Q2. Answer: (c) New zealand

The correct answer is New Zealand.

Key Points

• India won the test match against New Zealand by 197-runs in their historic 500th cricket Test in Kanpur.
• On the fifth and final day of the match at Green Park, India bowled out the visitors for 236 in their second innings with a total target of 434.
• Ravichandran Ashwin had taken 6 wickets in the innings.
• Ravinder Jadeja was declared Man of the Match for his fine all-round performance.

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• Jadeja had taken 6 wickets and scored 92 runs in the match.

Additional Information

• India is the 4th country to play 500 Tests in a format that has 10 participants. Others are England (played 976 test matches), Australia (791), and West Indies (517).

• The first-ever Test match was played by India in England on June 25, 1932, under Douglas Jardine. CK Nayudu was the captain of the Indian team.

Q3. Answer: (c) 1885

The correct answer is 1885.

Key Points

• The Indian National Congress (INC) was officially established on December 28, 1885, during its first session.

• The organization was founded by Allan Octavian Hume (A.O. Hume), a retired British officer of the Indian Civil Service, who played a pivotal role in organizing the initial meet.

• The first session was held at Gokuldas Tejpal Sanskrit College in Bombay (now Mumbai), after the venue was shifted from Pune due to a cholera outbreak.

• Womesh Chandra Bonnerjee presided as the first President of the Congress, leading a gathering of 72 delegates from across India.

• The formation of the INC marked the transition of the Indian independence movement from scattered regional protests to a unified national political platform.

Additional Information

• Foundational Context of the Indian National Congress:

• Safety Valve Theory: Some historians suggest that Lord Dufferin, the then Viceroy, encouraged the formation of the INC to act as a safety valve for simmering public discontent against British rule.

• Moderate Phase (1885−1905): During its first two decades, the INC followed Moderate ideologies, focusing on constitutional reforms, petitions, and prayers to influence the British Parliament.

• Key Figures: Early leadership included stalwarts like Dadabhai Naoroji (known as the Grand Old Man of India), Pherozeshah Mehta, Surendranath Banerjee, and Dinshaw Wacha.

• Initial Objectives: The Congress aimed to promote national unity, create a common political program, and demand greater Indian representation in the Legislative Councils and the Civil Services.

• Evolution: Over time, the INC transformed from an elite debating society into a mass-based political party under the influence of Extremist leaders and later, Mahatma Gandhi.

Q4. Answer: (a) Shaukat Ali

The correct answer is Shaukat Ali.

Key Points

• Shaukat Ali, along with his brother Muhammad Ali, was a prominent leader in the Khilafat Movement, which aligned with the Non-Cooperation Movement led by Mahatma Gandhi.

• He was one of the key figures supporting the cause of Hindu-Muslim unity during India's freedom struggle.

• Shaukat Ali actively participated in the Non-Cooperation Movement to oppose British colonial rule.

• He worked closely with Mahatma Gandhi to unite Indians across religious lines for the cause of independence.

Important Points

• The Non-Cooperation Movement (1920-1922) was launched by Mahatma Gandhi in collaboration with leaders like Shaukat Ali to resist British rule through non-violent means.

• The movement encouraged Indians to boycott British goods, resign from government jobs, and refuse to cooperate with the colonial administration.

• The Khilafat Movement, led by Shaukat Ali and Muhammad Ali, merged with the Non-Cooperation Movement to create a unified front against British imperialism.

Additional Information

• Muhammad Ali Jinnah: Jinnah was not associated with the Non-Cooperation Movement. He was a prominent leader of the Indian National Congress but later became the leader of the Muslim League and played a key role in the creation of Pakistan.

• Khalifa: The "Khalifa" (Caliph) refers to the head of the Ottoman Empire and the Islamic world. The Khilafat Movement was launched to support the restoration of the Caliphate, but Khalifa himself was not directly involved in India's Non-Cooperation Movement.

• Mansoor Ali: This name does not have any historical significance in the context of the Non-Cooperation Movement or the Indian independence struggle.

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Q5. Answer: (b) One-third

The correct answer is One-third.

Key Points

• One-third of seats in rural and urban local bodies in India are reserved for women candidates to promote gender equality in governance and decision-making.

• This reservation is implemented under the 73rd Constitutional Amendment Act, 1992 for Panchayati Raj Institutions and the 74th Constitutional Amendment Act, 1992 for urban local bodies.

• The reservation aims to empower women politically and ensure their active participation in grassroots-level democracy.

• Many states have extended this reservation to 50%, further enhancing women's representation in local governance.

• This policy has been instrumental in increasing the number of women leaders in India and addressing issues like women's welfare, education, and health at the local level.

Additional Information

• 73rd and 74th Constitutional Amendments:

• The 73rd Amendment Act established the Panchayati Raj system in rural areas, while the 74th Amendment Act focused on urban local bodies or municipalities.

• Both amendments mandate one-third reservation of seats for women in all tiers of local governance, including direct elections and chairperson positions.

• Role of Women in Local Governance:

• The reservation policy has enabled women to participate in decision-making processes and address issues like education, health, sanitation, and childcare in their communities.

• It has also contributed to the political empowerment of women and helped break traditional gender barriers.

• State-level Initiatives:

• States like Bihar, Rajasthan, Madhya Pradesh, and Uttarakhand have increased women's reservation to 50% in local bodies to further enhance their representation.

• Such initiatives have led to the emergence of strong women leaders at the grassroots level.

• Impact on Governance:

• The inclusion of women in local governance has improved the focus on women-centric issues and ensured better implementation of schemes like Anganwadi services and maternal health programs.

• This has helped bring significant changes in rural and urban development initiatives.

Important Points

• 73rd Amendment Act:

• Introduced in 1992, this act provided constitutional status to Panchayati Raj Institutions.

• It includes provisions for a three-tier system of governance: Gram Panchayat, Panchayat Samiti, and Zila Parishad.

• The act mandates one-third reservation for women and Scheduled Castes/Scheduled Tribes.

• 74th Amendment Act:

• Introduced in 1992, this act aimed to strengthen urban local governance in India.

• It mandates one-third reservation for women in municipalities and chairperson positions.

• The act focuses on decentralized governance and local decision-making in urban areas.

• Challenges:

• Despite the reservation, women often face challenges such as patriarchal attitudes, lack of education, and financial constraints.

• Efforts are needed to provide training and support for women to effectively utilize their positions in local governance.

Q6. Answer: (d) Ranchi

The correct answer is 'Ranchi'

Key Points

• Ranchi:

• The Tropic of Cancer is an imaginary line located at approximately 23.5° north latitude. It passes through several cities in India, including Ranchi.

• Ranchi is the capital city of Jharkhand and is geographically situated closest to the Tropic of Cancer compared to the other options.

• The Tropic of Cancer passes through the northern part of Ranchi, making it one of the prominent cities near this latitude.

• This proximity to the Tropic of Cancer gives Ranchi a tropical climate, characterized by hot summers and moderate winters.

Additional Information

• Bhopal:

• Bhopal, the capital of Madhya Pradesh, is not located close to the Tropic of Cancer. While the Tropic of Cancer passes through Madhya Pradesh, it is farther from Bhopal compared to Ranchi.

• Bhopal has a humid subtropical climate and is known for its historical significance and lakes, but it is geographically less relevant to the Tropic of Cancer.

• Jabalpur:

• Jabalpur is another city in Madhya Pradesh, but it is slightly farther from the Tropic of Cancer than Ranchi.

