Agniveer Army GD 10th 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. The revolutionaries declared _____ as Emperor of Delhi on 12th May, 1857.

(a) Nanasaheb
(b) Bakht Khan
(c) Shah Alam
(d) Bahadur Shah

Q2. Which of the following crops is associated with plantation agriculture in India?

(a) Bajra
(b) Tea
(c) Cotton
(d) Wheat

Q3. In June 2025, the Government of India evacuated students from Iran under which of the following operations?

(a) Operation Sindhu
(b) Operation Dost
(c) Operation Devi Shakti
(d) Operation Ganga

Q4. The Northern Plains of India are primarily formed by the deposition of sediments from which river systems?

(a) Mahi, Chambal, and Betwa
(b) Krishna, Godavari, and Cauvery
(c) Narmada, Tapi, and Mahanadi
(d) Ganga, Indus, and Brahmaputra

Q5. Which type(s) of emergencies stipulated in the Constitution of India?

(a) National Emergency
(b) Constitutional Emergency
(c) Financial Emergency
(d) All of the above

Q6. Who advises the centre on legal matters?

(a) Chief Justice of India
(b) Attorney General of India
(c) President of India
(d) Advocate General of india

Q7. A famous temple complex in Tamil Nadu is celebrated for its towering gopurams and detailed sculptures, representing the Dravidian architectural style. Which heritage site fits this description?

(a) Somnath Temple
(b) Konark Sun Temple

(c) Meenakshi Amman Temple
(d) Jagannath Temple

Q8. At which venue did the first edition of the Naval Commanders' Conference 01/2026 commence on 14 April 2026?
(a) South Block, New Delhi
(b) Nausena Bhawan, New Delhi
(c) Vayu Bhawan, New Delhi
(d) Sena Bhawan, New Delhi

Q9. World Declaration on Education For All' was done in which of the following conferences?
(a) Jaipur
(b) Jomtien
(c) Jamaica
(d) Jordan

Q10. The eighty-four pillars cenotaph is located at -
(a) Kota
(b) Jhalawar
(c) Bundi
(d) Sawai Madhopur

Q11. Who gave the slogan 'Jai Jawan Jai Kisan'?
(a) Atal Bihari Vajpayee
(b) Narendra Damodardas Modi
(c) Chaudhari Charan Singh
(d) Lal Bahadur Shastri

Q12. Who supported the idea of self-respect movement?
(a) Mumtaz Ali
(b) Raja Rammohan Roy
(c) Periyar
(d) Pandita Ramabai

Q13. When is International Peace day observed?
(a) 12th July
(b) 10th October
(c) 21st March
(d) 21st September

Q14. Who became famous as 'Kurmanchal Kesari'?
(a) Govindballabh Pant
(b) Anusuya Prasad Bahuguna
(c) Mukundilal
(d) Badri Dutt Pandey

Q15. The "Trinity of Carnatic Music" includes Tyagaraja, Muthuswami Dikshitar, and:
(a) Annamacharya
(b) Purandara Dasa
(c) Syama Sastri
(d) Swathi Tirunal

GENERAL SCIENCE

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Q16. _____ is a medical instrument used for listening to sounds produced within the body, chiefly in the heart or lungs.

(a) Stethoscope
(b) Periscope
(c) Kaleidoscope
(d) Telescope

Q17. Which of the following is not a unit of Energy?

(a) Calorie
(b) B.T.U
(c) Kilowatt-hour(kWh)
(d) Phon

Q18. Which instrument is used to measure altitudes in aircraft?

(a) Actinometer
(b) Ceilometer
(c) Accelerometer
(d) Altimeter

Q19. The essential organs in a flower for reproduction are:

(a) The sepal and stamen
(b) The stamen and pistil
(c) The sepal and petal
(d) The petal and pistil

Q20. Oxidation in chemical reactions is the _____

(a) loss of nitrogen
(b) loss of oxygen
(c) gain of hydrogen
(d) gain of oxygen

Q21. Which one of the following is not a conductor of electricity?

(a) Vinegar
(b) Lime juice
(c) Salt water
(d) Distilled water

Q22. Which instrument is used to measure the potential difference ?

(a) Anemometer
(b) Galvanometer
(c) Ammeter
(d) Voltmeter

Q23. Thin wires of which of the following metal is used for making the filament of electric bulbs?

(a) Tungsten
(b) Silver
(c) Nichrome
(d) Copper

Q24. In Goitre, there is swelling of the _____.

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

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Q25. According to the reactivity series of metals, which is the most reactive metal?

(a) Sodium
(b) Potassium
(c) Calcium
(d) Magnesium

Q26. Which of the following quantities have Newton (N) as their SI Unit?

(a) Weight and Force
(b) Impulse and Inertia
(c) Momentum and Acceleration
(d) Velocity and Acceleration

Q27. Which nervous system is responsible for carrying motor and sensory information?

(a) Somatic
(b) Autonomic
(c) Afferent
(d) Voluntary

Q28. _____carry oxygen-rich blood from the heart to all parts of the body.

(a) Skeletal Muscle
(b) Veins
(c) Arteries
(d) Plasma

Q29. Which of the following is NOT a scalar quantity?

(a) Potential difference
(b) Angular Velocity
(c) Speed
(d) Angular Frequency

Q30. Which among the following is NOT a fundamental SI unit?

(a) candela
(b) kelvin
(c) tesla
(d) ampere

MATHEMATICS

Q31. If P is a digit such that 6954P is divisible by 11, then P equals:

(a) 2
(b) 8
(c) 6
(d) 7

Q32. What sum of money (in Rs.) will amount to Rs. 2,400 at 4% per annum simple interest in 5 years?

(a) Rs. 12,000
(b) Rs. 2,050
(c) Rs. 2,000
(d) Rs. 1,950

Q33. Simplify: 39 - [18 - {12 - (15 - 12 ÷ 6 × 3)}]

(a) 27
(b) 21
(c) 24
(d) 42

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Q34. By how much is 50% of 60 greater than 30% of 40?

(a) 15
(b) 18
(c) 20
(d) 13

Q35. A person saves 60% of his income. If his expenditure is Rs. 440, then his income (in Rs.) is:

(a) 1,100
(b) 176
(c) 1,140
(d) 264

Q36. Find average of 17, 14, 31, 23, 35.

(a) 22
(b) 23
(c) 24
(d) 25

Q37. Find the mean proportional of 18 and 50.

(a) 35
(b) 30
(c) 33
(d) 40

Q38. A scooter's value was reduced by 20 percent and is now worth Rs. 72000. What was its original price?

(a) Rs. 88000
(b) Rs. 94000
(c) Rs. 90000
(d) Rs. 100000

Q39. Simplify the following expression :

$100 \div (2 \times 5) + 3 = ?$

(a) 12
(b) 103
(c) 13
(d) 10

Q40. If 6, 18, 39, and x are in proportion, then find the value of x.

(a) 115
(b) 139
(c) 117
(d) 112

Q41. Find the square root of 2025.

(a) 35
(b) 45
(c) 55
(d) 65

Q42. The wages of 10 workers for a six-day week are Rs. 1,200. What is the one-day wage of one worker?

(a) Rs. 28
(b) Rs. 24
(c) Rs. 20
(d) Rs. 16

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Q43. Find the area of circle whose radius is 8.4cm. (π = 22/7)

(a) 221.76 cm²
(b) 220.50 cm²
(c) 120.75 cm²
(d) 260.26 cm²

Q44. What is the value when 120 is increased by 25%?

(a) 510
(b) 160
(c) 150
(d) 270

Q45. The ratio of present ages of father and son is 2 : 1, the product of their ages is 200, what will be the ratio of their ages after 5 years?

(a) 9 : 5
(b) 10 : 7
(c) 9 : 2
(d) 5 : 3

LOGICAL REASONING

Q46. In a certain code language, 'KIOSK' is coded as 'LJRTL' and 'FLAME' is coded as 'GMDNF. What is the code for 'ENJOY' in the given code language?

