Agniveer Army GD 1 July 2025 (Shift 2) Memory-Based Paper (Previous Year Paper)

Army GD Agniveer • 2025 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. Which newspaper edited by Bal Gangadhar Tilak, was one of the strongest critics of the British rule?

(a) Amrita Bazar Patrika
(b) Kesari
(c) The Tribune
(d) The Hindu

Q2. Where has India's 58th Tiger Reserve been established?

(a) Madhya pradesh
(b) Uttar Pradesh
(c) Rajasthan
(d) Haryana

Q3. Which of the following Articles was inserted in the Indian Constitution by the 86^(th) Amendment Act, 2002?

(a) Article 15
(b) Article 19
(c) Article 32
(d) Article 21 A

Q4. Which articles of the Indian constitution address fundamental rights?

(a) Article 12 to 35
(b) Article 5 to 35
(c) Article 12 to 40
(d) Article 5 to 11

Q5. How many battalions are typically commanded under a Brigadier?

(a) 2 to 3 battalions
(b) 4 to 5 battalions
(c) 5 to 6 battalions
(d) 6 to 7 battalions

Q6. Which of the following is NOT a part of the Right to Freedom?

(a) Freedom of speech and expression
(b) Right to assemble peacefully without arms
(c) Right to strike
(d) Freedom of silence

Q7. Which Film maker was honoured with Satyajit Ray Lifetime Achievement Award at 55th International Film Festival of India 2024 ?

(a) Wong Kar-Wai
(b) Krzysztof Zanussi

(c) Phillip Noyce
(d) Martin Scorsese

Q8. Which of these creatures is not found in dense forests?
(a) Camel
(b) Kangaroo
(c) Elephant
(d) Monkey

Q9. In which of the following dance forms the faces of dancers are made up to look like painted masks and the costume consists of a full skirt, a heavy jacket, numerous garlands and necklaces and a towering headdress?
(a) Kathakali
(b) Odissi
(c) Kathak
(d) Mohiniyattam

Q10. Who is the current chief of the Indian Navy?
(a) Admiral Dinesh K Tripathi
(b) Admiral S M Prakash Nanda
(c) Admiral Sunil Lanba
(d) Admiral Arun

Q11. What is the main occupation of the Bhil tribe?
(a) Agriculture
(b) Hunting and gathering
(c) Fishing
(d) Trading

Q12. Who was the Viceroy of India at the times of the Dandi March initiated by Gandhiji?
(a) Lord Willingdon
(b) Lord Reading
(c) Lord Irwin
(d) Lord Linlithgow

Q13. Which of the following dance forms is derived from martial arts practices?
(a) Chhau
(b) Jhora
(c) Bharatanatyam
(d) Ghoomar

Q14. Rainfall occurs in which layer of the earth's atmosphere?
(a) Troposphere
(b) Thermosphere
(c) Stratoshphere
(d) Mesosphere

Q15. Guru Ghasidas National Park is situated in
(a) Uttar Pradesh
(b) Madhya Pradesh
(c) Chhattisgarh
(d) Jharkhand

GENERAL SCIENCE

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Q16. Acid rain is the result of increase in

(a) Dust and microbes in air
(b) CO_2 and CO in air
(c) SO_2 and NO_2 in air
(d) Dust and ozone in air

Q17. The Blood is filtered in _____.

(a) Kidney
(b) Lungs
(c) Heart
(d) Intestine

Q18. A moving charge produces:

(a) an electric field only
(b) a magnetic field only
(c) Both an electric field & a magnetic field
(d) None of these

Q19. Iron rusts because of _____ reaction.

(a) Oxidation
(b) Reduction
(c) Corrosion
(d) Redox

Q20. What gets destroyed by cutting and washing fruits and vegetables?

(a) Fiber
(b) Water
(c) Carbohydrates
(d) Vitamin

Q21. The electromagnets are used in-

(a) Small motors
(b) MRI
(c) Electric bell
(d) All of the above

Q22. Which vitamin is made at a higher rate in our body?

(a) Vitamin A
(b) Vitamin B
(c) Vitamin C
(d) Vitamin D

Q23. Lenses are widely used in spectacle to

(a) Protect eyes from sore eye
(b) Prevention against conjunctivitis
(c) Help in the formation of the image
(d) Correct the eye defects

Q24. What do dolphins, bats and porpoise use

(a) Ultrasound
(b) Infrasound
(c) Both a and b
(d) None of them

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Q25. Which of the following is an example of vector quantity?

(a) Velocity
(b) Distance
(c) Entropy
(d) Energy

Q26. Which of the following metals does not form amalgams?

(a) Zinc
(b) Copper
(c) Magnesium
(d) Iron

Q27. _____ is a halogen.

(a) magnesium
(b) Krypton
(c) Chlorine
(d) Sodium

Q28. Which alkane is known as marsh gas?

(a) Methane
(b) Ethane
(c) Propane
(d) Butane

Q29. Deficiency of which vitamin causes Rickets?

(a) Vitamin K
(b) Vitamin D
(c) Vitamin E
(d) Vitamin B Complex

Q30. Which of the following compounds is unsaturated?

(a) C_(2)H_(6)
(b) C3H8
(c) C_(2)H_(4)
(d) C4H10

MATHEMATICS

Q31. What will be the LCM of 48 and 65?

(a) 48
(b) 1
(c) 3120
(d) 65

Q32. A boy has 120 balls of which some are white and the remaining are black. If the percentage of white balls is 45%, find the number of black balls he has.

(a) 56
(b) 66
(c) 64
(d) 54

Q33. In a class, there are 45 girls and 27 boys. What is the ratio of boy to girl?

(a) 3 : 5
(b) 5 : 9
(c) 9 : 3

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(d) 5 : 3

Q34. The average of 12 numbers is 40. The average of the first seven numbers is 30 then finds the average of the remaining numbers?