• Although Madhya Pradesh is crossed by the Tropic of Cancer, Jabalpur is not the nearest city to this latitude.

• Jabalpur is known for its marble rocks and scenic beauty, but its geographical position is less relevant for this question.

• Bhuj:

• Bhuj is located in Gujarat and is closer to the Tropic of Cancer compared to Bhopal and Jabalpur but still not as close as Ranchi.

• The Tropic of Cancer does pass through Gujarat, but Bhuj is situated farther west and not the nearest city to this latitude.

• Bhuj is famous for its cultural heritage and proximity to the Rann of Kutch, but it does not hold geographical prominence regarding the Tropic of Cancer.

Q7. Answer: (c) Admiral

The correct answer is Admiral.

Key Points

• The Indian Navy is the naval branch of the Indian Armed Forces.

• The President of India is the Supreme Commander of the Indian Navy.

• Admiral is the highest-ranked commissioned officer in the Indian Navy.

• The Indian Navy was founded on 26 January 1950.

• Its motto is "Sam no Varunah" meaning: “Be auspicious unto us Oh Varuna”.

• The headquarters of the Indian Navy is in New Delhi.

• Every year Navy Day is celebrated on 4th December.

• The current Chief of the Naval Staff is Admiral Dinesh K Tripathi (May 2024)

• The Vice Chief of the Naval Staff is Admiral Krishna Swaminathan (May 2024)

Additional Information

• Indian Navy officer rankings in ascending order:

• Midshipman

• Sub Lieutenant

• Lieutenant

• Lieutenant Commander

• Captain Commander

• Commodore

• Rear Admiral

• Vice Admiral

• Admiral.

Image of Logo of Indian Navy

Q8. Answer: (d) Vindhyas

The Correct answer is Vindhyas.

Key Points

• The Vindhya mountain range acts as a natural boundary between the Northern Plains and the Deccan Plateau.

• The range is located in Central India and runs across the states of Madhya Pradesh, Uttar Pradesh, and Gujarat.

• It is considered one of the important geological formations in the Indian subcontinent.

• The Vindhya range is known for its moderate elevation, compared to the towering Himalayas.

• It plays a significant role in climatic and ecological division between the north and south regions of India.

• The Vindhya range is a source of several rivers, including Chambal, Betwa, and Ken rivers.

• It is culturally significant and is often mentioned in Indian mythology and history.

Additional Information

• Satpuras

• The Satpura Range is located in central India and runs parallel to the Vindhya range.

• It acts as a dividing line between the northern and southern regions but does not specifically separate the Northern Plains from

the Deccan Plateau.

• The Satpura range is known for its dense forests and biodiversity.

• It is home to several important wildlife reserves, including the Pachmarhi Biosphere Reserve.

• Aravallis

• The Aravalli Range is one of the oldest mountain ranges in India, located in the northwestern part of the country.

• It runs across the states of Rajasthan, Haryana, and Gujarat.

• The range is known for its rich mineral resources and historical significance, but it does not act as a boundary between the Northern Plains and the Deccan Plateau.

• Important cities like Udaipur and Jaipur are located in the Aravalli region.

• Himalayas

• The Himalayas are the youngest and tallest mountain range in the world.

• They are located in the northern part of India and form a natural boundary between the Indian subcontinent and Central Asia.

• The Himalayas separate the Indian Plains from the Tibetan Plateau, not the Deccan Plateau.

• They are the source of major rivers like the Ganga, Yamuna, and Brahmaputra.

Q9. Answer: (c) Five

The correct answer is Five

Key Points

• Five types of writs can be issued by the Supreme Court to protect the Fundamental Rights of Indian citizens.

• These writs are: Habeas Corpus, Mandamus, Prohibition, Quo-Warranto, and Certiorari.

• The power to issue these writs is granted to the Supreme Court under Article 32 of the Constitution of India.

• The writ of Habeas Corpus is issued to produce a person who has been detained unlawfully before the court and to set them free if such detention is found illegal.

• The writ of Mandamus commands a public authority to perform a public duty.

• The writ of Prohibition is issued by a higher court to a lower court to prevent it from exceeding its jurisdiction.

• The writ of Quo-Warranto is issued to prevent a person from holding a public office to which they are not entitled.

• The writ of Certiorari is issued to transfer a case from a lower court to a higher court for review.

Additional Information

• Article 32 of the Indian Constitution is known as the "Heart and Soul" of the Constitution by Dr. B.R. Ambedkar.

• It provides the right to individuals to move the Supreme Court directly in case of violation of Fundamental Rights.

• The Supreme Court has the power to issue writs not only for Fundamental Rights but also for other purposes under Article 139 of the Constitution.

• Similarly, the High Courts have the power to issue writs under Article 226 of the Constitution.

• The writ jurisdiction of the High Courts is broader as it is not confined to the protection of Fundamental Rights alone.

Q10. Answer: (a) Chilka Lake

The correct answer is Chilka Lake.

Key Points

• Chilka Lake is Asia's largest brackish water lagoon, located on the eastern coast of India, in the state of Odisha.

• It spans an area of about 1,100 square kilometers and is separated from the Bay of Bengal by a narrow strip of sand.

• The lake is a hotspot for biodiversity and is home to over 160 species of birds, including migratory species from as far as Siberia and the Caspian region.

• Chilka Lake is famous for its rich ecosystem, including fish, crabs, prawns, and other aquatic life, making it an important economic resource for fishermen in the region.

• The lake is also a significant tourist destination, attracting visitors for its scenic beauty, bird-watching opportunities, and the presence of the endangered Irrawaddy dolphins.

Additional Information

• Vembanad Lake:

• It is the longest lake in India and the largest lake in the state of Kerala.

• Vembanad is known for its backwaters, which are a major tourist attraction in Kerala.

• The annual Nehru Trophy Boat Race is conducted here, adding to its fame.

• Dal Lake:

• Located in Srinagar, Jammu and Kashmir, it is often referred to as the "Jewel in the crown of Kashmir."

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• Dal Lake is famous for its houseboats, shikaras (traditional wooden boats), and floating gardens.
• It plays a vital role in the region's tourism and economy.
• Wular Lake:
• Wular Lake, located in Jammu and Kashmir, is one of the largest freshwater lakes in Asia.
• It is fed by the Jhelum River and serves as an important habitat for migratory birds and aquatic life.
• The lake plays a crucial role in flood control and is a significant source of fish for the local population.

Q11. Answer: (b) Sri Lanka

The correct answer is Sri Lanka

Key Points

• Palk Strait:
• The Palk Strait is a narrow stretch of water that separates India from Sri Lanka.
• It connects the Bay of Bengal in the northeast with the Gulf of Mannar in the southwest.
• The strait is named after Robert Palk, who was a governor of Madras (now Chennai) during the British colonial period.
• The strait is approximately 40 to 85 miles (64 to 137 kilometers) wide.
• It is a crucial maritime route for the movement of goods and people between the two countries.
• The shallow waters of the Palk Strait are dotted with several small islands and shoals, including the notable Adam's Bridge (also known as Ram Setu).

Additional Information

• Pakistan:
• Pakistan is located to the northwest of India and does not share a maritime boundary with it.
• The two countries are separated by a land border and share the Arabian Sea to their south.
• They do not have any straits or narrow sea passages separating them.
• Maldives:
• The Maldives is an island nation situated in the Indian Ocean, southwest of India and Sri Lanka.
• It does not share any direct maritime boundary with India.
• The Maldives is separated from India by the Lakshadweep Sea, not by a strait like the Palk Strait.
• Mauritius:
• Mauritius is an island nation located in the Indian Ocean, far to the southeast of India.
• It is situated about 2,000 kilometers (1,200 miles) off the southeast coast of the African continent.
• Mauritius does not share any maritime boundary with India.