(a) GNMRY
(b) EMOQY
(c) FOMPZ
(d) ENOQZ

Q47. Select the number that will come in the place of the question mark(?), if '+' and '−' are interchanged and '×' and '÷' are interchanged

63 × 7 ÷ 13 − 64 + 42 = ?

(a) 144
(b) 131
(c) 139
(d) 124

Q48. Select the number from among the given options that can replace the question mark (?) in the following series.

39, 53, ?, 108, 149, 199

(a) 81
(b) 72
(c) 79
(d) 76

Q49. Seven people, A, B, C, D, E, F and G, are sitting in a straight row facing the north. Only two people sit to the left of C. Only two people sit between A and B.

B sits to the left of A. E is an immediate neighbour of A to the right. Only one person sits to the right of D. F is not an immediate neighbour of B. Who sits at the centre?

(a) C
(b) E
(c) D
(d) A

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Q50. In a class of 57 students, Rajat is ranked 25th from the top. Then what is his rank from the bottom ?

(a) 28th
(b) 34th
(c) 30th
(d) 33rd

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) Bahadur Shah

The correct answer is - Bahadur Shah

Key Points

• After the battle of Plassey, the period between 1757 to 1857 is a series of religiopolitical violence, tribal movements, peasant uprising, agrarian, riots, civil rebellions, famine, etc caused
• Anger against the rude British policies and resulting in the revolt of 1857.
• Causes of revolt are earlier uprisings socio-cultural, economic, and political reasons.
• The revolt began at Meerut which is 58 km from Delhi.
• The revolt started on May 10, 1857, and then gathered force rapidly
• Indian soldiers refuse to accept the greased Cartridge, this is the immediate cause of the revolt.
• A young sepoy of the 34th native infantry Mangal Pandey went to step further.
• In Delhi, the local infantry joined and kill their own European officers Delhi
• Delhi was soon to become the centre of the great revolt and Bahadur Shah its symbol.
• The long-range of the Mughal dynasty had become the traditional symbol of India's political unit.
• The revolutionaries declared Mughal King Bahadur Shah as the empire of Delhi on 12th May 1857
• Bahadur Shah organized the confederacy of Indian States to fight and replace the British region.
• But at last revolved was suppressed on September 20, 1857, Bahadur Shah was taken prisoner and the fall of Delhi the focal point of the revolt disappeared

Q2. Answer: (b) Tea

The correct answer is Tea.

Key Points

• Tea is one of the major crops associated with plantation agriculture in India, primarily cultivated in states like Assam, West Bengal, Tamil Nadu, and Kerala.
• Plantation agriculture involves large-scale cultivation of crops on estates for commercial purposes, and tea is a prime example.
• Tea plantations are highly labor-intensive and provide employment to millions of workers, especially in northeastern and southern India.
• India is the second-largest producer and consumer of tea globally, contributing significantly to the export market.
• Climate conditions such as high rainfall, moderate temperature, and humid environments in hilly regions favor the growth of tea plantations.

Additional Information

• Plantation Agriculture
• Plantation agriculture is a type of commercial farming where crops like tea, coffee, rubber, and sugarcane are grown on large estates.
• This form of agriculture often requires substantial capital investment and skilled labor.
• It is practiced in tropical and subtropical regions with favorable climatic conditions.

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• India's plantation crops contribute significantly to the economy through export earnings.
• Tea Cultivation in India
• Tea cultivation dates back to the British era when it was introduced in Assam.
• India has major tea-growing regions such as Darjeeling, Nilgiri Hills, and Assam.
• The tea industry is regulated by the Tea Board of India, which oversees production, marketing, and export.
• India's tea is famous for its varieties, including Assam Tea, Darjeeling Tea, and Nilgiri Tea.
• Key Factors for Tea Growth
• Tea requires acidic soil with high organic content and good drainage.
• The plant thrives in a humid climate with temperatures between 20°C to 30°C.
• Heavy rainfall (150-250 cm annually) and shade are crucial for optimal growth.
• Global Significance
• India is one of the world's largest tea exporters, with countries like Russia, the USA, and the UK being major importers.
• Tea is a culturally significant beverage in India, consumed daily by millions.
• The tea industry supports rural development and provides substantial employment opportunities.

Q3. Answer: (a) Operation Sindhu

The correct answer is Operation Sindhu.

Key Points

• Operation Sindhu was the specialized evacuation mission launched by the Government of India in June 2025 to ensure the safe return of Indian students and citizens from Iran due to escalating regional tensions.
• The mission was coordinated primarily by the Ministry of External Affairs (MEA) in collaboration with the Indian Embassy in Tehran and the Indian Air Force.
• A significant number of the evacuees were medical students and researchers located in cities such as Tehran, Shiraz, Isfahan, and Qom.
• The operation utilized both commercial aircraft and military transport planes like the C-17 Globemaster III to facilitate a swift exit from Imam Khomeini International Airport.
• This operation highlighted India's "Citizen First" foreign policy, prioritizing the safety of the Indian diaspora during international crises. Hence, the correct answer is Operation Sindhu.

Additional Information

• Operation Ganga (2022):
• This was an evacuation mission by the Government of India to rescue Indian citizens, mostly students, from Ukraine during the 2022 Russian invasion.
• Since the Ukrainian airspace was closed, citizens were moved to neighboring countries like Poland, Romania, Hungary, and Slovakia before being flown back to India.
• More than 20,000 Indians were successfully repatriated under this operation.
• Operation Devi Shakti (2021):
• Launched in August 2021, this operation aimed to evacuate Indians and Afghan partners from Kabul after the Taliban took over Afghanistan.
• The mission was carried out under extremely difficult security conditions at the Hamid Karzai International Airport.
• The name "Devi Shakti" was chosen to symbolize the strength and protection of the Indian state towards its people.
• Operation Dost (2023):
• This was a humanitarian aid and disaster relief mission launched in February 2023 following the devastating earthquake in Turkey and Syria.
• India sent National Disaster Response Force (NDRF) teams, dog squads, field hospitals, and medicines to provide search and rescue support.
• The 7.8 magnitude earthquake caused widespread destruction, and India was one of the first countries to provide specialized assistance.

Important Points

• Standard Operating Procedures (SOPs) for Evacuation:
• The Government of India maintains a National Crisis Management Committee (NCMC) to oversee large-scale rescue operations.
• The MADAD portal is often used by the MEA to register Indians living abroad so they can be contacted during emergencies.
• Evacuation missions often involve "Air Bubbles" or special flight arrangements in regions where regular transport is suspended.
• Recent Related Operations:
• Operation Ajay (2023): Launched to facilitate the return of Indian citizens from Israel during the 2023 Israel–Hamas war.

• Operation Kaveri (2023): Conducted to rescue Indian citizens from conflict-torn Sudan, involving the Indian Navy ships like INS Sumedha.

• Vande Bharat Mission (2020): One of the largest civilian repatriations in history, brought back over 6 million Indians stranded across the world during the COVID-19 pandemic.

Q4. Answer: (d) Ganga, Indus, and Brahmaputra

The Correct answer is Ganga, Indus, and Brahmaputra.

Key Points

• The Northern Plains of India are formed through the process of alluvial deposition by three major river systems: the Ganga, Indus, and Brahmaputra.

• These rivers carry enormous amounts of sediment from the Himalayas and deposit them in the plains over millions of years.

• The Northern Plains are one of the most fertile lands in the world and are often referred to as the "Granary of India."

• The Indus River System flows through the northern regions of India, Pakistan, and China, forming a significant part of the plains in Punjab and Haryana.

• The Ganga River System is the most extensive and covers the states of Uttar Pradesh, Bihar, and West Bengal. Its tributaries include Yamuna, Ghaghara, Gandak, and Kosi.