(a) 50
(b) 52
(c) 54
(d) 56

Q35. The income of a person is Rs. 6400, if his income increases by 10% each year then what will be his income after two years.

(a) Rs. 7680
(b) Rs. 7400
(c) Rs. 7744
(d) Rs. 7000

Q36. The number of senior citizens (above 60 years) in 10 families are 3, 4, 2, 5, 6, 0, 1, 3, 2 and 4 respectively. Find the average of senior citizens per family.

(a) 4
(b) 7
(c) 5
(d) 3

Q37. Evaluate:

16 ÷ 4 + 24 ÷ 6

(a) 7
(b) 9
(c) 6
(d) 8

Q38. Simplify: 25 ÷ 5 × 6 + 31 - 41.

(a) 10
(b) 20
(c) 24
(d) 28

Q39. Find the missing figure from the following given options,

0.75% of ? = 0.18

(a) 0.22
(b) 24
(c) 32
(d) 29

Q40. Find the number of diagonals in an octagon.

(a) 20
(b) 24
(c) 16
(d) 18

Q41. What principal will yield Rs. 120 as simple interest at 6% p.a. in 10 years?

(a) Rs. 120
(b) Rs. 180
(c) Rs. 200
(d) Rs. 210

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Q42. If A : B = 3 : 5 and B : C = 2 : 3, then A : B : C is equal to:

(a) 6 : 15 : 10
(b) 3 : 8 : 6
(c) 6 : 10 : 15
(d) 3 : 7 : 3

Q43. If the perimeter of a rectangle is 36 metres and the length is 6 metres, what is the area of the rectangle?

(a) 106 m²
(b) 72 m²
(c) 80 m²
(d) 121 m²

Q44. Anil is twice as old as Sunita. Three years ago, he was three times as old as Sunita. The present age of Anil is

(a) 6 years
(b) 8 years
(c) 12 years
(d) 16 years

Q45. A train, 150 m long, is running at 90 km/h. How long (in seconds) will it take to cross a platform that is 300 m long?

(a) 12
(b) 50
(c) 18
(d) 6

LOGICAL REASONING

Q46. Aashna ranks 25th from the top in a class of 70 students. What will be her rank from the bottom?

(a) 46th
(b) 45th
(c) 26th
(d) 48th

Q47. Find the next number in the series.

20, 47, 74, 101, 128, ?

(a) 155
(b) 158
(c) 160
(d) 165

Q48. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

PAN : SCP :: HOP : ?

(a) KQR
(b) KRQ
(c) KSQ
(d) KQS

Q49. Pointing to a photograph, a woman said to a man, “She is the wife of the only son of your brother's grandfather.” How is the woman in the photograph related to the man?

(a) Mother
(b) Sister
(c) Aunt
(d) Grandmother

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Q50. Directions: Study the following series of numbers carefully answer the question given below.

3 7 4 5 8 7 8 3 7 9 5 6 7 2 3 5 8 7 8 5 8 7 6 8 9 7

If all 7 are eliminated from the series, how many consecutive pairs of 8 are present in it? (For e.g. 88)

(a) one
(b) two
(c) three
(d) more than three

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) Kesari

The correct answer is Kesari.

Key Points

• Kesari newspaper published in the Marathi language is one of the strongest critics of British rule.

• Kesari was founded by nationalist leader Lokmanya Bal Gangadhar Tilak on 4 Januray 1881.

• The newspaper was actively used as the voice of the Indian National freedom movement.

• In 1897 Bal Gangadhar Tilak was charged by the British government for his critical views in the newspaper against the government.

Additional Information

• Lokmanya B. G. Tilak started two newspapers Kesari in Marathi language and Maratha in English language.

• Many prominent freedom fighters became editors of these newspapers, like Vishnushastri Chiplunkar, and Gopal Ganesh Agarkar.

• Amrita Bazar Patrika was started by Sisir Ghosh and Moti Lal Ghosh in 1868.

• The Tribune is an Indian English-language daily newspaper founded in 1881 by Sardar Dyal Singh.

• The Hindu is an English daily newspaper founded by G Subramanyam Iyer in 1878.

Q2. Answer: (a) Madhya pradesh

The correct answer is Madhya Pradesh.

Key Points

• Madhav Tiger Reserve in Madhya Pradesh has been designated as India's 58th tiger reserve.

• This addition makes Madhya Pradesh the state with the highest number of tiger reserves in India, totaling nine.

• The reserve is located in the Shivpuri district of Madhya Pradesh.

• The establishment of this reserve underscores India's commitment to wildlife conservation and biodiversity preservation.

Additional Information

• Project Tiger: Launched in 1973, this initiative aims to ensure a viable population of tigers in their natural habitats and to protect them from extinction.

• National Tiger Conservation Authority (NTCA): A statutory body under the Ministry of Environment, Forest and Climate Change, NTCA oversees tiger conservation efforts in India.

• Madhav National Park: Initially established as Shivpuri National Park in 1956 and later renamed in 1959 after Madho Rao Scindia, the Maharaja of Gwalior, this park forms the core area of the newly designated Madhav Tiger Reserve.

• Biodiversity Significance: The region hosts diverse flora and fauna, including species like leopards, deer, and various bird species, contributing to ecological balance.

• Ecotourism Potential: The designation of the tiger reserve is expected to boost ecotourism in the region, providing economic benefits to local communities while promoting conservation awareness.

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• Conservation Challenges: Establishing new tiger reserves helps address challenges such as habitat loss, human-wildlife conflict, and poaching, ensuring the long-term survival of tiger populations.

Q3. Answer: (d) Article 21 A

The correct answer is 'Article 21 A'.

Key PointsThe Constitution of India (86th Amendment) Act, 2002

• It is related to the new Article 21A added after Article 21.