Important Points

• The Palk Strait is an important geographical feature that has historical and cultural significance for both India and Sri Lanka.
• Adam’s Bridge, a chain of natural limestone shoals between Pamban Island (also known as Rameswaram Island) off the southeastern coast of Tamil Nadu, India, and Mannar Island, off the northwestern coast of Sri Lanka, is associated with the Palk Strait.
• The Palk Strait is shallow, making navigation difficult for large ships, which is why it is mostly used by smaller vessels.

Q12. Answer: (c) C-17 Globemaster III

The correct answer is C-17 Globemaster III.

Key Points

• The C-17 Globemaster III is the premier strategic heavy-lift transport aircraft of the Indian Air Force (IAF), which played a vital role in supporting the IAF contingent during Exercise Garuda 25.
• Exercise Garuda is a bilateral air exercise conducted between the Indian Air Force (IAF) and the French Air and Space Force (FASF). The 2025 iteration continues the tradition of enhancing interoperability and operational synergy between the two nations.
• The C-17 Globemaster III was responsible for the logistical movement of the contingent, including the transportation of ground support equipment, technical personnel, and essential spares required to maintain the fighter fleet during the exercise.
• This aircraft is manufactured by Boeing in the United States and is capable of carrying a maximum payload of approximately 77,500 kg. Its ability to operate from short and semi-prepared runways makes it indispensable for rapid global deployments.
• During such international exercises, the C-17 ensures that the IAF can sustain long-duration operations far from home bases, demonstrating India's strategic reach and expeditionary capabilities. Hence, the statement regarding its support in Exercise Garuda is correct.

Additional Information

• C-130J Super Hercules:

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• Produced by Lockheed Martin (USA), this is a tactical transport aircraft used by the IAF for special operations and short-range airlift.

• While it also supports exercises, its primary role is paratrooping, search and rescue, and humanitarian assistance in rugged terrains like Ladakh and Arunachal Pradesh.

• IL-76 Gajraj:

• The Ilyushin Il-76, known as Gajraj in India, is a Soviet-era heavy transport aircraft.

• It has been the backbone of IAF heavy lift for decades since its induction in the 1980s, though it is gradually being supplemented and replaced in high-intensity missions by the C-17.

• Boeing 737:

• The IAF operates a small fleet of Boeing 737s primarily for VIP transport (Air HQ Communication Squadron).

• These aircraft are not typically used for carrying combat support equipment or large contingents for tactical international exercises like Garuda.

• Exercise Garuda History:

• The first edition of Exercise Garuda was held in 2003 at Gwalior, India.

• The exercise alternates between India and France, providing a platform for pilots to fly Rafale, Su-30 MKI, and Tejas aircraft in complex Large Force Engagement (LFE) scenarios.

Important Points

• The Indian Air Force currently operates a fleet of 11 C-17 Globemaster III aircraft, based at Hindon Air Force Station under the No. 81 Squadron (Skylords).

• Strategic airlift is critical for India's defense posture, allowing for the quick movement of T-90 tanks, infantry combat vehicles, and large troops to high-altitude areas during standoffs.

• The C-17 has a range of approximately 4,480 km with a full load, which can be extended through aerial refueling, though it primarily relies on its massive internal fuel capacity for transcontinental flights.

• The involvement of such heavy lifters in Exercise Garuda underscores the logistical complexity of modern bilateral defense cooperation between New Delhi and Paris.

Q13. Answer: (d) Economic

The correct answer is Economic.

Key Points

• The Preamble of the Indian Constitution mentions various ideals that the nation strives to achieve, including Justice.

• Justice in the Preamble is categorized into three forms: Social, Economic, and Political, reflecting the core objectives of the Indian Constitution.

• Social justice aims to eliminate inequalities among individuals in society and ensure equal treatment for all, regardless of caste, gender, or religion.

• Economic justice ensures that wealth and resources are distributed fairly and that there is no exploitation of the economically weaker sections of society.

• Political justice guarantees equal participation in the democratic process, ensuring every citizen has an equal voice in governance.

• Among the listed options, Economic specifically refers to one of the forms of Justice explicitly mentioned in the Preamble. Hence, this is the correct answer.

Additional Information

• The Preamble to the Indian Constitution:

• The Preamble serves as the introductory statement of the Constitution, highlighting the guiding principles and objectives of the nation.

• It was adopted on 26th November 1949 and came into effect on 26th January 1950.

• The Preamble declares India as a Sovereign, Socialist, Secular, Democratic Republic.

• It guarantees citizens Justice, Liberty, Equality, and Fraternity.

• The ideals mentioned in the Preamble were inspired by the Objectives Resolution proposed by Jawaharlal Nehru on December 13, 1946

• Forms of Justice in the Preamble:

• Social Justice: Elimination of social discrimination and promotion of equality among all citizens.

• Economic Justice: Fair distribution of wealth and opportunities, ensuring protection against economic exploitation.

• Political Justice: Equal rights to participate in the political process and governance.

• Key Features of the Preamble:

• The Preamble is considered the spirit of the Constitution and provides the framework for its interpretation.

• It underwent an amendment during the 42nd Constitutional Amendment Act, 1976, which added the terms Socialist, Secular, and Integrity.

• The Preamble is non-justiciable, meaning its provisions cannot be enforced in a court of law.

• Important Terms in the Preamble:

• Sovereign: India has the supreme authority to make decisions without external interference.

• Socialist: The government strives for social and economic equality.

• Secular: India does not promote any particular religion and treats all religions equally.

• Democratic: Power lies with the people, who elect their representatives.

• Republic: India has an elected head of state (the President) rather than a monarch.

Important Points

• The 42nd Amendment (1976):

• Known as the Mini Constitution, this amendment added the words Socialist, Secular, and Integrity to the Preamble.

• It reinforced the goal of achieving social and economic justice for all citizens.

• Dr. B.R. Ambedkar's Contribution:

• Dr. Ambedkar, the Father of the Indian Constitution, emphasized Justice as a cornerstone for the nation's development.

• He advocated for the protection of marginalized communities and the elimination of social inequalities.

• Judicial Interpretation:

• The Supreme Court of India has described the Preamble as the key to the Constitution and an essential guide to its interpretation.

• In the landmark case of Keshavananda Bharati v. State of Kerala (1973), the Preamble was upheld as part of the Constitution's basic structure.

Q14. Answer: (c) Petitions and speeches

The correct answer is Petitions and speeches.

Key Points

• The Moderates, also known as the Early Nationalists, were a group of political leaders in India who dominated the Indian National Congress (INC) from its inception in 1885 until 1905.

• Their political strategy was characterized by Constitutional Agitation, which focused on seeking administrative and economic reforms within the legal framework of the British Empire.

• The Moderates primarily used the method of Petitions and speeches to convey their demands, believing that the British authorities were fundamentally just and would address Indian grievances if presented with facts and logic. Hence, this is the correct answer.

• They followed the policy of the 3Ps, which stood for Prayer, Petition, and Protest. This involved sending formal Memorandums, holding annual Resolutions, and organizing Public Meetings to educate the masses and the British Parliament.