• The Brahmaputra River System flows mainly through Assam and merges with the Ganga in Bangladesh, contributing to the formation of the Sundarbans Delta.

• This region is characterized by its flat terrain, high population density, and intensive agricultural activities.

Additional Information

• Mahi, Chambal, and Betwa

• The Mahi River flows through Madhya Pradesh, Rajasthan, and Gujarat, and is not involved in forming the Northern Plains.

• The Chambal River, a tributary of the Yamuna, is known for its ravines and badlands.

• The Betwa River is also a tributary of the Yamuna and flows through Madhya Pradesh and Uttar Pradesh.

• These rivers primarily contribute to the formation of the Central Indian Plateau, not the Northern Plains.

• Krishna, Godavari, and Cauvery

• The Krishna, Godavari, and Cauvery Rivers are located in South India and contribute to the formation of the Deccan Plateau.

• The Godavari, known as the "Dakshin Ganga," is the largest river in Peninsular India.

• The Cauvery River is known for its importance in irrigation and its role in the Cauvery Water Dispute.

• Narmada, Tapi, and Mahanadi

• The Narmada and Tapi Rivers flow through the rifts in the Peninsular Plateau and drain into the Arabian Sea.

• The Mahanadi River flows through Chhattisgarh and Odisha and contributes to the formation of the Eastern Coastal Plains.

• These rivers are not involved in forming the Northern Plains of India.

Q5. Answer: (d) All of the above

• An emergency due to war and external aggression or armed rebellion called National Emergency which is given in Article 352 of the Indian Constitution.

• An Emergency due to the failure of the constitutional machinery in the states called Constitutional Emergency.

• The Constitutional Emergency is also known as "President Rule" or "State Emergency".

• The threat to the financial stability or credit of India stated in Article 360 of the Indian Constitution is called Financial Emergency.

Q6. Answer: (b) Attorney General of India

The correct answer is Attorney General of India.

Key Points

Article 76 in The Constitution Of India

• The President shall appoint a person who is qualified to be appointed a Judge of the Supreme Court to be Attorney General for India.

• It shall be the duty of the Attorney General to give advice to the Government of India upon such legal matters.

• In the performance of his duties, the Attorney General shall have the right to audience in all courts in the territory of India.

• The Attorney General shall hold office during the pleasure of the President, and shall receive such remuneration as the President may determine the Conduct of Government Business

• R. Venkataramani is the incumbent Attorney-General for India.

• He succeeded to the office as the 16th Attorney-General on 1 October 2022.

Additional Information

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Article 52	**The President of India There shall be a President of India.**
Article 165	The Advocate General of a State, who advises the State on legal matters
Article 124	Establishment and composition of the Supreme Court

Q7. Answer: (c) Meenakshi Amman Temple

The correct answer is Meenakshi Amman Temple.

Key Points

• The Meenakshi Amman Temple is located in the historic city of Madurai on the southern bank of the Vaigai River in Tamil Nadu.

• It serves as a quintessential example of Dravidian Architecture, a style primarily found in Southern India, characterized by pyramid-shaped towers and intricate stone carvings.

• The complex is famous for its 14 Gopurams (gateway towers), the tallest of which is the Southern Tower, reaching a height of approximately 170 feet (52 meters).

• The temple is dedicated to Meenakshi, a form of Goddess Parvati, and her consort Sundareswarar, a form of Lord Shiva.

• A major highlight of the temple is the Aayiram Kaal Mandapam (Hall of Thousand Pillars), which contains 985 uniquely carved pillars and a museum displaying icons and photographs.

• The current structure was largely expanded and rebuilt during the Nayaka dynasty in the 16th and 17th centuries, although the shrine's history dates back over two millennia.

Additional Information

• Other Major Temples in India:

• Somnath Temple: Located in Prabhas Patan, Gujarat, it is the first among the twelve Jyotirlinga shrines of Shiva and is built in the Chalukya style (Māru-Gurjara architecture).

• Konark Sun Temple: Situated in Odisha, this 13th-century UNESCO World Heritage Site was built by King Narasimhadeva I of the Eastern Ganga Dynasty in the Kalinga architectural style, designed as a colossal chariot.

• Jagannath Temple: Located in Puri, Odisha, it is a significant Vaishnava temple and one of the Char Dham pilgrimage sites, famous for its massive Ratha Yatra (Chariot Festival).

• Architectural Features:

• The Porthamarai Kulam (Golden Lotus Tank) within the Meenakshi temple is an ancient pond where devotees take a ritual dip.

• The temple walls are adorned with frescoes and detailed sculptures depicting various mythological themes from the Puranas.

Q8. Answer: (b) Nausena Bhawan, New Delhi

The correct answer is Nausena Bhawan, New Delhi

In News

• The first edition of the Naval Commanders' Conference 01/2026 commenced at Nausena Bhawan, New Delhi, on 14 April 2026.

Key Points

• The inaugural address was delivered by Adm Dinesh K Tripathi, the Chief of the Naval Staff (CNS), to the senior naval leadership and operational commanders.

• The conference serves as a platform to discuss combat readiness, the adoption of emerging technologies, and building a Future Ready force.

• The CNS commended the Navy's role in safeguarding energy security and maritime interests amidst conflicts in West Asia.

• The location, Nausena Bhawan, is the headquarters designated for naval deliberations and staff functions in New Delhi, making it the correct venue for this high-level conference.

Additional Information

• Gen Anil Chauhan, the Chief of the Defence Staff (CDS), also addressed the commanders on the changing geopolitical orders and the evolving character of war.

• The conference highlighted innovation and indigenisation as key operational pillars for the Indian Navy.

• Emphasis was placed on proactive engagement with Friendly Foreign Countries (FFCs) through bilateral and multilateral exercises.

Important Points

• South Block, Vayu Bhawan, and Sena Bhawan are other major administrative buildings in New Delhi housing various wings of the Ministry of Defence, but the 01/2026 conference specifically began at Nausena Bhawan.

• The conference focuses on inter-service synergy and multi-domain safety practices.

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Q9. Answer: (b) Jomtien

The nations across the world, communicated through the Universal Declaration of Human Rights, asserted that "everyone has a right to education". The period post-1990 saw the coming together of countries across the world and set universal goals to achieve basic education for all in a step-wise manner.

Key Points

• The World Conference on "Education for All" was held at Jomtien, Thailand, in 1990. This was jointly convened by the leading international funding agencies that included World Bank, UNESCO, UNICEF, and UNDP.

• The conference proposed for the attainment of universal primary education (UPE) by 2000, which required to be taken up through intensive drives for universal access to education and ensure quality monitoring through very close monitoring of learning levels among the learners enrolled in schools.

• The delegates adopted a World Declaration on Education for All at the Jomtien Conference, 1990, which reaffirmed the notion of education as a fundamental human right and urged countries to intensify efforts to address the basic learning needs of all.

Additional Information The Framework for Action was required to meet the basic learning needs that defined targets and strategies to meet them by the year 2000. It included the following goals:

• To focus on equity in education.

• To ensure universal access to learning.

• To enhance the environment for learning.

• To emphasize on increased learning outcomes.

• To strengthen and maximize partnerships by 2000.

• To broaden the means and the scope of basic education.

Thus, it is concluded that World Declaration on Education For All' was done in Jomtien conferences.

Q10. Answer: (c) Bundi

The correct answer is The eighty-four pillars cenotaph is located at Bundi.

Key Points

• The Eighty-Four Pillared Cenotaph, also known as the "Chaurasi Khambon ki Chhatri," is located in the city of Bundi, Rajasthan.

• It was built by Maharaja Rao Raja Anirudh Singh in the 17th century in memory of his foster brother Deva.

• The structure is a splendid example of Rajput architecture, featuring 84 intricately carved pillars, which form the base of the cenotaph.

• The cenotaph is a two-story structure adorned with exquisitely carved domes, floral patterns, and geometric designs, showcasing the architectural brilliance of the period.