• The new Article 21A deals with the right to education - "The State shall provide free and compulsory education to all children of the age of 6 to 14 years. This shall be subject to the law prescribed by the State concerned."

• The following article has been added to Article 45 of the Constitution in which provision has been made for the early care and education of children below the age of six years.

• Article 45 "The State shall endeavour to provide for the early care and education of all children until they attain the age of six years."

• By amending Article 51A of the Constitution, after (J), a new article (K) has been added, "There is a provision to provide opportunities to enable a parent or guardian of a child of the age of six to 14 years to provide education to his child."

Thus, the correct answer is Article 21 A.

Additional InformationLet's have a look at other options:

Article	Provision for
15	Prohibition of discrimination on the grounds of religion, race, caste, sex or place of birth.
19	Guarantees to all the citizens the six rights.
32	Right to constitutional remedies.

Q4. Answer: (a) Article 12 to 35

The correct answer is Article 12 to 35.

Key Points

• Fundamental Rights are enshrined in Part III of the Indian Constitution, which consists of Articles 12 to 35.

• These articles provide for the basic rights and freedoms that every citizen of India is entitled to, irrespective of their religion, race, caste, sex, or place of birth.

• Some of the important fundamental rights guaranteed by the Indian Constitution include the Right to Equality, Right to Freedom of Speech and Expression, Right to Life and Personal Liberty, Right to Education, and Right to Constitutional Remedies.

• The fundamental rights are enforceable by the courts, and any law or action that violates them can be challenged in the courts of law.

Additional Information

• Article 5 to 35 - This option is incorrect as Article 5 deals with the Citizenship of India and not fundamental rights.

• Article 12 to 40 - This option is incorrect as Article 36 to 40 deal with the Directive Principles of State Policy and not fundamental rights.

• Article 5 to 11 - This option is incorrect as Article 11 deals with the Power of Parliament to regulate the right of citizenship by law and not fundamental rights.

Q5. Answer: (a) 2 to 3 battalions

The Correct answer is 2 to 3 battalions.

Key Points

• A Brigadier is a senior rank in the Indian Army, typically commanding a brigade.

• A brigade usually consists of 2 to 3 battalions, depending on operational requirements and the type of unit.

• Each battalion is commanded by a Lieutenant Colonel and consists of around 800 to 1,000 soldiers.

• The Brigadier is responsible for coordinating the operations, administration, logistics, and training of all battalions under their command.

• The number of battalions under a brigade can vary based on the army division structure, type of unit (infantry, artillery, armored), and mission requirements.

• The brigade, under a Brigadier, is the key link between battalions and the higher formation, usually a division commanded by a Major General.

• This structure ensures operational flexibility and efficient deployment of forces in both peacetime and combat scenarios.

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Q6. Answer: (c) Right to strike

The correct answer is 'Right to strike.

Key PointsLet's have a look at all options:

Right to Freedom	Article
Freedom of speech and expression	19 (a)
Right to assemble peacefully without arms	19 (b)
Freedom of Silence	20 (3)

But there is no such right as 'Right to Strike'. Thus, the correct answer is Right to strike.

Additional Information

• Right to Freedom

• The objective of the Indian Constitution is to ensure freedom of thought, expression, belief, religion, and worship. Therefore, the Right to Freedom has been mentioned in the Indian Constitution from Articles 19 to 22.

• In these, provisions have been given keeping in mind all the sections of the people of the country, so that any person can do any work of his mind, but that work should not be illegal and unconstitutional, nor should that work be done by any other person such that the fundamental rights should be violated.

• Article 19 of the Indian Constitution is most important in this regard. Article 19 of the Indian Constitution at present describes only 6 freedoms for the citizens of the country, which are as follows

• Freedom of thought and expression

• Freedom of arms and peaceful assembly.

• Community and freedom of association

• Freedom of travel

• Freedom of residence

• Freedom of trade

• Article 20 offers protection in respect of conviction for offences.

• Article 21 offers protection of life and personal liberty.

• Article 22 offers protection against arrest and detention in certain cases.

Confusion PointsCitizens were granted 7 freedoms by Article 19 of the original constitution, and the sixth of these freedoms was "Freedom of Property", which was defined by the 44th Constitutional Amendment of the Indian Constitution as the fundamental right to property as well as "Freedom of Property". has been abolished. But the right to property is still not completely separated from the Indian Constitution, Right to Property is still a constitutional right, and is described in Article 300 'A' of the Indian Constitution.

Q7. Answer: (c) Phillip Noyce

The correct answer is Phillip Noyce.

Key Points

• Australian filmmaker Phillip Noyce was honored with the prestigious Satyajit Ray Lifetime Achievement Award at the 55th International Film Festival of India (IFFI) held in 2024.

• Phillip Noyce is renowned for directing acclaimed films such as "Dead Calm," "Patriot Games," and "The Quiet American."

• The award recognizes Noyce's remarkable contribution to global cinema across various genres, including thrillers, dramas, and literary adaptations.

• The Satyajit Ray Lifetime Achievement Award is named after the legendary Indian filmmaker Satyajit Ray and is presented annually at IFFI to honor exceptional contributions to the art of cinema.

• The 55th edition of IFFI took place in Goa, India, continuing its legacy as one of Asia's most prominent film festivals.

Additional Information

• International Film Festival of India (IFFI):

• Established in 1952, IFFI is one of Asia's oldest and most prestigious film festivals.

• The festival aims to celebrate the diversity of global cinema and promote India's cinematic heritage.

• Held annually in Goa since 2004, the event showcases films from across the world, including feature films, documentaries, and short films.

• Satyajit Ray Lifetime Achievement Award:

• Named after the iconic Indian filmmaker Satyajit Ray, the award honors individuals who have made outstanding contributions to the world of cinema.