• Methods such as Boycott and Satyagraha were not part of the Moderate arsenal; Boycott became a major tool during the Swadeshi Movement (led by Extremists) after 1905, and Satyagraha was later introduced by Mahatma Gandhi. Hence, statement 1 is incorrect.

• Passive resistance was a strategy advocated by Extremist leaders like Aurobindo Ghosh and Bal Gangadhar Tilak to non-violently defy British authority, which the Moderates considered too radical. Hence, statement 2 is incorrect.

• Armed rebellion involved the use of force and violence to overthrow the government, a path taken by Revolutionary Nationalists like Hindustan Socialist Republican Association (HSRA), which was entirely opposed by the Moderates. Hence, statement 4 is incorrect.

Additional Information

• Prominent Moderate Leaders:

• Key figures of this phase included Dadabhai Naoroji (known as the Grand Old Man of India), Gopal Krishna Gokhale, Pherozeshah Mehta, Surendranath Banerjee, and Justice M.G. Ranade.

• Dadabhai Naoroji was the first Indian to be elected to the British House of Commons, where he worked to highlight Indian issues.

• The Economic Critique:

• One of the most significant contributions of the Moderates was the Drain of Wealth theory.

• Dadabhai Naoroji, in his book Poverty and Un-British Rule in India, explained how the British were systematically siphoning India's wealth to England, leading to widespread poverty.

• Achievements of the Moderates:

• Their consistent agitation through Constitutional means led to the Indian Councils Act of 1892, which expanded the legislative councils and introduced the concept of indirect elections.

• They successfully created a national awakening and a sense of unity among diverse groups of Indians.

• Decline and Transition:

• The Moderates lost their dominance after the Partition of Bengal in 1905 by Lord Curzon, as the younger generation felt that their 'mendicant' policy of Petitions was ineffective.

• This led to the rise of the Extremists (Lal-Bal-Pal), who demanded Swaraj (Self-Rule) and utilized more assertive methods like Swadeshi and National Education.

Important Points

• The Indian National Congress was founded in December 1885 at Gokuldas Tejpal Sanskrit College in Bombay, with W.C. Bonnerjee as its first President.

• The Moderates believed in maintaining a strong link with Britain, as they felt India needed time to develop its democratic institutions under British guidance.

• They demanded the Indianization of the Civil Services and the separation of the Judiciary from the Executive to ensure fair governance.

• While their methods were criticized as being limited to the Urban Elite, they laid the essential foundation for the larger mass movements that followed in the 20th century.

Q15. Answer: (c) Both Statement I and Statement II are correct

The correct answer is Both Statement I and Statement II are correct.

In News

• India celebrated its 63rd National Maritime Day on April 5, 2026, marking a significant milestone in the nation's shipping history.

Key Points

• Statement I is correct: The 2026 theme "Maritime India — Empowering Progress" emphasizes the sector's role in driving economic growth and national development.

• Statement II is correct: National Maritime Day is observed every year on April 5 to commemorate the maiden voyage of the SS Loyalty in 1919, which sailed from Mumbai to London.

• The SS Loyalty was the first ship of the Indian-owned Scindia Steam Navigation Company, representing a break from British maritime monopoly.

• National Maritime Day Facts

• First celebration - April 5, 1964

• 2026 Edition - 63rd National Maritime Day

• Significance - Recognizes the bravery of seafarers and the strategic importance of the maritime industry.

Additional Information

• Scindia Steam Navigation Company

• Founded by Walchand Hirachand and Narottam Morarjee, it was the first large-scale Indian-owned shipping venture.

• SS Loyalty

• Originally a hospital ship, it was converted for commercial use to demonstrate Indian capability in international waters.

• Maritime Milestones

• India is among the world's leading suppliers of trained seafarers, contributing significantly to the global blue economy.

Q16. Answer: (c) Leaf and other chloroplast bearing parts

The correct answer is Leaf and other chloroplast bearing parts

Key Points

• Photosynthesis primarily occurs in the leaves of the plant.

• The process involves the conversion of light energy into chemical energy by chloroplasts, which contain the pigment chlorophyll.

• Other parts of the plant that contain chloroplasts, such as certain parts of the stem, can also perform photosynthesis.

• The main function of leaves is to produce food for the plant through photosynthesis, providing energy for growth and development.

• Chloroplasts are abundant in mesophyll cells of the leaves, where the photosynthesis process is most efficient.

Additional Information

• Photosynthesis can be summarized by the equation: $6CO_2 + 6H_2O$ + light energy → $C_6H_{12}O_6 + 6O_2$.

• The process consists of two main stages: light-dependent reactions and the Calvin cycle (light-independent reactions).

• Light-dependent reactions occur in the thylakoid membranes of the chloroplasts and generate ATP and NADPH.

• The Calvin cycle takes place in the stroma of the chloroplasts and uses ATP and NADPH to synthesize organic molecules from carbon dioxide.

• Plants also have specialized cells called guard cells that regulate gas exchange and water loss by opening and closing the

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stomata on the leaf surface.

Q17. Answer: (b) The sun

The correct answer is The sun.

Key Points

• All plants require a certain amount of sunlight to make food and survive, through a process called photosynthesis.
• This organic matter contains energy that was first produced by the sun.
• Humans get our energy from the food we eat, and all of that food is derived from the energy of the sun.
• Solar energy is a renewable energy source.
• The sun generates energy from a process called nuclear fusion.
• Our body also creates vitamin D from direct sunlight on our skin when we're outdoors.

Additional Information

• Corona is a luminous envelope of plasma that surrounds the Sun.
• The photosphere temperature of the Sun's surface is 6000 oC.
• It takes 8 minutes to reach the light of the Sun to Earth.
• It takes 1.3 seconds to reach the light of the Moon to Earth.
• Sun generates its energy by nuclear fusion of hydrogen nuclei into helium.

Q18. Answer: (b) Condensation

Explanation:

States of Matter and Phase Change: Substances change their states/phases with the change in temperature.

Several processes of phase change:

• Melting: It occurs when a substance changes from a solid to a liquid.
• Vaporization: It occurs when a substance changes from a liquid to a gas.
• Condensation: It occurs when a substance changes from a vapor to a liquid.
• Sublimation: It occurs when a substance changes from a solid into a gas.
• Deposition: It occurs when a substance converts directly from its gaseous state to a solid state.
• Fusion: It implies the conversion from solid-state to liquid (melting) as well as from liquid-state to solid-state (freezing).

Additional Information

• Evaporation vs Vaporization: Evaporation is a specific type of vaporization, where phase change (liquid-> gas) occurs only at the surface of the liquid.
• Common examples of Sublimation
• Dry ice (a frozen form of carbon dioxide)
• Naphthalene (organic compound).

Q19. Answer: (d) Thyroid gland

In Goitre, there is swelling of the thyroid gland.

• A goitre is a swelling in the neck caused due to an enlarged thyroid gland.
• Around 90% of goitre cases are caused due to iodine deficiency.
• A goitre is linked with hypothyroidism or hyperthyroidism.

Q20. Answer: (b) meiosis

The correct answer is meiosis.

Key Points

• Meiosis is a type of cell division that reduces the chromosome number by half, resulting in four daughter cells, each with half the number of chromosomes of the parent cell.
• This process is essential for sexual reproduction and occurs in the germ cells to produce gametes (sperm and eggs).
• Meiosis involves two sequential divisions: meiosis I and meiosis II.
• During meiosis I, homologous chromosomes are separated, and during meiosis II, sister chromatids are separated.
• The reduction in chromosome number ensures that when fertilization occurs, the resulting zygote has the correct diploid number of chromosomes.