• It serves as a popular tourist attraction in Bundi, drawing visitors for its historical importance and architectural beauty.

• The reason behind the name "84 Pillars" is a local belief that counting all the pillars accurately is a challenging task.

Additional Information

• Bundi:

• Bundi is a historical town in Rajasthan, known for its palaces, forts, and stepwells.

• It is often referred to as the "City of Stepwells" due to the presence of numerous baoris (stepwells).

• The town is famous for its miniature paintings and murals that reflect Rajputana art and culture.

• Prominent attractions in Bundi include the Taragarh Fort, Garh Palace, and Rani Ji ki Baori.

• Architecture of Cenotaphs in Rajasthan:

• Cenotaphs, locally known as Chhatris, are memorial structures built in honor of rulers or distinguished individuals.

• They are often characterized by domed pavilions, intricate carvings, and elaborate designs.

• Regions like Jodhpur, Udaipur, and Bundi are known for their splendid cenotaphs.

• These structures hold cultural and historical significance, serving as a reminder of Rajasthan's royal heritage.

• Other Attractions Near Bundi:

• Taragarh Fort: Also known as the "Star Fort," it offers panoramic views of Bundi and showcases excellent Rajput architecture.

• Rani Ji ki Baori: A magnificent stepwell featuring intricate carvings, built in the 17th century by Rani Nathavati Ji.

• Sukh Mahal: A serene palace overlooking Jait Sagar Lake, believed to have inspired Rudyard Kipling's novel "Kim."

• Chitrashala: A gallery within Garh Palace known for its stunning murals and miniature paintings.

Important Points

• Historical Significance: The cenotaph reflects the architectural skill and cultural richness of the Rajput era in Rajasthan.

• Tourism: Bundi, with its cenotaphs, forts, and palaces, is part of Rajasthan's cultural tourism circuit and attracts history enthusiasts and tourists from around the world.

• Preservation Efforts: The government and heritage organizations have undertaken conservation projects to preserve these

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historical monuments.

• Local Beliefs: The mystery surrounding the "84 Pillars" adds to the allure of the cenotaph, making it a must-visit spot in Bundi.

Q11. Answer: (d) Lal Bahadur Shastri

The correct answer is Lal Bahadur Shastri.

Key Points

• Lal Bahadur Shastri

• He was born on 2^(nd) October 1904 in Mughalsarai, a small railway town seven miles from Varanasi in Uttar Pradesh.

• Participated in the freedom movement since 1930.

• He joined the Kashi Vidyapeeth in Varanasi, one of the many national institutions set up in defiance of British rule.

• 'Shastri' was the bachelor's degree awarded to him by the Vidya Peeth but has stuck in the minds of the people as part of his name.

• He was a minister in the Union Cabinet from 1951 to 1956 when he resigned taking responsibility for the railway accident and later from 1957-1964.

• He was India's second Prime Minister (1964-66).

• He signed an agreement with then Ceylon (now Sri Lanka) on persons of Indian origin there, in 1964 — an endorsement of the importance of neighbourhood.

• He was the first person to be posthumously awarded the Bharat Ratna (1966).

Additional Information

• Atal Bihari Vajpayee

• He was an Indian statesman who served three terms as the prime minister of India, first for a term of 13 days in 1996, then for a period of 13 months from 1998 to 1999, followed by a full term from 1999 to 2004.

• Vajpayee was one of the co-founders and a senior leader of the Bharatiya Janata Party.

• Narendra Damodardas Modi

• He is an Indian politician serving as the 14th and current prime minister of India since 2014.

• He was the chief minister of Gujarat from 2001 to 2014 and is the Member of Parliament for Varanasi.

• Modi is a member of the Bharatiya Janata Party and its National Democratic Alliance.

• Chaudhary Charan Singh

• He served as the 5th Prime Minister of India between 28 July 1979 and 14 January 1980.

• Historians and people alike frequently refer to him as the 'champion of India's peasants.'

Q12. Answer: (c) Periyar

The correct answer is Periyar.

The self-respect movement, the non-brahmin movement was fought by untouchables for their dignity.

Important Points

E.V. Ramaswamy Naicker or Periyar founded the self-respect movement.

• He belonged to a middle-class family and was annoyed by the caste distinctions.

• He said that the untouchables were the original supporter of Tamil and Dravidian culture.

• Further, he argued that in order to achieve social equality, the untouchables have to boycott the religion.

• According to him, religion gave birth to social and caste distinction and questioned religious texts.

• He raised the voice of untouchables and said that the Brahmins dominated the untouchables in the name of religion.

Hence, we can conclude that Periyar supported the self-respected movement.

Q13. Answer: (d) 21st September

The correct answer is 21st September.

Key Points

• Each year the International Day of Peace is observed around the world on September 21st.

• The International Day of Peace was established in 1981 by the United Nations General Assembly.

• Two decades later, in 2001, the United Nations General Assembly (UNGA) voted to call for "non-violence and cease-fire" on World Peace Day.

• The 2023 theme for the International Day of Peace is Actions for Peace: Our Ambition for the #GlobalGoals".

• The UN encourages countries to observe the day by adhering to "24 hours of non-violence."

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Q14. Answer: (d) Badri Dutt Pandey

The correct answer is Badri Dutt Pandey.

Key Points

• Badri Dutt Pandey was an Indian freedom fighter and historian known by the title 'Kurmanchal Kesari'.

• He played a significant role in the Indian independence movement, particularly in the Kumaon region of present-day Uttarakhand.

• Pandey's efforts were instrumental in the abolition of the British-imposed 'Forest Act' in the Kumaon region, which had severely restricted the rights of local people.

• He is also known for his literary contributions, particularly his book "Kumaon Ka Itihas," which documents the history of the Kumaon region.

Additional Information

• Indian Independence Movement:

• The Indian independence movement was a series of activities with the ultimate aim of ending British rule in India.

• The movement spanned from 1857 to 1947 and included various forms of protest and rebellion.

• Kumaon Region:

• Kumaon is one of the two regions and administrative divisions of Uttarakhand, the other being Garhwal.

• The region is known for its scenic beauty, including the Himalayas, and its rich cultural heritage.

• Forest Act:

• The Forest Act was a law imposed by the British to regulate and control forest resources in India.

• This act restricted the rights of local communities to access forest resources, which led to widespread dissent.

• Literary Contributions:

• Badri Dutt Pandey was not only a freedom fighter but also a historian and author.

• His book "Kumaon Ka Itihas" is considered an important source for the history of the Kumaon region.

Q15. Answer: (c) Syama Sastri

The correct answer is Syama Sastri.

Key Points

• The "Trinity of Carnatic Music", also known as the Three Jewels of Carnatic Music, refers to three legendary composers of South Indian classical music: Tyagaraja, Muthuswami Dikshitar, and Syama Sastri.

• Syama Sastri (1762–1827) was one of the most prominent Carnatic music composers, renowned for his unique compositional style and mastery over rhythm (tala).

• The works of these composers are considered the foundation of modern Carnatic music, with their compositions being widely sung and practiced by musicians across generations.

• Syama Sastri's compositions are primarily in the Telugu and Sanskrit languages and are celebrated for their devotional depth, especially towards Goddess Kamakshi, his family deity.

• The other options, such as Annamacharya, Purandara Dasa, and Swathi Tirunal, while significant in Indian classical music, are not part of the "Trinity of Carnatic Music."

Additional Information

• About Syama Sastri:

• Born in 1762 in Tiruvarur, Tamil Nadu, Syama Sastri was the eldest among the Trinity.

• He composed around 300 kritis, focusing on intricate rhythmic patterns and devotional lyrics.

• His most famous compositions are in the Swarajati format, and his works are primarily dedicated to Goddess Kamakshi.

• He was known for his mastery of rhythm, creating complex rhythmic structures in his compositions.

• About Tyagaraja:

• Born in 1767 in Tiruvarur, Tamil Nadu, Tyagaraja is regarded as the most prolific composer among the Trinity.