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• It has been a part of IFFI's legacy, recognizing luminaries from both Indian and international cinema.

• Phillip Noyce:

• An acclaimed Australian filmmaker known for his expertise in crafting suspenseful and emotionally resonant films.

• His notable works include "Rabbit-Proof Fence," which highlights social and historical issues, and "Salt," an action thriller starring Angelina Jolie.

• He has received numerous accolades throughout his career, further solidifying his status as a visionary in global cinema.

• Global Recognition of Indian Cinema:

• Indian cinema has gained international acclaim for its diverse storytelling and unique cultural narratives.

• Platforms like IFFI have played a pivotal role in showcasing Indian films to global audiences.

Q8. Answer: (a) Camel

The correct answer is Camel.

Key Points

• The camel is a creature typically found in deserts, not in dense forests, making it an incorrect option for forest habitat.

• Camel, known for its ability to survive in harsh desert climates, is specially adapted to live in dry, arid regions.

• In contrast, dense forests are home to creatures that thrive in moisture-rich, shaded, and biodiverse environments.

• Examples of animals found in dense forests include tigers, elephants, and various species of monkeys, unlike the camel.

• The camel's physical features, such as a hump for storing fat, are suited to its desert habitat, not a forested environment.

Additional Information

• Desert Ecosystem:

• Desert ecosystems are characterized by low rainfall, sparse vegetation, and animals adapted to hot, dry conditions.

• The camel is one of the most famous animals in desert ecosystems, known for its ability to go without water for extended periods.

• Forest Ecosystem:

• Dense forests, unlike deserts, have a rich biodiversity and are characterized by high rainfall and a variety of plant and animal life.

• Forests are home to animals like tigers, jaguars, and various primates, which are adapted to moist, dense, and shaded environments.

• Adaptations of Camel:

• The camel's hump stores fat, which the animal uses as a source of energy when food is scarce.

• Its long legs help it avoid the hot ground in the desert, while its thick eyelashes protect against blowing sand.

• Impact of Habitat on Animal Life:

• Habitats like deserts and forests shape the physical and behavioral traits of animals to suit environmental conditions.

• In deserts, animals like camels have adaptations to conserve water and endure high temperatures, whereas forest animals have traits to navigate dense vegetation and humidity.

Q9. Answer: (a) Kathakali

The correct answer is Kathakali.

Key Points

• A significant type of classical Indian dance is Kathakali.

• The extremely colourful make-up, costumes, and face masks that the traditionally male actor-dancers wear set this "story play" kind of art apart.

• The seventeenth century saw the development of Kathakali, or "tale drama," in Kerala, southern India, with the support of the prince of Karnataka.

• Women execute the dance in homage to the Hindu god Vishnu, who is represented by the enchantress Mohini.

Additional Information

• the word Mohiniyattam literally means - dance of the enchantress. Mohiniyattam has a legend attached to it as per Hindu mythology.

• One of the eight primary styles of Indian classical dance is kathak. It is Uttar Pradesh's traditional style of dance. Traditional accounts trace the development of Kathak to the wandering storytellers known as Kathakars in ancient northern India.

• Indian traditional dance known as Sattriya is very popular. It is a dance-drama performance art that has its roots in the Krishna-centered Vaishnavism monasteries of Assam and is credited to the saint and scholar of the Bhakti movement Mahapurush Srimanta Sankardev, who lived in the 15th century.

• Odissi, also referred to as Orissi in old literature, is a major ancient Indian classical dance that originated in the temples of Odisha – an eastern coastal state of India.

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Q10. Answer: (a) Admiral Dinesh K Tripathi

The correct answer is Admiral Dinesh K Tripathi.

Key Points

• Admiral Dinesh Kumar Tripathi assumed office as the 26th Chief of Naval Staff (CNS) on 30 April 2024, succeeding Admiral R. Hari Kumar.

• He is an alumnus of Sainik School Rewa, Madhya Pradesh, and the National Defence Academy, and was commissioned into the Indian Navy in 1985.

• Throughout his career, Admiral Tripathi rose through the ranks and held various significant positions, including Commander of the Western Naval Command and vice-admiral (vice-chief) of the Indian Navy.

• He also served as the commandant of the prestigious Indian Naval Academy at Ezhimala, Kerala, and as the director general of naval operations.

• Admiral Tripathi specializes in electronics and communication warfare and has served on the Navy's guided missile destroyer INS Mumbai in key roles.

• He has completed advanced military courses, including graduation from the Defence Services Staff College in Wellington, Tamil Nadu, and attending the Naval Higher Command Course and the Naval Command College at the US Naval War College in Newport, Rhode Island.

Additional Information

• Vice Admiral Krishna Swaminathan, AVSM, VSM assumed charge as the Vice Chief of Naval Staff on May 1, 2024.

• Upon assuming charge, he paid homage to fallen soldiers by placing a floral wreath at the National War Memorial.

• Vice Admiral Swaminathan was commissioned into the Indian Navy in July 1987 and specializes in Communication and Electronic Warfare.

• He has received prestigious awards like the Ati Vishisht Seva Medal and Vishisht Seva Medal.

• Throughout his career, he has held various operational, staff, and training appointments, including command positions of missile vessels, a missile corvette, a guided missile destroyer, and an aircraft carrier.

• He has served in important roles such as Chief Staff Officer (Training) at Headquarters, Southern Naval Command, and as Flag Officer Commanding, Western Fleet.

• Before his current position, he served as Chief of Personnel at NHQ.

Q11. Answer: (a) Agriculture

The Correct answer is Agriculture.

Key Points

• The Bhil tribe is one of the largest tribal communities in India, primarily found in the states of Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra.

• Their main occupation is agriculture, which includes cultivating crops such as millets, maize, wheat, and pulses.

• The Bhils also engage in subsistence farming, producing food mainly for their own consumption rather than large-scale trade.