Additional Information

• Binary Fission
• Binary fission is a form of asexual reproduction commonly found in prokaryotes such as bacteria.

• During binary fission, the parent cell divides into two genetically identical daughter cells.
• Mitosis
• Mitosis is a type of cell division that results in two daughter cells, each with the same number of chromosomes as the parent cell.
• It is involved in growth, repair, and asexual reproduction in multicellular organisms.
• Amitosis
• Amitosis is a direct method of cell division where the nucleus and cytoplasm divide without the formation of chromosomes.
• This process is less common and occurs in some single-celled organisms and certain tissues.

Q21. Answer: (a) Transpiration

Explanation:
• Wilting is the loss of rigidity of non - wood parts of the plant.
• The rate of loss of water from the plant is greater than the absorption of water in the plant, this process is called transpiration.

Additional Information
• Absorption: The process of intake of water and minerals by plants through their roots is called absorption of water.
• Guttation is the process of loss of water in the form of droplets from the leaf margins or uninjured regions. It occurs when transpiration is low and water absorption is high i.e. the root pressure is high.
• Cellular respiration is a set of metabolic reactions and processes that take place in the cells of organisms to convert chemical energy from oxygen molecules or nutrients into adenosine triphosphate (ATP), and then release waste products.

Q22. Answer: (a) Malaria

The correct answer is Malaria.

Key Points
• Malaria is caused by a parasite that usually infects a certain type of mosquito that feeds on humans.
• The parasites, spread by the female Anopheles mosquito, deposit sporozoites in the skin of the human host.
• World Malaria Day 2020 is being celebrated by the World Health Organization (WHO) on 25 April with the theme 'Zero Malaria Start with Me'.
• Chloroquine is a drug used to prevent and treat malaria, primarily in areas where malaria is sensitive to its effects.

Additional Information
• Goiter is a swelling of the thyroid gland that causes a lump in the front of the neck.
• The lump will move up and down when you swallow.
• The thyroid gland is a small butterfly-shaped gland in the neck, just in front of the windpipe (trachea).
• Pneumonia is an infection that inflames the air sacs in one or both lungs.
• The air sacs may fill with fluid or pus (purulent material), causing cough with phlegm or pus, fever, chills, and difficulty breathing.
• A variety of organisms, including bacteria, viruses, and fungi, can cause pneumonia.
• Plague is a disease that affects humans and other mammals.
• It is caused by the bacterium, Yersinia pestis.
• Humans usually get plague after being bitten by a rodent flea that is carrying the plague bacterium or by handling an animal infected with plague.

Q23. Answer: (a) blue

The correct answer is Blue.
• The colour of red litmus paper turns blue when it reacts with base.

Key Points
• The base is a chemical substance that donates electrons, accepts protons, or releases hydroxide (OH^-) ions in aqueous solution.
• It tastes bitter and changes the colour of red litmus into blue. It reacts with acids to form salts.
• Phenolphthalein changes from colourless to pink in the presence of a basic solution.
• Litmus paper is a paper that is treated with a specific indicator which is a mixture of 10 to 15 natural dyes obtained from lichens.
• It is helpful in determining whether the solution is acidic or basic.

Additional Information

Solution	Red Litmus	Blue Litmus
Acidic	stays red	turns red

Basic	turns blue	stays blue
Alkaline	turns blue	stays blue

Q24. Answer: (b) Evaporation

Evaporation:

• Evaporation is the process by which a liquid turns into a gas at any temperature.

• Evaporation is an essential part of the water cycle.

• Evaporation of water occurs when the surface of the liquid is exposed, allowing molecules to escape and form water vapor; this vapor can then rise up and form clouds. With sufficient energy, the liquid will turn into vapor.

• The salt can be separated from the sea water by a simple process of evaporation.

Separation of salt from water:

• Pour the salt water into a shallow pan.

• As the water evaporates, the salt will remain behind.

Hence, we can conclude that Evaporation method is commonly used to separate salt from water.

Additional Information

• Condensation is the process where water vapor becomes liquid.

• Filtration, the process in which solid particles in a liquid or gaseous fluid are removed by the use of a filter medium

• Sedimentation is the process of allowing particles in suspension in water to settle out of the suspension

Q25. Answer: (b) CO2 and H2O

The correct answer is CO2 and H2O.

Key Points

• Naphthalene is a hydrocarbon, specifically a polycyclic aromatic hydrocarbon (PAH), with the molecular formula C10H8.

• Upon complete combustion, hydrocarbons react with oxygen to produce carbon dioxide (CO2) and water (H2O). This is a fundamental chemical reaction governing the combustion of organic compounds.

• Complete combustion implies that there is sufficient oxygen to ensure that all the carbon atoms in the fuel are oxidized to CO2 and all hydrogen atoms are oxidized to H2O. Hence, statement 2 is correct.

• During the combustion process, carbon monoxide (CO) is produced only when there is incomplete combustion due to insufficient oxygen. Therefore, CO is not produced during complete combustion. Hence, statement 1 is incorrect.

• Naphthalene does not contain sulfur, so its combustion cannot produce sulfur dioxide (SO2). Hence, statement 3 is incorrect.

• Methane (CH4) is not a product of naphthalene combustion; it is a separate hydrocarbon. Naphthalene cannot produce methane during combustion. Hence, statement 4 is incorrect.

• Hence, the correct answer is CO2 and H2O.

Additional Information

• Complete Combustion Reaction:

• The general chemical equation for the combustion of hydrocarbons like naphthalene is:

$C_{10}H_8 + 12O_2 \rightarrow 10CO_2 + 4H_2O$

• This equation shows that naphthalene reacts with oxygen (O2) to produce carbon dioxide (CO2) and water vapor (H2O). Heat energy is also released during this exothermic reaction.

• Characteristics of Naphthalene:

• Physical Properties: Naphthalene is a white, crystalline substance with a distinctive smell. It is used widely in mothballs and as a precursor in the chemical industry.

• Chemical Properties: It is a stable compound but burns readily in the presence of oxygen, releasing energy.

• Uses: Naphthalene is used in pesticides, dyes, and plastics. It is also a byproduct of coal tar distillation.

• Incomplete Combustion:

• Incomplete combustion occurs when there is insufficient oxygen. This leads to the formation of carbon monoxide (CO), which is toxic.

• Incomplete combustion also produces soot (unburnt carbon particles), causing environmental pollution.

Important Points

• Environmental Impact:

• Combustion of hydrocarbons like naphthalene contributes to carbon dioxide emissions, which are a leading cause of global warming.

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• Proper combustion with sufficient oxygen minimizes pollutants like carbon monoxide and particulate matter.
• Applications of Naphthalene:
• Used in the manufacture of dyes, resins, and lubricants.
• Naphthalene derivatives are used in pharmaceuticals and organic synthesis.

Q26. Answer: (a) Anthracite

The correct answer is Anthracite.

Key Points

• Anthracite is the purest form of carbon among all types of coal.
• It contains a very high percentage of carbon, ranging between 86% to 98%, making it the cleanest and most efficient type of coal.
• Anthracite has the highest energy content compared to other forms of coal, such as bituminous or lignite, due to its high carbon concentration.
• It is characterized by its hardness, metallic sheen, and high density, which makes it burn with minimal smoke and pollutants.
• Anthracite is commonly used for industrial purposes, heating, and as a filtration medium due to its purity and efficiency.