• He composed thousands of kritis, primarily in Telugu, emphasizing devotion to Lord Rama.

• Famous works include "Nagumomu," "Endaro Mahanubhavulu," and the Pancharatna Kritis.

• About Muthuswami Dikshitar:

• Born in 1775 in Tiruvarur, Tamil Nadu, Dikshitar's compositions are renowned for their structure and use of Sanskrit lyrics.

• He composed around 500 kritis, with many dedicated to various Hindu deities and temples.

• His compositions often include references to Indian mythology and astrology.

• Other Prominent Figures in Indian Classical Music:

• Annamacharya: A 15th-century composer from Andhra Pradesh, known for his devotional songs dedicated to Lord

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Venkateshwara in Telugu.

• Purandara Dasa: Known as the "Father of Carnatic Music," he laid the foundation for Carnatic music's teaching methodology in the 16th century.

• Swathi Tirunal: A 19th-century composer and king of Travancore, known for his compositions in multiple languages, including Sanskrit, Malayalam, and Hindi.

Important Points

• The "Trinity of Carnatic Music" represents the golden era of Carnatic music, showcasing unparalleled devotion, creativity, and musical genius.

• Syama Sastri's compositions often focus on intricate rhythmic structures, while Tyagaraja's works emphasize Bhakti (devotion), and Dikshitar's compositions are known for their scholarly depth.

• Though other composers like Purandara Dasa and Swathi Tirunal contributed significantly to Indian classical music, they are not part of the Trinity.

• The works of the Trinity continue to be a vital part of Carnatic music concerts, training, and repertoire, influencing generations of musicians and music enthusiasts.

Q16. Answer: (a) Stethoscope

The correct answer is a stethoscope.

• The stethoscope is a medical instrument used for listening to sounds produced within the body, chiefly in the heart or lungs.

Key Points

• The stethoscope is a medical instrument used for listening to sounds produced within the body, chiefly in the heart or lungs.

• It can also be used to listen to the sounds produced by the intestines, as well as blood flow in arteries and veins.

Additional Information

• Periscope is used to view objects above sea level (used in submarines).

• A kaleidoscope is an optical device consisting of mirrors that reflect images of bits of coloured glass in a symmetrical geometric design through a viewer.

• A telescope is an optical device used to see celestial objects.

• It consists of two convex lenses placed coaxially in a hollow tube.

• The lens facing the object is called the objective and the lens towards the eye is called the eyepiece.

Q17. Answer: (d) Phon

The correct answer is Phon.

• Phon is not a unit of Energy.

• Phon is a unit of the perceived loudness of sound for pure tones.

Units of heat:

• A British thermal unit (BTU) is a measure of the heat content of fuels or energy sources.

• It is the quantity of heat required to raise the temperature of one pound of liquid water by 1 degree Fahrenheit.

• kWh is used for electric power measurement.

• Joule is used for energy measurement.

Key Points

• The SI unit for temperature is the Kelvin.

• Celsius is a derived unit for temperature.

• The SI unit of energy/work is the joule.

• The SI unit of power is the watt (W).

• The SI unit for pressure is the pascal (Pa).

Q18. Answer: (d) Altimeter

The correct answer is option 4, i.e Altimeter.

Key Points

• An altimeter is an instrument used to measure altitudes in aircraft.

• The altimeter was invented by Louis Paul Cailletet.

• The measurement of altitude using altimeter is called altimetry.

• Actinometer is the instrument used to measure the heating power of radiation.

• Ceilometer is the instrument used to measure the aerosol concentration within the atmosphere.

• The accelerometer is the instrument used to measure the acceleration forces.

Instrument	Use
Ammeter	Measures the strength of the electric current.
Anemometer	Measures wind speed.
Barometer	Measures atmospheric pressure.
Bolometer	Measures heat radiations.
Crescograph	Measures growth in plants.
Calorimeter	Measures heat in chemical reactions.
Hydrometer	Measures the specific gravity of a liquid.
Hygrometer	Measures atmospheric humidity.
Lactometer	Measures the purity of milk.
Thermometer	Measures temperature.

Q19. Answer: (b) The stamen and pistil

The correct answer is The stamen and pistil.

Key Points

• The stamen and pistil are the essential organs in a flower for reproduction.

• The male reproductive organ of the flower is the stamen, while the pistil is the female reproductive organ.

• Sepals are found below the petals of a flower.

• Petals are the colored part of the flowers.

Additional Information

Q20. Answer: (d) gain of oxygen

The correct answer is gain of oxygen

Concept:

Chemical Reactions:

• A process in which one or more compounds are formed as products completely different from the reacting substances is known as a chemical reaction.

• There is generally a change in heat, colour, or appearance when a chemical reaction takes place.

• The evolution of gas may also occur.

• A chemical reaction may be reversible or irreversible in nature.

Oxidation reaction:

• Oxidation Reaction refers to a reaction in which either the addition of Oxygen takes place or the removal of Hydrogen takes place.

• It can also be said as the process of loss of one or more electrons by atoms or ions.

• Example is:

$2Mg + O_2 = 2MgO$

Reduction Reaction:

• Reduction Reaction refers to a reaction in which either the addition of Hydrogen takes place or the removal of oxygen takes place.

• In the process of reduction, a chemical species also gains electrons.

• It is the reverse of the oxidation reaction.

• Example is:

$H_2 + F_2 \rightarrow 2HF$

Explanation:

Oxidation is a chemical reaction that is characterized by

• loss of electron

• addition of oxygen atom

• removal of the hydrogen atom

The substance that undergoes oxidation is said to be oxidized.

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The loss of electrons and an increase in the oxidation state are the characteristics of an oxidation reaction.

For example:

$H_2S + Cl_2 \rightarrow 2HCl + S$

In this reaction, the chlorine is getting reduced to hydrochloric acid (HCl) on the addition of hydrogen provided by Hydrogen sulfide (H_2S).

Q21. Answer: (d) Distilled water

CONCEPT:

• Some liquids are good conductors of electricity and some are poor conductors.

• Most liquids that conduct electricity are solutions of acids, bases and salts.

• The passage of an electric current through a conducting liquid causes chemical reactions. The resulting effects are called chemical effects of currents.

EXPLANATION:

These conduct electricity in their aqueous medium (dissolve in water).

• Vinegar is the common name of acetic acid and breaks into their ions in the aqueous medium.

• Lime juice is made of citric acid and it breaks into their ions in the aqueous medium.

• Saltwater is also broken into their ions in the aqueous medium.

• Distilled water is free of salts and is a poor conductor of electricity.

Hence, it becomes clear that Distilled water is not a conductor of electricity.

Q22. Answer: (d) Voltmeter

The correct answer is voltmeter.

Key Points

• A Voltmeter is an instrument used to measure the potential difference in a circuit.

• A voltmeter is always connected in parallel in the circuit to measure the potential difference between two points.

• Unit of Potential Difference - Volt.

• A galvanometer can be converted into a voltmeter by connecting a large resistance in series.

• Voltmeter was invented by Hans Orested.

Additional Information

Name of the Instrument	Functions/ Used for
Barometer	Measuring atmospheric pressure.
Galvanometer	Measuring small electric current.
Ammeter	Measuring the strength of the electric current.
Pyrometer	Measuring very high temperature.
Calorimeter	Measuring quantities of heat.
Polygraph	Recording changes, simultaneously in physiological processes such as heartbeat, blood pressure, and respiration is also used as a lie detector.
Electrocardiograph (ECG)	Measuring movements of the heart.
Dynamo	Converts mechanical energy into electrical energy.
Periscope	Used for viewing objects above sea level.
Electroencephalograph (EEG)	Measures electrical activities in the brain.

Q23. Answer: (a) Tungsten

Tungsten metal is used for making the filament of electric bulbs.

Tungsten is used to making an electrical bulb filament for the following reasons:

• It's a very high melting point element.