• Besides agriculture, they practice animal husbandry, raising cattle, goats, and poultry to supplement their income and food resources.

• The Bhil tribe is also known for their traditional knowledge of forests, medicinal plants, and local ecology, which they use to support their agricultural lifestyle.

• They live predominantly in rural and forested areas, which provides them with land suitable for farming and gathering forest produce.

• Their culture and festivals are often linked to the agricultural calendar, reflecting the importance of farming in their daily lives and social structure.

Additional Information

• Hunting and gathering: This was a traditional occupation of early tribal communities, but the Bhils have largely shifted to settled agriculture over time.

Q12. Answer: (c) Lord Irwin

The correct answer is Lord Irwin.

Important Points

• Lord Irwin was the Viceroy of India at the time of the Dandi March initiated by Gandhiji.

• On 12 March Gandhi began his historic Dandi March to the Gujarat seashore where on 6 April he publicly violated the salt law.

• The march attracted enormous publicity both in India and overseas, and was followed by wholesale illegal manufacture and sale of salt, accompanied by the boycott of foreign clothes and liquor.

• Gandhiji's arrest came on May 4, 1930 (Dandi march ended on 6th April 1930) when he had announced that he would proceed

to continue his defiance of the salt laws by leading a raid on the Dharasana Salt Works on the west coast.

Additional Information

Lord Irwin was the Viceroy of India from 1926-1931.

• Major Incidents that took place in India under him:

• In 1928, Simon's commission came to India.

• The incidence of Dandi took place in 1930.

• The Civil Disobedience movement was started in 1930.

• Gandhi signed the Irwin pact. From November 1930 to January 1931, First Round Table Conference was held.

Lord Willingdon

• He was the Viceroy of India from 1931-1936.

• Major Incidents that took place in India under him:

• In his reign, Poona Pact was signed.

• During his time, the Second and Third Round Table Conference was held.

• British Prime Minister Ramsay MacDonald started Communal Award.

• Government of India Act (1935) was passed.

Lord Linlithgow

• He was the Viceroy of India from 1936-1944.

• Major Incidents that took place in India under him:

• In provinces, the Government of India Act 1935 was enforced.

• In 1942, Cripps Mission visited India.

• In 1942, the Quit India movement was started.

• In 1939, the Second World war took place.

Lord Reading

• He was the Viceroy of India from 1921-1926.

• Major Incidents that took place in India under him:

• The incidence of Chauri - Chaura took place during his time.

• Swaraj Party was formed at his time.

• In 1921, the Ahmedabad session of INC was held.

Q13. Answer: (a) Chhau

The correct answer is Chhau.

Key Points

• Chhau is a semi-classical Indian dance that incorporates martial arts steps and techniques along with dance.

• The dance form is known to originate in the states of Odisha, West Bengal, and Jharkhand.

• Chhau dance is a traditional dance form performed by men from Eastern India that enacts episodes from epics including Ramayana and Mahabharata.

• The main objective of this dance form is to celebrate martial arts.

• Chhau dance can be classified into three divisions based on the place it is performed; Mayurbhanj Chau of Odisha, Seraikella Chau of Jharkhand, and Purulia Chau of Bengal.

Additional Information

• Jhora:

• Jhora dance belongs to the state of Uttarakhand.

• It originated in the Kumaon region.

• This magical folk dance form binds people of all castes. Everyone enjoys the dance with a peaceful mind.

• Jhora dance is usually seen in the evening at weddings or fairs.

• As the dancers perform, everyone watching fills up with energy.

• Everyone jumps up to join the dance. It is generally performed in the spring season.

• People from all around the country come to witness this magnificent folk dance form.

• Jhora dance is incomplete without the famous traditional drum known as "Hurka".

• Imagine the drum beating in the background and a large group of people dancing their feet on the beats.

• The beats are different from traditional Indian drums.

• Bharatnatyam :

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• It is the traditional dance of the state of Tamil Nadu.

• Ghoomar:

• It is a traditional folk dance of Rajasthan, India, and Sindh, Pakistan.

• The dance is chiefly performed by veiled women who wear flowing dresses called Ghaghara.

• The dance typically involves performers pirouetting while moving in and out of a wide circle.

• The word ghoomna describes the twirling movement of the dancers and is the basis of the word Ghoomar.

• Ghoomar is often performed on special occasions, such as at weddings and during Holi, and sometimes lasts for hours.

Q14. Answer: (a) Troposphere

The correct answer is Troposphere.

Key Points

• The troposphere is the Earth's initial and lowest layer of the atmosphere, containing 75 per cent of the planetary atmosphere's total mass, 99 per cent of the overall mass of water vapour and aerosols, and is where most meteorological occurrences occur.

• The troposphere's temperature drops at high altitudes due to inversion layers that form at the tropopause, the atmospheric boundary that separates the troposphere from the stratosphere.

• Low air temperatures lower the saturation vapour pressure, or the quantity of atmospheric water vapour in the upper troposphere, at higher altitudes.

• The troposphere's average height is 13 km.

• The atmosphere is a gaseous blanket that covers the Earth. Earth's gravitational attraction keeps it close to the planet's surface.

Additional Information

• The thermosphere is the part of the atmosphere above the mesosphere and below the height at which the atmosphere loses its continuous medium features. The thermosphere is characterised by a gradual increase in temperature as it rises in altitude.

• The stratosphere is a layer of the atmosphere that extends from the tip of the troposphere to roughly 50 kilometres and contains the ozone layer. It is located between the troposphere and the mesosphere.

• Between the thermosphere and the stratosphere is the mesosphere. The term "meso" refers to the topmost layer of the atmosphere when all of the gases are mingled together.

Hence, the troposphere is the layer where rain occurs in the Earth's atmosphere.

Q15. Answer: (c) Chhattisgarh

The correct answer is Chhattisgarh.