Additional Information

• Wood Charcoal:
• Wood charcoal is produced by the carbonization of wood in the absence of air.
• It contains lower carbon content (approximately 70%-80%) compared to anthracite.
• It is primarily used for domestic heating, cooking, and as a reducing agent in metallurgy.
• Graphite:
• Graphite is an allotropic form of carbon with a crystalline structure.
• Unlike anthracite, graphite is not a form of coal; it is mainly used in lubricants, pencils, and electrodes.
• It has excellent electrical conductivity and is widely employed in electrochemical applications.
• Coal Classification:
• Coal types are classified based on their carbon content, moisture level, and energy output.
• Anthracite is the highest grade of coal, followed by bituminous coal, sub-bituminous coal, and lignite.
• Lignite contains the lowest carbon content and is the least efficient for energy production.
• Applications of Anthracite:
• Used in power generation and industrial heating due to its high energy output.
• Often employed in water filtration systems because of its purity and density.
• Anthracite is also utilized in steel manufacturing and other metallurgical processes.

Important Points

• Formation of Anthracite:
• Anthracite forms over millions of years under intense pressure and high temperatures in geological processes.
• It is mainly found in regions like Pennsylvania (USA), South Wales (UK), and parts of China.
• Environmental Benefits:
• Due to its high carbon content, anthracite burns cleanly with minimal smoke, making it environmentally friendly compared to other coal types.
• It contributes less to air pollution and is considered a high-efficiency fuel.

Q27. Answer: (b) Development

Nutrition is defined as the science of food and its relationship to health. It is concerned chiefly with the part played by nutrients in growth and development of the body.

In other words, Nutrition is the science deals with foods and its uses by the body

Good nutrition stands for the supply of essential nutrients adequate quantities.

Functions of Nutritious food

• It creates tissues
• It repairs the damaged tissues
• It affects chemical change in the body
• It created heat in the body
• It provides energy to the body
• It creates a fibre while the other gets destroyed

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• It accumulates energy in the body

Important Point:

Postural deformities imply not having proper alignment of body parts. An individual who has postural deformities cannot perform his work efficiently. Some postural deformities are kyphosis, flat foot, knock knee etc.

Q28. Answer: (a) buoyant force (or upthrust)

The correct answer is buoyant force (or upthrust).

Key Points

• Buoyant force, also known as upthrust, is the upward force exerted by a fluid on an object immersed in it. This force opposes the downward gravitational pull.

• When an empty plastic bottle with an airtight stopper is pushed deeper into water, the volume of displaced water increases, leading to a stronger buoyant force.

• The buoyant force increases with depth due to the greater pressure exerted by the surrounding water. This is governed by the principle of fluid pressure increasing with depth.

• Archimedes' Principle states that the buoyant force acting on an object is equal to the weight of the fluid displaced by the object. This principle explains the resistance felt when pushing the bottle deeper.

• This phenomenon is applicable to all fluids, including liquids and gases, and is crucial in understanding the behavior of objects in water or air.

Additional Information

• Characteristics of Buoyant Force:

• It acts vertically upward, counteracting the weight of the object.

• The magnitude of the buoyant force depends on the density of the fluid and the volume of the object submerged.

• Objects with densities less than the fluid will float, while denser objects sink.

• Gravitational Force:

• Gravitational force is the downward pull exerted by the Earth on any object.

• It is proportional to the mass of the object and acts opposite to the buoyant force.

• In this case, gravitational force is not the correct explanation for the resistance experienced while pushing the bottle deeper.

• Surface Tension:

• Surface tension is the property of liquid surfaces that causes them to behave like an elastic sheet.

• It is responsible for phenomena such as water droplets forming spherical shapes but does not directly explain the upward force resisting the downward push of the bottle.

• Atmospheric Pressure:

• Atmospheric pressure is the force exerted by the weight of the air above a surface.

• It does not significantly affect the buoyant force experienced by the bottle underwater.

Important Points

• Archimedes' Principle: This principle is fundamental in understanding buoyancy and explains why objects float or sink in fluids.

• Applications: Buoyant force is utilized in designing ships, submarines, hot air balloons, and hydrometers.

• Example: A steel ship floats because its overall density (including air inside) is less than water, whereas a steel block sinks due to higher density.

• Scientific Fact: Water has a density of approximately 1 g/cm³, making it a common reference fluid for buoyancy experiments.

• Practical Insight: Divers experience increasing buoyant force as they go deeper, requiring adjustments in weights to maintain stability underwater.

Q29. Answer: (d) All the above

The correct answer is All the above.

Key Points

• Forest fires contribute to global warming by releasing large amounts of stored carbon dioxide (CO2), methane (CH4), and other greenhouse gases into the atmosphere, intensifying climate change.

• They cause significant degradation of catchment areas by destroying vegetation, which leads to increased soil erosion, reduced water retention, and decreased water quality in rivers and reservoirs.

• While forest fires do not directly deplete the ozone layer, they produce nitrogen oxides (NOx) and volatile organic compounds (VOCs), which can contribute to ozone layer depletion when interacting with sunlight and other atmospheric elements.

• Forest fires have a cascading impact on ecosystems, affecting biodiversity, air quality, and human health, as well as causing economic losses due to damage to resources and infrastructure.

• The combined impact of these effects underscores the significance of forest fires as a global environmental issue, with

wide-reaching consequences.

Additional Information

• Global Warming

• Global warming refers to the long-term rise in Earth's average temperature due to increased levels of greenhouse gases in the atmosphere.

• Forest fires contribute to this by releasing stored carbon from trees and vegetation, adding to the greenhouse gas levels.

• These emissions further exacerbate climate change, leading to more frequent and intense natural disasters such as storms, droughts, and heatwaves.

• Depletion of the Ozone Layer

• The ozone layer, located in the Earth's stratosphere, protects life by absorbing most of the sun's harmful ultraviolet (UV) radiation.

• Although forest fires do not directly deplete the ozone layer, they release gases like NOx, which can indirectly contribute to ozone depletion under specific conditions.

• Chlorofluorocarbons (CFCs) and halons are the primary contributors to ozone depletion, not forest fires.

• Degradation of Catchment Areas

• Catchment areas are regions from where water is collected by natural landscapes into rivers, lakes, or reservoirs.

• Forest fires destroy vegetation in these areas, increasing soil erosion and sedimentation in water bodies.

• This can lead to a reduction in water quality and the capacity of reservoirs, affecting water supply and irrigation systems.

• Impact of Forest Fires

• Forest fires are a natural phenomenon but are increasingly caused by human activities such as deforestation and poor land management.

• They disrupt ecosystems, destroy habitats, and pose risks to human life and property.

• Effective management strategies, such as controlled burns and reforestation, are essential to mitigate their impact.

Q30. Answer: (b) Work done to move 1 C charge

The correct answer is Work done to move 1 C charge.

Key Points

• Potential difference is defined as the work done per unit charge to move a charge from one point to another within an electric field.

• It is expressed mathematically as V = W/Q, where:

• V is the potential difference (measured in volts).

• W is the work done (measured in joules).

• Q is the charge (measured in coulombs).

• Potential difference indicates the amount of energy required to move 1 coulomb (C) of charge through an electric field. Hence, this definition is correct.

• Statement Analysis:

• Option 1: Heat per unit mass is incorrect because potential difference is unrelated to heat or mass.

• Option 3: Charge stored per unit area is incorrect because this relates to capacitance, not potential difference.