• It has very high resistance, so it does not burn easily at room temperature.

• The lamp glows at high temperatures.

• Tungsten filament does not melt even though a significant amount of heat is generated due to the passing of the current through

the filament (through the heating effect of the current).

Key Points

Tungsten has the highest melting point i.e. 3,410°C.

Argon is used in electric bulbs to prevent corrosion of its tungsten filament. Since it doesn't react with tungsten, it stops the filament from burning away in the presence of oxygen.

Hence, which results in increased light bulb life.

In the electric bulb, electric energy is converted into light energy.

Tungsten:

• Symbol: W

• Atomic number: 74

• Atomic mass: 183.84 u

Additional Information

Q24. 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.

Q25. Answer: (b) Potassium

The correct answer is Potassium.

Key Points

• The Reactivity series of metals refers to the arrangement of metals in the descending order of their reactivities.

• Features of Reactivity series:

• The metals at the top of the reactivity series are powerful reducing agents since they are easily oxidized and get corroded very easily.

• The reducing ability of the metals grows weaker while traversing down the series.

• The electro positivity of the elements also reduces while moving down the reactivity series of metals.

• All metals that are found above hydrogen in the activity series liberate H2 gas upon reacting with dilute HCl or dilute H2SO4.

• Metals that are placed higher on the reactivity series have the ability to displace metals that are placed lower from their salt solutions.

Additional Information

• Cesium is the most reactive metal in the periodic table.

• It is a rare metal than other alkali metals.

• It is silvery gold, soft, and ductile.

Important Points

• Cesium, Gallium, and Mercury are the only three metals that are liquid at or around room temperature.

Q26. Answer: (a) Weight and Force

The correct answer is Weight and Force.

Key Points

• The SI unit of weight and force is the Newton (N), which quantifies the amount of force applied to an object.

• Weight is the force exerted by gravity on an object, and it is directly proportional to the mass of the object.

• Force is a vector quantity that causes an object with mass to change its velocity, i.e., to accelerate.

• The Newton is defined as the amount of force required to accelerate a one-kilogram mass by one meter per second squared.

Additional Information

Option	Details
Option 2	Impulse has the SI unit of Newton-second (Ns) and Inertia does not have a unit as it is quantified by the object's mass.
Option 3	Momentum has the SI unit of kilogram meter per second (kg·m/s), while Acceleration is measured in meters per second squared (m/s^2).

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Option 4	velocity has the SI unit of meters per second (m/s), and Acceleration is measured in meters per second squared (m/s²).

Q27. Answer: (a) Somatic

The correct answer is Somatic.

Key Points

• Somatic nervous controls the voluntary actions in the body by transmitting impulses from CNS to skeletal muscle cells. It consists of the somatic nerves.

• The somatic nervous system is responsible for carrying motor and sensory information.

• It is made up of nerves that connect to the skin, sensory organs, and skeletal muscles.

• The somatic system is responsible for all voluntary muscle movements as well as for processing sensory information from external stimuli. (Hearing, touching, and sight).

Important Points

• The autonomic nervous system - The nervous system that controls and regulates the internal organs without any conscious recognition or effort by the organism.

• Afferent is responsible for transmitting messages from tissues and organs to the CNS.

Q28. Answer: (c) Arteries

The correct answer is Arteries.

• Arteries carry oxygen-rich blood from the heart to all parts of the body.

• The largest artery is the aorta, the main high-pressure pipeline connected to the heart's left ventricle.

• The arteries smaller branches are called arterioles and capillaries.

• The pulmonary artery is the only artery that carries oxygen-poor blood from the heart to the lungs under low pressure.

• A vein is an elastic blood vessel that transports blood from various regions of the body to the heart.

• Plasma carrying these blood components throughout the body as the fluid in which they travel.

Q29. Answer: (b) Angular Velocity

The correct answer is Angular Velocity.

• Angular Velocity is a vector quantity.

Key Points

• Vector Quantities

• Physical quantities which have magnitude and direction both and which obey triangle law are called vector quantities.

• Example: Displacement, Velocity, angular velocity etc.

• Angular Velocity

• The time rate of change of the angular displacement of a particle relative to its origin is angular velocity.

• Its direction is given by the right-hand thumb rule.

• Scalar Quantities

• Physical quantities which have magnitude only and no direction are called scalar quantities.

Example: Mass, Speed, Volume, etc.

• Angular frequency is the magnitude of Angular velocity, hence it is a scalar quantity.

Additional Information

Scalar Quantities	Vector Quantities
Temperature	Angular Momentum
Mass	Electric Flux
Current	Torque
Potential Difference	Gravity
Resistance	Impulse
Charge	Force
Energy	Acceleration
Power Work	Magnetic Field

Q30. Answer: (c) tesla

The Correct Answer is tesla.

Key Points

• The tesla is a magnetic induction unit derived from the International System of Units. One tesla is equivalent to one weber per metre square.

• The device was announced at the 1960 General Conference on Weights and Measures and, on the suggestion of the Slovenian electrical engineer France Avčin, is named in honor of Nikola Tesla.

• The strongest fields observed on Earth from permanent magnets are from the spheres of Halbach and can be over 4.5 T.

• Scientists at the National High Magnetic Field Laboratory's Los Alamos National Laboratory campus, the world's first 100-tesla non-destructive magnetic field, have created the record for the highest continuous pulsed magnetic field.

Important Points

• In the International System of Units, a candela is the base unit of luminous intensity; that is, the luminous power per unit of solid angle emitted in a particular direction by the point light source.

• In the International System of Units, kelvin is the base unit of temperature with the unit symbol K.

• In the International System of Units, the ampere, sometimes shortened to 'amp', is the base unit of electric current.

Q31. Answer: (a) 2

Shortcut Trick

Apply the divisibility rule of 11 directly:

Sum of alternate digits (odd places) = 6 + 5 + P = 11 + P

Sum of remaining digits (even places) = 9 + 4 = 13

Difference = (11 + P) − 13 = P − 2

For divisibility by 11, P − 2 = 0 => P = 2

Therefore The correct answer is 2.

Alternate Method

Given:

A 5-digit number 6954P is exactly divisible by 11.

P is a single digit (0 to 9).

Method Used:

A number is divisible by 11 if the difference between the sum of digits at odd positions and the sum of digits at even positions is either 0 or a multiple of 11.

Calculations:

=> Sum of digits at odd places (1st, 3rd, 5th from right) = P + 5 + 6 = 11 + P

=> Sum of digits at even places (2nd, 4th from right) = 4 + 9 = 13

=> Difference = (11 + P) − 13

=> Difference = P − 2

=> For the difference to be a multiple of 11, the only possible value for a single digit P ($0 \le P \le 9$) is when the difference is exactly 0.

=> P − 2 = 0

=> P = 2

Therefore The correct answer is 2.

Additional Information

Divisibility Rule of 3 and 9

A number is divisible by 3 (or 9) if the sum of its digits is exactly divisible by 3 (or 9).

Divisibility Rule of 4 and 8

A number is divisible by 4 if its last two digits form a number divisible by 4. It is divisible by 8 if its last three digits form a number divisible by 8.

Combined Divisibility Rule of 7, 11, and 13

Form alternating sums of blocks of three digits from right to left. If the resultant difference is divisible by 7, 11, or 13, then the original number is also divisible by 7, 11, or 13 respectively.

Q32. Answer: (c) Rs. 2,000

Shortcut Trick

Effective interest rate for 5 years = 4% × 5 = 20%.

Total amount in percentage = 100% (Principal) + 20% (Interest) = 120%.

Given that 120% of the principal corresponds to Rs. 2,400.

Principal (100%) = (2400 ÷ 120) × 100 = 20 × 100 = 2000.

Therefore The correct answer is Rs. 2,000.

Alternate Method

P = ?