Key Points

• Guru Ghasidas National Park is situated in Chhattisgarh.

• It was declared as a National park in the year 1981.

• Guru Ghasidas National Park was formed from Sanjay National Parl when Chhattisgarh was bifurcated from Madhya Pradesh.

• The national park is an area which is strictly reserved for the betterment of the wildlife & biodiversity, and where activities like developmental, forestry, poaching, hunting and grazing on cultivation are not permitted.

• The Chhattisgarh government has decided to declare Guru Ghasidas National Park as a tiger reserve. It is in korea/koriya district.

• It is a significant move for the conservation of Tigers and ensuring employment to locals, besides preventing illegal mining in the area.

• Chhattisgarh already has three tiger reserves- Indravati in Bijapur district, Udanti-Sitanadi in Gariaband and Achanakmar in Bilaspur.

Important Points

• Chhattisgarh CM - Bhupesh Baghel

• Governor - Anusuiya Uikey

Q16. Answer: (c) SO2 and NO2 in air

The correct answer is SO2 and NO2 in air.

• pH of normal rainwater is 5.6 due to the presence of H^+ ions.

• Normal rainwater becomes acid rain when the pH of the rainwater drops below 5.6.

• Acid rain is the result of the increase in SO2 and NO2 in the air.

• Acid rain is a byproduct of a variety of human activities that emit the oxides of sulfur and nitrogen into the atmosphere

• SO2 and NO2 after oxidation and reaction with water are major contributors to acid rain.

• 2SO2 (g) + O2 (g) + 2H2O (l) → 2H2SO4 (aq)

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• $4NO_2 (g) + O_2 (g) + 2H_2O (l) \rightarrow 4HNO_3 (aq)$

Additional Information

• Acid rain refers to the ways in which acid from the atmosphere is deposited on the earth's surface.

• It affects plants and animal life in the aquatic ecosystem.

• Acid rain is harmful to agriculture and plants as it dissolves and washes away nutrients needed for their growth.

• Acid rain leads to respiratory ailments in human beings and animals.

• When acid rain falls and flows as groundwater to reach rivers, lakes, etc.

• The Taj Mahal in India has been affected by acid rain.

• Acid rain can be avoided only by reducing the emission of sulfur dioxide and nitrogen dioxide in the atmosphere by controlling human activities.

Q17. Answer: (a) Kidney

The correct answer is Kidney.

• The kidneys play a crucial role in maintaining the body's internal environment by filtering waste products, excess ions, and water from the bloodstream to form urine.

• The kidneys are two bean-shaped organs, each about the size of a fist.

• Kidneys are located just below the rib cage, one on each side of your spine.

• Healthy kidneys filter about a half cup of blood every minute.

• The kidney also removes waste material, extra fluid and removes it from the body in form of Urine.

• kidneys also remove acid that is produced by the cells of the body and maintain a healthy balance of water, salts, and minerals—such as sodium, calcium, phosphorus, and potassium—in the blood.

• The kidney also helps in developing hormones that control blood pressure, make red blood cells, keeps bones stronger.

Additional Information

• The heart is responsible to provide oxygenated blood to every part of the body.

• Gall Blader stores the Urine and transfers the Urine to Ureters through two thin pipes.

• The gallbladder also stores bile produced by the liver.

• Bile juice is alkaline in nature which is used to digest food.

Q18. Answer: (c) Both an electric field & a magnetic field

• A charged particle produces an electric field around it, independent of its motion.

• But when it is at rest, it doen't produce any magnetic field.

• A moving charge results in the flow of current.

• We know that the current-carrying conductor produces a magnetic field around it.

• So moving charges produces both an electric field and a magnetic field.

Q19. Answer: (d) Redox

Mistake PointsSince here oxidation option is also given do not confuse with it. The best option among them is Redox.

• During rusting, iron combines with oxygen in the presence of water. This is an oxidation reaction where oxygen acts as an oxidizing agent.

• Since oxygen also combines with the metal iron, this is a reduction reaction, where the metal iron acts as a reducing agent.

• So here both the oxidation and reduction process is taking place.

• This combination of these processes is a redox reaction. So the correct answer is the redox reaction.

Explanation:

Oxidation and Reduction:

• The addition of oxygen to a substance and the removal of the hydrogen from a substance is called oxidation.

• The addition of Hydrogen in a substance and the removal of oxygen from a substance is called reduction.

Rusting of iron is an example of a Redox reaction.

• Redox reaction = Oxidation-Reduction reaction. In this reaction, an oxidation number of a molecule, atom, or ion changes either by gaining or losing an electron.

• The substance which gets reduced in a chemical reaction is known as the oxidizing agent and a substance that gets oxidized in a chemical reaction is known as the reducing agent.

• Rusting is the corrosion of iron. Iron forms red-brown hydrated metal oxide (rust) in the presence of water and air.

• Iron is oxidized to Fe2+ and oxygen is reduced to water. Rust keeps on forming due to the subsequent oxidation of Fe^(2+) by atmospheric oxygen.

• Therefore we can say that rusting is a redox reaction because oxygen acts as an oxidising agent and iron acts as a reducing agent.

Rusting of Iron takes place due to redox reaction.

• Rust is an iron oxide, a usually red oxide formed by the redox reaction of iron and oxygen in the presence of water or air moisture.

• Fe + O2 → Fe2O3(Iron (III)oxide)

Hence, 4 is the correct answer.

Q20. Answer: (d) Vitamin

The correct answer is Vitamin.

Key Points

• Cutting and washing fruits and vegetables can lead to the loss of vitamins, especially water-soluble ones like vitamin C and B vitamins.

• Vitamins are sensitive to light, heat, and oxygen, and washing or cutting can expose them to these elements, causing degradation.

• Fruits and vegetables lose nutrients mainly through washing, cutting, and exposure to air, which accelerates oxidation.