• Option 4: Energy of electrons is incorrect because potential difference refers to the work done on charges, not directly to electron energy.

• Hence, option 2 is the correct answer.

Additional Information

• Definition of Voltage:

• Voltage, also known as electric potential difference, is a scalar quantity representing the difference in electric potential between two points in a circuit.

• It is measured in units of volts (V), where 1 volt = 1 joule/coulomb.

• Applications of Voltage:

• Voltage is used to drive electric currents in circuits, powering devices such as lights, motors, and electronics.

• It is also critical in fields like electric power systems, battery technology, and semiconductor devices.

• Key Characteristics:

• Sources of Voltage: Voltage can be generated through chemical reactions in batteries, electromagnetic induction in generators, or solar energy in photovoltaic cells.

• Types of Voltage: DC (Direct Current) voltage remains constant over time, while AC (Alternating Current) voltage varies periodically.

Important Points

• Misconceptions about Potential Difference:

• Potential difference is often confused with electric potential energy. While related, potential difference refers specifically to energy per unit charge.

• It is also distinct from electric current, which measures the flow of charge, and resistance, which quantifies opposition to current.

• Real-life Examples:

• A 9V battery provides 9 joules of energy for every coulomb of charge it moves.

• Power outlets in households typically supply 120V or 230V AC, depending on the country.

• Electric cars use high-voltage batteries (e.g., 400V) to power their motors efficiently.

Q31. Answer: (c) 17

Concept used:

Follow the BODMAS rule according to the table given below:

Calculation:

=> 4 – 1 + 5 × 6 ÷ 2 – 1 =?

=> 4 – 1 + 5 × 3 – 1 =?

=> 4 – 1 + 15 – 1 =?

=> 19 – 2 = 17

=> 17 is the correct answer.

Q32. Answer: (b) Rs. 1400/11

Given:

S.P = Rs. 140

Profit = 10%

Formula used:

P% = (P/CP) × 100

Calculation:

Let the CP be Rs. x

So, 10 = [(140 - x)/x] × 100

=> 1/10 = (140 - x)/x

=> x = 1400 - 10x

=> 11x = 1400

=> x = Rs 1400/11

Therefore The C.P is Rs. 1400/11

Alternate Method

A.T.Q

110% of CP = 140

=> CP = (140 × 100)110

=> CP = Rs. 1400/11

Therefore The C.P is Rs. 1400/11

Q33. Answer: (b) Rs. 1,500

Given:

Principal (P) = Rs. 10,000

Rate of interest (R) = 5%

Time (T) = 3 years

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

Calculation:

=> SI = (10,000 × 5 × 3) ÷ 100

=> SI = (150,000) ÷ 100

=> SI = Rs. 1,500

Therefore The correct answer is Rs. 1,500.

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Q34. Answer: (c) 60°

Given:

In a triangle, the ratio of the angles is 1 : 2 : 3.

Formula used:

The sum of the angles in a triangle is 180º.

Calculation:

Let the angles be x, 2x, and 3x.

x + 2x + 3x = 180º

=> 6x = 180º

=> x = 30º

The smallest angle is x = 30º.

The greatest angle is 3x = 3×30º = 90º.

The difference between the greatest and the smallest angle is 90º - 30º = 60º.

Therefore The correct answer is option (3).

Q35. Answer: (c) 19/24

Concept:

To add fractions with different denominators, convert them into fractions having a common denominator, then add the numerators.

Given:

3/8 + 5/12

Calculation:

LCM of 8 and 12 = 24

3/8 = 9/24

5/12 = 10/24

Add the fractions:

9/24 + 10/24 = 19/24

Final Answer:

19/24

Q36. Answer: (b) Rs. 24600

Shortcut Trick

Savings % = 100% − 72% = 28%

28% of monthly salary = Rs. 5,740

1% of monthly salary = 5,740 ÷ 28 = Rs. 205

10% of annual salary = 1.2 × monthly salary (since 10% of 12 months = 1.2 months)

Required value = 1.2 × 100 × 205 = 120 × 205 = Rs. 24,600

Therefore The correct option is B.

Alternate Method

Given:

Spend = 72% | Monthly Savings = Rs. 5,740

Formula Used:

Salary = Expenditure + Savings | Annual Salary = Monthly Salary × 12

Spend (72%)Save (28%)28% = Rs. 5,740Monthly Salary (100%)

=> Monthly Savings % = 100% − 72% = 28%

=> 28% of Monthly Salary = 5,740

=> 1% of Monthly Salary = 5,740 ÷ 28 = 205

=> Monthly Salary = 205 × 100 = 20,500

=> Annual Salary = 20,500 × 12 = 2,46,000

=> 10% of Annual Salary = 2,46,000 × 10/100 = 24,600

Therefore The correct option is B.

Additional Information

Percentage Change Formula

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Percentage Change = (Final Value − Initial Value) ÷ Initial Value × 100

Salary Distribution

Income is always taken as 100%. If a person spends x% and saves y%, then x + y = 100.

Annual Conversion

Annual Salary = Monthly Salary × 12. To find p% of Annual Salary, use (p/100) × 12 × Monthly Salary.

Q37. Answer: (b) 942

Given:

Percentage = 75%

Value = 1256

Calculations:

1. Calculate 75% of 1256:

=> 75% = 75/100 = 0.75

=> 75% of 1256 = 0.75 × 1256

=> = 942

Therefore 75% of 1256 is 942.

Q38. Answer: (c) 26 cm

Shortcut Trick

The length and width of a rectangle form a right-angled triangle with the diagonal.

The given sides 10 cm and 24 cm can be simplified by dividing by 2, yielding 5 and 12.

These values match the standard Pythagorean triple (5, 12, 13).

By multiplying the hypotenuse value back by 2, we directly get the diagonal: 13 × 2 = 26 cm.

Therefore The correct answer is 26 cm.

Alternate Method

Given:

Length of the rectangle (L) = 24 cm

Width of the rectangle (W) = 10 cm

Formula Used:

Diagonal of a rectangle (d) = $\sqrt{(L^2 + W^2)}$

Length = 24 cm Width = 10 cm Diagonal (d)

Calculations:

=> $d = \sqrt{(24^2 + 10^2)}$

=> $d = \sqrt{(576 + 100)}$

=> $d = \sqrt{(676)}$

=> d = 26 cm

Therefore The correct answer is 26 cm.

Additional Information

Area of a Rectangle

The area is calculated as the product of its length and width. Area = L × W.

Perimeter of a Rectangle

The perimeter represents the total outer boundary of the shape. Perimeter = 2 × (L + W).

Properties of Diagonals

In any rectangle, the two diagonals are exactly equal in length and bisect each other, but they only intersect at exactly 90 degrees if the rectangle is a perfect square.