Year 0

A = Rs. 2400

Year 5

• SI (4% × 5 = 20%)

Amount = P + 20% of P = 120% of P

Given:

Amount (A) = Rs. 2,400

Rate of Interest (R) = 4% p.a.

Time (T) = 5 years

Formula Used:

Amount = Principal × [1 + (R × T) ÷ 100]

Calculations:

=> 2400 = P × [1 + (4 × 5) ÷ 100]

=> 2400 = P × [1 + 20 ÷ 100]

=> 2400 = P × [1 + 1/5]

=> 2400 = P × (6/5)

=> P = (2400 × 5) ÷ 6

=> P = 400 × 5

=> P = 2000

Therefore The correct answer is Rs. 2,000.

Additional Information

Simple Interest (SI) Formula

The general formula to calculate simple interest is SI = (P × R × T) ÷ 100, where P is the principal, R is the rate per annum, and T is the time in years.

Effective Rate of Interest

In simple interest, the effective interest rate over a given period is directly proportional to time and is calculated as R × T. The total amount returned becomes (100 + R × T)% of the principal.

Relation between Amount and Principal

Amount (A) is the total sum returned at the end of the time period. The formula is A = P + SI = P × [1 + (R × T) ÷ 100].

Q33. Answer: (c) 24

Given:

39 − [18 − {12 − (15 − 12 ÷ 6 × 3)}]

Formula Used:

BODMAS rule

Calculation:

=> 39 − [18 − {12 − (15 − 12 ÷ 6 × 3)}]

=> 39 − [18 − {12 − (15 − 2 × 3)}]

=> 39 − [18 − {12 − (15 − 6)}]

=> 39 − [18 − {12 − 9}]

=> 39 − [18 − 3]

=> 39 − 15

=> 24

Therefore The correct answer is 24.

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Q34. Answer: (b) 18

Shortcut Trick

Calculate 50% of 60 by taking half of the value: 60 ÷ 2 = 30.

Calculate 30% of 40 by multiplying the non-zero digits: 3 × 4 = 12.

Determine the required difference by subtracting the smaller result from the larger: 30 − 12 = 18.

Therefore The correct answer is 18.

Alternate Method

Given:

First number = 50% of 60

Second number = 30% of 40

Formula Used:

Percentage Value = (Percentage/100) × Total Value

Calculations:

=> First value = (50/100) × 60

=> First value = 0.5 × 60 = 30

=> Second value = (30/100) × 40

=> Second value = 0.3 × 40 = 12

=> Difference = First value − Second value

=> Difference = 30 − 12 = 18

Therefore The correct answer is 18.

Additional Information

Basic Percentage Rule

To calculate x% of y, the formula used is (x × y) ÷ 100. Multiplication is commutative, so x% of y is the same as y% of x.

Percentage to Fraction Conversion

Common fractions simplify calculations: 50% = 1/2, 25% = 1/4, 20% = 1/5, and 10% = 1/10.

Percentage Change

The percentage difference between two values a and b is calculated as |a − b| ÷ b × 100, where b is the base value.

Q35. Answer: (a) 1,100

Shortcut Trick

Savings = 60%, so Expenditure = 100% − 60% = 40%.

Given, 40% of Income = Rs. 440.

100% of Income = (440 ÷ 40) × 100 = 11 × 100 = Rs. 1,100.

Therefore The correct answer is Rs. 1,100.

Alternate Method

Given:

Savings Percentage = 60%

Expenditure = Rs. 440

Calculations:

=> Total Income = Expenditure + Savings

=> 100% = Expenditure % + 60%

=> Expenditure % = 40%

=> 40% of Income = Rs. 440

=> (40 ÷ 100) × Income = 440

=> Income = (440 × 100) ÷ 40

=> Income = 11 × 100 = Rs. 1,100

Therefore The correct answer is Rs. 1,100.

Additional Information

Income Equation

Income is always the sum of Expenditure and Savings. Income = Expenditure + Savings.

Percentage Base Change

If savings are s%, then expenditure is (100 − s)% of the total income.

Ratio Method

Savings of 60% means Savings : Income = 3 : 5. Thus, Expenditure : Income = 2 : 5.

Q36. Answer: (c) 24

Given:

Given numbers are 17, 14, 31, 23, 35.

Formula used:

Average = (Sum of observations)/(The number of observation)

Calculation:

Average = (17 + 14 + 31 + 23 + 35)/5

=> Average = 120/5

=> Average = 24

Therefore The average is 24.

Q37. Answer: (b) 30

Shortcut Trick

Mean Proportional of two numbers a and b is given by √(a × b).

Given numbers: 18 and 50.

Mean Proportional = √(18 × 50)

Mean Proportional = √900 = 30.

Therefore The correct answer is 30.

Alternate Method

Given:

First number (a) = 18

Second number (b) = 50

Formula Used:

If x is the mean proportional between a and b, then a : x = x : b

=> $x^2 = a \times b$

Calculations:

=> $x^2 = 18 \times 50$

=> $x^2 = 900$

=> $x = \sqrt{900}$

=> x = 30

Therefore The correct answer is 30.

Additional Information

Third Proportional

The third proportional of two numbers a and b is defined as the number c such that a : b = b : c, which means $c = b^2 \div a$.

Fourth Proportional

The fourth proportional of three numbers a, b, and c is d such that a : b = c : d, which means d = (b × c) ÷ a.

Continued Proportion

Three quantities a, b, c are in continued proportion if a : b = b : c.

Q38. Answer: (c) Rs. 90000

Given:

Current Value = Rs. 72000,

Depreciation = 20%

Concept:

Original Price = Current Value/(1 - Depreciation)

Solution:

=> Original Price = 72000/(1 - 0.20)

=> Original Price = Rs. 90000

Therefore, the original price was Rs. 90000.

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Q39. Answer: (c) 13

Shortcut Trick

Solve using the BODMAS hierarchy: Brackets → Division → Addition.

Step 1 (Bracket): 2 × 5 = 10

Step 2 (Division): 100 ÷ 10 = 10

Step 3 (Addition): 10 + 3 = 13

Therefore The correct answer is 13.

Alternate Method

Given:

The expression is 100 ÷ (2 × 5) + 3

Formula Used:

BODMAS Rule (Brackets, Orders, Division, Multiplication, Addition, Subtraction)

=> First, simplify the terms inside the parentheses (Brackets):

=> 100 ÷ 10 + 3

=> Next, perform the division:

=> 10 + 3

=> Finally, perform the addition:

=> 13

Therefore The correct answer is 13.

Additional Information

BODMAS Hierarchy

It defines the order of operations: Brackets → Orders (powers/roots) → Division and Multiplication (left-to-right) → Addition and Subtraction (left-to-right).

Bracket Types

Always solve from innermost to outermost: Round (), Curly { }, and Square [] brackets.

Common Error

Calculating addition before division (e.g., 100 ÷ 13) would lead to an incorrect answer; always follow the hierarchy.

Q40. Answer: (c) 117

Shortcut Trick

For proportion a : b :: c : d, the Product of Extremes = Product of Means.

6 × x = 18 × 39

x = (18 × 39) ÷ 6

x = 3 × 39 = 117

Therefore The correct answer is 117.

Alternate Method

Given: Numbers 6, 18, 39, and x are in proportion.

Formula Used: If a, b, c, d are in proportion, then a/b = c/d.

=> 6/18 = 39/x

=> 1/3 = 39/x

=> x = 39 × 3

=> x = 117

Therefore The correct answer is 117.

Additional Information

Fourth Proportional

If three numbers a, b, and c are given, then the fourth proportional d is calculated as d = (b × c) ÷ a.

Continued Proportion

Three numbers a, b, and c are in continued proportion if a : b = b : c, which implies $b^2 = ac$, where b is the mean proportional.

Mean Proportional

The mean proportional between two numbers a and b is given by √(a × b).

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Q41. Answer: (b) 45

Shortcut Trick

For any number ending in 25, the square root ends in 5.

Identify the remaining part of the number: 20.