• Cooking and prolonged storage can also contribute to the breakdown of vitamins, with vitamin C being particularly vulnerable.

• To preserve vitamins, it is recommended to wash and cut fruits and vegetables just before consumption or cooking.

Additional Information

• Water-Soluble Vitamins:

• Vitamin C and B vitamins are water-soluble and prone to degradation when exposed to heat, light, and oxygen.

• These vitamins are found in many fruits and vegetables and are essential for various body functions like immunity and energy metabolism.

• Oxidation Process:

• Oxidation occurs when oxygen reacts with certain nutrients in fruits and vegetables, leading to the breakdown of vitamins.

• It can be minimized by reducing exposure to air, heat, and light, such as using airtight containers or refrigeration.

• Cooking Effects on Vitamins:

• Heat-sensitive vitamins, like vitamin C, can be destroyed during cooking, especially if boiled for long periods.

• Steaming or microwaving is a better method to retain more vitamins in fruits and vegetables.

Q21. Answer: (d) All of the above

The correct answer is Option 4

Key Points

• Small Motors:

• In small motors, an electromagnet is used to create a rotating magnetic field that interacts with a permanent magnet or another electromagnet.

• This interaction creates rotational motion. As the current running through the electromagnet's coil changes direction, it causes the motor's shaft to turn, converting electrical energy into mechanical energy.

• MRI (Magnetic Resonance Imaging):

• The strong magnetic field produced by the electromagnet aligns the protons in the body's water molecules.

• When a radio frequency pulse is applied, these protons are knocked out of alignment. As they realign with the magnetic field, they emit signals that are detected and used to build detailed images of the body's internal structures.

• Electric Bell:

• In an electric bell, when the switch is pressed, an electric current flows through the electromagnet, magnetizing it.

• The electromagnet attracts a metal armature attached to a hammer, which then hits the bell producing a sound.

• As the armature moves, it breaks the circuit, deactivating the electromagnet and causing the armature to return to its initial position due to a spring. This action repeatedly opens and closes the circuit, continuously striking the bell until the switch is released.

Each of these examples demonstrates the versatility and effectiveness of electromagnets in various technological applications, leveraging the basic principle of electromagnetism to perform useful work.

Additional InformationSoft iron is generally used for making electromagnets because it has high magnetic permeability, i.e. it can easily gain magnetic properties when current is passed around the core and quickly lose when current is stopped.

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Q22. Answer: (d) Vitamin D

• Vitamin D3 (cholecalciferol) is synthesized in the human skin from 7-dehydrocholesterol upon exposure to ultraviolet-B (UVB) radiation from sunlight,

• Thus large amounts of the vitamin can be produced when the body is exposed to sunlight for long time.

Q23. Answer: (d) Correct the eye defects

The correct answer is to Correct the eye defects.

• Lenses are widely used in spectacle to correct eye defects.

• There are three common defects of vision that can be corrected with the help of suitable spherical lenses (convex lenses or concave lenses).

• Myopia is also known as Short-sightedness or nearsightedness.

• Due to this defect, the person cannot see the distant objects clearly but he/she can see the nearby objects clearly.

• The far point of the eye having myopia is less than infinity.

• The defect is caused due to the high converging power of eye-lens or due to the eyeball being too long.

• It can be corrected by making use of spectacles containing concave lenses.

• Hypermetropia is also known as Long-sightedness or farsightedness.

• Due to this defect, the person cannot see the nearby objects clearly but he/she can see the distant objects clearly.

• The near point of a hypermetropic eye is more than 25 centimetres away.

• The defect is caused due to the low converging power of eye-lens or due to the eye-ball being too short.

• It can be corrected by making use of spectacles containing convex lenses.

• Presbyopia is a vision disease caused mostly in old age.

• The ciliary muscles become weak and the eye-lens become rigid and the eye loses its power of accommodation in old age in this vision defect.

• In Presbyopia the person cannot see the nearby objects clearly due to loss of power of accommodation of the eye.

• The near point of the old person having presbyopia gradually reduces and becomes much more than 25 centimetres away.

• It can be corrected by making use of spectacles containing convex lenses.

• A person suffering from both Myopia and Hypermetropia uses spectacles having bifocal lenses in which the upper part consists of a concave lens to correct myopia and the lower part consists of a convex lens to correct hypermetropia.

Q24. Answer: (a) Ultrasound

CONCEPT:

• Sound waves are longitudinal mechanical waves and frequency can be defined as the number of wave cycles happening in one sec.

Audible sound waves:

• The frequency range of this wave is 20Hz - 20000Hz. Humans can easily detect these types of waves.

• Example: Sound produced by Vocal cords.

Infrasonic waves:

• The frequency range of these types of waves is below 20Hz. Humans cannot detect it.

• Example: Sound produced by Earthquake, Volcanic eruption and ocean waves, etc.

Ultrasonic waves or Ultrasound waves:

• The sound frequency above 20,000Hz is known as ultrasonic waves. Humans cannot detect it too.

• Examples: dog whistle is an example of an Ultrasound wave.

EXPLANATION:

• From above it is clear that types of sound waves whose frequencies are higher than the upper audible limit of human hearing are called ultrasound.

• The sound frequency of ultrasonic waves is above 20,000Hz.

• Ultrasound is produced by animals such as dolphins, bats, and porpoises. Therefore option 1 is correct.

Q25. Answer: (a) Velocity

The Correct Answer is Velocity.

• The physical quantities which are specified with the magnitude or size alone are called scalar quantities. For example, length, speed, work, mass, distance, entropy, energy, etc.

• Vector quantities refer to the physical quantities characterized by the presence of both magnitude and direction. For example, velocity, displacement, force, torque, momentum, acceleration, etc.