Q39. Answer: (a) 29

Shortcut Trick

Use the identity: $x^2 + y^2 = (x + y)^2 - 2xy$

Given: x + y = 7 and xy = 10

=> $x^2 + y^2 = 7^2 - 2 \times 10$

=> $x^2 + y^2 = 49 - 20 = 29$

Therefore Answer = 29

Alternate Method
Given:
$x + y = 7$ and $xy = 10$
Formula used:
$x^2 + y^2 = (x + y)^2 - 2xy$
Calculations:
=> Substitute: $x^2 + y^2 = (7)^2 - 2 \times 10$
=> Simplify: $x^2 + y^2 = 49 - 20 = 29$
Therefore The correct answer is 29.
Additional Information
Related Identity: Expansion Formula
$(x + y)^2 = x^2 + y^2 + 2xy$
Sum and Product of Roots
For quadratic equation $ax^2 + bx + c = 0$, sum of roots = $-b/a$ and product of roots = c/a.
Difference of Squares
$x^2 - y^2 = (x + y)(x - y)$
Useful Identity
$x^2 + y^2 = (x + y)^2 - 2xy$

Q40. Answer: (d) 5041

Shortcut Trick
Square of 71 using $(a+b)^2$ logic:
$71^2 = (70 + 1)^2$
→ $70^2 + (2 \times 70 \times 1) + 1^2$
→ $4900 + 140 + 1 = 5041$
Therefore The correct option is (4).
Alternate Method
Given: Number = 71
Formula Used: Square of a number n = n × n
=> Square of 71 = 71 × 71
=> Square of 71 = 71 × (70 + 1)
=> Square of 71 = (71 × 70) + (71 × 1)
=> Square of 71 = 4970 + 71
=> Square of 71 = 5041
Therefore The correct option is (4).
Additional Information
Algebraic Identity for Squaring
The identity $(a + b)^2 = a^2 + 2ab + b^2$ helps in breaking down numbers into easier components for mental calculation.
Units Digit Property
Any number ending in 1 will always have a square that also ends in 1, as 1 × 1 = 1.
Base Method (Near 50)
For numbers near 50: $(50 + x)^2 = (25 + x)$ along with x^2. For 71, x = 21: (25 + 21) | $21^2 = 46$ | 441 = 5041.

Q41. Answer: (d) 12 days

Given
A can do a piece of work in 20 days and B can do the same work in 30 days.
Concept used
Total work = Number of days × efficiency
Calculation
Total work = Lcm of 20 and 30 which is 60
Efficiency of A = 60/20 = 3
Efficiency of B = 60/30 = 2

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A + B can do the work = 60/5 = 12 days.

Q42. Answer: (c) 638

Calculation:

26 + 126 × 3 + 78 × 3

=> 26 + 378 + 234

=> 638

Hence, the correct answer is 638.

Q43. Answer: (b) 42

Given:

The sides of a square are in the ratio 2 : 3 : 4 : 5.

Perimeter of the square = 294 cm.

Formula Used:

Perimeter of a square = 4 × (side of the square)

Calculation:

Let the sides of the square be 2x, 3x, 4x, and 5x.

Since the perimeter of the square is 294 cm, we can write:

2x + 3x + 4x + 5x = 294

=> 14x = 294

=> x = 294 / 14

=> x = 21

The smallest side is 2x:

Smallest side = 2 × 21

Smallest side = 42 cm

The smallest side of the square is 42 cm.

Q44. Answer: (a) 54

Shortcut Trick

New Average = 34

Increase in Average = 34 − 32 = 2

Total Increase for 11 innings = 11 × 2 = 22

Runs required = New Average + Total Increase (for previous innings)

=> 34 + (10 × 2) = 34 + 20 = 54

Therefore The correct answer is 54 runs.

Alternate Method

Given:

Average of 10 innings = 32

Required Average of 11 innings = 34

Formula Used:

Total Runs = Average × Number of Innings

Calculations:

=> Total runs in 10 innings = 10 × 32 = 320

=> Total runs in 11 innings = 11 × 34 = 374

=> Runs required in 11th innings = Total runs (11) − Total runs (10)

=> 374 − 320 = 54

Therefore The correct answer is 54 runs.

Additional Information

Average Concept

Average is the sum of observations divided by the number of observations. Formula: Average = Sum ÷ Count.

Inclusion/Exclusion Rule

When a new member joins: New Value = New Average + (Change in Average × Old Number of Members).

Batting Average

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Batting Average = Total Runs Scored ÷ Total Innings Played (excluding Not Out innings if specified).

Q45. Answer: (c) Rs. 36,000

Given:

A = 20000

B = 30000

Total profit = 60000

Formula Used:

Profit share prop. to Investment

Calculation:

=> Ratio A : B = 20000 : 30000 = 2 : 3

=> Total ratio = 2 + 3 = 5

=> B's share = 60000 × 3 ÷ 5

=> B's share = 60000 × 3 ÷ 5 = 36000

Therefore The correct answer is 36000.

Q46. Answer: (a) m + n - 1 = p

Logic followed here is.

Logic: In a linear arrangement, if the position of an individual is known from both the beginning and the end, the total number of people in the row is calculated by adding both positions and then subtracting 1 (because that individual is counted twice in the summation).

Given Parameters:

Variable	Representation
Bob's position from the beginning	m
Bob's position from the end	n
Total number of persons	p

Calculation:

According to the ranking logic:

Total persons (p) = (Position from beginning) + (Position from end) - 1

Substituting the given values:

p = m + n - 1

Rearranging the equation as per the options:

m + n - 1 = p

Therefore, the option m + n - 1 = p is always true.

Q47. Answer: (b) BRICS

The logic followed here is:

Name	Parent Organization
UNESCO	United Nation
UNICEF	United Nation
WHO	United Nation

All the given options except BRICS are part of the United Nations organization but BRICS is a totally different and separate organization.

Hence, the correct answer is "BRICS".

Additional Information

BRICS is an acronym for the powerful grouping of the world's leading emerging market economies, namely Brazil, Russia, India, China and South Africa. The BRICS mechanism aims to promote peace, security, development, and cooperation.

Important Points

• The United Nations officially came into existence on 24 October 1945.

• United Nations Day is celebrated on 24 October each year.

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• The main organs of the UN are:

1. the General Assembly
2. the Security Council
3. the Economic and Social Council
4. the Trusteeship Council
5. the International Court of Justice
6. and the UN Secretariat

• All 6 were established in 1945 when the UN was founded.

• The General Assembly is the main deliberative, policymaking, and representative organ of the UN.

Additional Information

• London conference (officially named as Declaration of St James' palace) was signed on 12th June 1941.

• This conference led to the idea of the formation of the United Nation,

• The Hague Conference, 1954 is related to the protection of cultural property in the Event of Armed Conflict.

• The Berlin Conference of 1884–1885, also known as the Congo Conference or West Africa Conference regulated European colonization and trade in Africa.

Q48. Answer: (d) 1

According to given information:

Given Word: BOUNCED

If each of the letters in the word BOUNCED is arranged in alphabetical order, then the new arrangement is:

Thus only 'one' letters i.e. 'B' in the word 'BOUNCED' will remain unchanged.

Hence, the correct answer is "1"

Q49. Answer: (b) NVTBKD

The position of the letters according to the English alphabet series:

The logic followed here is:

The word, 'FINGER' is written as 'GJOFDQ'

The word 'KIDNEY' is written as 'LJEMDX'

Similarly, the word 'MUSCLE' is written as 'NVTBKD'

Hence, the correct answer is 'NVTBKD'

Q50. Answer: (c) 2, 1, 4, 5, 3

The arrangement according to the given options:

(1) 3, 5, 1, 4, 2 → Old, Adult, Toddler, Teenage, Infant

(2) 1, 2, 4, 5, 3 → Toddler, Infant, Teenage, Adult, Old

(3) 2, 1, 4, 5, 3 → Infant, Toddler, Teenage, Adult, Old

(4) 3, 5, 4, 2, 1 → Old, Adult, Teenage, Infant, Toddler

Here, The arrangement of (3) in a logical and meaningful order.

Hence, "Option (3)" is the answer.

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