Find two consecutive integers whose product is 20 => 4 × 5 = 20.

The smaller integer 4 is the tens digit of the root.

Therefore The correct answer is 45.

Alternate Method

Given: Number = 2025

Formula Used: Prime Factorization Method for square root calculation.

Calculations:

=> 2025 = 5 × 405

=> 405 = 5 × 81

=> 81 = 3 × 3 × 3 × 3

=> 2025 = (5 × 5) × (3 × 3) × (3 × 3)

=> $\sqrt{2025} = \sqrt{(5^2 \times 3^2 \times 3^2)}$

=> $\sqrt{2025} = 5 \times 3 \times 3$

=> $\sqrt{2025} = 45$

Therefore The correct answer is 45.

Additional Information

Square of Numbers Ending in 5

To square a number ending in 5 (say A5), the result is always [A × (A+1)] followed by 25. Example: $45^2 = [4 \times 5]25 = 2025$.

Perfect Square Identification

A perfect square never ends in the digits 2, 3, 7, or 8. Its digital sum (sum of digits reduced to a single digit) is always 1, 4, 7, or 9.

Estimation Method

Since $40^2 = 1600$ and $50^2 = 2500$, the square root of 2025 must lie between 40 and 50. Since it ends in 5, the only possible value is 45.

Q42. Answer: (c) Rs. 20

Shortcut Trick

Total Wages = Workers × Days × Daily Wage

Rs. 1,200 = 10 × 6 × Daily Wage

Rs. 1,200 = 60 × Daily Wage

Daily Wage = 1,200 ÷ 60 = Rs. 20

Therefore The correct answer is Rs. 20.

Alternate Method

Given:

Number of workers = 10

Number of days = 6

Total wages = Rs. 1,200

Formula Used:

Wage per worker per day = Total Wages ÷ (Number of workers × Number of days)

Calculations:

=> Total man-days = 10 workers × 6 days = 60 man-days

=> One-day wage of 10 workers = 1,200 ÷ 6 = Rs. 200

=> One-day wage of 1 worker = 200 ÷ 10 = Rs. 20

Therefore The correct answer is Rs. 20.

Additional Information

Work and Wages Principle

Wages are distributed in direct proportion to the work done or the product of efficiency and time.

Chain Rule Formula

The relationship is given by (M1 × D1 × H1) ÷ W1 = (M2 × D2 × H2) ÷ W2, where W represents work or wages.

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Man-Days Concept

Total effort is measured in man-days, which is the product of the number of persons and the time they work.

Q43. Answer: (a) 221.76 cm²

Shortcut Trick

Radius r = 8.4 cm

Area = π × r² = (22 ÷ 7) × 8.4 × 8.4

Area = 22 × 1.2 × 8.4 = 26.4 × 8.4 = 221.76 cm²

Quick Check: The result must be a multiple of 11 (2+1+6 = 9 and 2+7 = 9; 9−9 = 0).

Therefore The correct answer is 221.76 cm².

Alternate Method

Given:

Radius (r) = 8.4 cm

π = 22 ÷ 7

Formula Used:

Area of Circle = πr²

r = 8.4 cm Circle Area = π × (8.4)²

Calculations:

=> Area = (22 ÷ 7) × 8.4 × 8.4

=> Area = 22 × (8.4 ÷ 7) × 8.4

=> Area = 22 × 1.2 × 8.4

=> Area = 26.4 × 8.4

=> Area = 221.76 cm²

Therefore The correct answer is 221.76 cm².

Additional Information

Circumference of a Circle

The boundary length of a circle is calculated as C = 2 × π × r.

Area of a Semicircle

A semicircle is half of a circle, and its area is exactly half of the circle area: A = (π × r²) ÷ 2.

Area of a Sector

The area of a portion of a circle with central angle θ is given by A = (θ ÷ 360) × π × r².

Diameter of a Circle

The longest chord passing through the center is the diameter, where D = 2 × r.

Q44. Answer: (c) 150

Shortcut Trick

A 25% increase means the new value is 125% of the original.

Using the fraction method, 125% is equivalent to 5/4.

New Value = 120 × (5/4) = 30 × 5 = 150.

Therefore The correct answer is 150.

Alternate Method

Given: Initial value = 120, Percentage increase = 25%.

Formula: New Value = Initial Value + (Increase% × Initial Value) / 100

=> Increase amount = 120 × (25/100)

=> Increase amount = 120 × (1/4) = 30

=> New Value = 120 + 30 = 150

Therefore The correct answer is 150.

Additional Information

Percentage Increase and Decrease

To increase a number by x%, multiply it by (1 + x/100). To decrease by x%, multiply it by (1 − x/100).

Fractional Equivalents

Memorizing common fractions like 25% = 1/4, 20% = 1/5, and 12.5% = 1/8 helps in faster mental calculations.

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Successive Percentage Change

If a value is increased by a% and then by b%, the effective net change is given by the formula: (a + b + (a × b)/100)%.

Q45. Answer: (d) 5 : 3

Shortcut Trick

Ratio of Father and Son = 2 : 1

Product of ratio units = 2 × 1 = 2 units²

2 units² = 200 => 1 unit² = 100 => 1 unit = 10

Present ages: Father = 20, Son = 10

Ages after 5 years: (20 + 5) : (10 + 5) = 25 : 15 = 5 : 3

Therefore The correct answer is 5 : 3.

Alternate Method

Given: Ratio = 2 : 1, Product = 200

Formula Used: Product of ages = (First Age) × (Second Age)

=> Let the present ages be 2x and x.

=> (2x) × (x) = 200

=> 2x² = 200

=> x² = 100

=> x = 10

=> Present age of Father = 2 × 10 = 20 years

=> Present age of Son = 1 × 10 = 10 years

=> Age after 5 years: Father = 25, Son = 15

=> Required Ratio = 25 : 15 = 5 : 3

Therefore The correct answer is 5 : 3.

Additional Information

Ratio and Proportions

If the ratio of two quantities is a : b, they can be represented as ax and bx where x is the common multiplier.

Age Problems

To find the age after 'n' years, add 'n' to the present age. To find the age 'n' years ago, subtract 'n' from the present age.

Product of Ages

When multiplying terms in a ratio, ensure the variable power increases (e.g., x × x = x²).

Q46. Answer: (c) FOMPZ

The logic followed here is,

KIOSK : LJRTL

FLAME : GMDNF

Similarly,

ENJOY : ?

Hence, the correct answer is "FOMPZ".

Q47. Answer: (c) 139

BODMAS Table:

After decoding signs:

Signs	Decoded signs
•	•
•	•
×	÷
÷	×

Given equation: 63 × 7 ÷ 13 − 64 + 42 = ?

After interchanging the signs then:

=> 63 ÷ 7 × 13 + 64 - 42 = ?

=> 9 × 13 + 64 - 42

=> 117 + 64 - 42

=> 181 - 42 = 139

Hence, the correct answer is "139".

Q48. Answer: (d) 76

The pattern followed in the given series is:

The difference of difference between the terms is 9.

Hence the correct answer is option 4).

Q49. Answer: (d) A

According to the given statement, we have:

Step 1): Seven people, A, B, C, D, E, F and G, are sitting in a straight row facing the north. Only two people sit to the left of C. Only one person sits to the right of D.

Step 2): Only two people sit between A and B. B sits to the left of A. E is an immediate neighbour of A to the right.

Step 3): F is not an immediate neighbour of B. Thus the final arrangement is:

Thus, A sits at the center.

Hence, the correct answer is 'option 4'.

Q50. Answer: (d) 33rd

Given:

Total number of students in the class = 57

Rajat's rank from the top = 25th

The formula for rank from the bottom is:

Rank from Bottom = Total Students - Rank from Top + 1

Substituting the values:

Rank from Bottom = 57 - 25 + 1

= 32 + 1

= 33rd

Hence, the correct answer is "Option 4".

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