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Physical quantity	Definition	SI Unit
Velocity	The velocity of an object is the rate of change of its position with respect to a frame of reference and is a function of time.	meter/second
Distance	Distance refers to "how much ground an object has covered" during its motion.	Meter
Entropy	It is an extensive property of a thermodynamic system. It represents the unavailability of a system's thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system	Joules per kelvin
Energy	It is the quantitative property that must be transferred to an object in order to perform work on, or to heat, the object.	Joule

Q26. Answer: (d) Iron

Concept:

• Alloys are substances which possess metallic character and are obtained by mixing of metal with another metal or another element.

• Either the mixture/alloy of mercury (Hg) with any other metal is called an amalgam whereas Tungsten, Platinum, Iron, and Tantalum are exceptions that do not form an amalgam.

• The alloys of mercury with any other metal are termed as amalgams and depending upon the proportion of mercury, they can be liquid, paste or solid in nature.

• One of the best examples of Amalgam is a mixture of mercury and silver which is used by the dentist for a dental filling.

Explanation:

From the above explanation, we can see that amalgams are an alloy of mercury and other metal like zinc copper magnesium except iron

i.e., Iron or Fe is the metal which can not be used to form amalgum alloy.

Q27. Answer: (c) Chlorine

• Chlorine is a Halogen

• The Halogens are the elements belonging to Group 17 in the periodic table.

Element Name	Symbol	Atomic Number
Fluorine	F	9
Chlorine	Cl	17
Bromine	Br	35
Iodine	I	53
Astatine	At	85

Q28. Answer: (a) Methane

Methane is the lightest hydrocarbon having one carbon and four hydrogen atoms. Its molecular weight is 16. It is also a fuel gas commonly called marsh gas because it is produced from marshy lands. Some facts about it:

• Methane is produced when vegetation decomposes naturally within some geographical marshes, swamps.

• The main process behind the production of methane is anaerobic digestion.

• Biogas or Gobar gas also contains 60-70% of methane.

• Methane is one of the greenhouse gases. Other greenhouse gases are- carbon dioxide, water vapour, nitrous oxide and ozone.

• Methane is produced in the soil during microbial decomposition of organic matter and reduction of CO_2 under strictly anaerobic conditions.

Hence, we conclude that Methane is known as Marsh gas.

Q29. Answer: (b) Vitamin D

The correct answer is Vitamin D.

Key Points

• Rickets is a condition that affects bone development in children, causing the bones to become soft and weak.

• Vitamin D is crucial for the absorption of calcium and phosphate from the diet, which are essential for healthy bone formation.

• A deficiency in Vitamin D can lead to rickets, characterized by bone pain, delayed growth, and skeletal deformities.

• Sources of Vitamin D include sunlight exposure, fortified foods, and dietary supplements.

• Early diagnosis and treatment with Vitamin D supplements and a balanced diet can help prevent and cure rickets.

Additional Information

• Vitamin K

• Essential for blood clotting and helps in wound healing.

• Found in green leafy vegetables, fish, meat, and eggs.

• Vitamin E

• Acts as an antioxidant, protecting cells from damage.

• Present in nuts, seeds, and green leafy vegetables.

• Vitamin B Complex

• Comprises a group of eight B vitamins that play a role in energy production and the formation of red blood cells.

• Found in whole grains, meat, eggs, and dairy products.

Q30. Answer: (c) C_(2)H_(4)

The correct answer is C2H4.

Key Points

• Unsaturated compounds contain at least one double or triple bond between carbon atoms.

• C2H4, also known as ethene, is an unsaturated hydrocarbon because it contains a carbon-carbon double bond.

• Compounds like C2H6 (ethane) and C3H8 (propane) are saturated hydrocarbons, meaning they only have single bonds between carbon atoms.

• Unsaturated hydrocarbons are more reactive than saturated hydrocarbons due to the presence of double or triple bonds.

• Unsaturated compounds can participate in addition reactions, where the double or triple bonds are broken to add new atoms to the molecule.

Additional Information

• Saturated Hydrocarbons

• These are hydrocarbons that contain only single bonds between carbon atoms.

• They are also known as alkanes.

• Examples include methane (CH4), ethane (C2H6), and propane (C3H8).

• Alkenes

• Alkenes are unsaturated hydrocarbons containing at least one carbon-carbon double bond.

• They are more reactive than alkanes due to the presence of the double bond.

• Ethene (C2H4) is the simplest alkene.

• Alkynes

• Alkynes are unsaturated hydrocarbons containing at least one carbon-carbon triple bond.

• They are even more reactive than alkenes.

• Examples include ethyne (C2H2), also known as acetylene.

Q31. Answer: (c) 3120

Given

48 and 65

Concept

Find the factors of 45 and 65

Calculation

Factors of 48 = 2 × 2 × 2 × 2 × 3

Factors of 65 = 5 × 13

L.C.M of 48 and 65 = 2 × 2 × 2 × 2 × 3 × 5 × 13

=> 3120

Therefore The LCM of 48 and 65 is 3120

Q32. Answer: (b) 66

Shortcut Trick

Total percentage is always 100%.

White balls = 45% → Black balls = 100% − 45% = 55%.

Number of black balls = 55% of 120 = 0.55 × 120 = 66.

Therefore The correct answer is 66.

Alternate Method

Given:

Total number of balls = 120

Percentage of white balls = 45%

Calculations:

=> Number of white balls = 45% of 120

=> White balls = (45 ÷ 100) × 120 = 0.45 × 120 = 54

=> Number of black balls = Total balls − White balls

=> Black balls = 120 − 54 = 66

Therefore The correct answer is 66.

Additional Information

Percentage Basics

To find the percentage of a quantity, use the formula: (Value ÷ Total) × 100.

Complementary Percentage

If a whole is divided into two parts A and B, then Percentage of B = 100% − Percentage of A.

Ratio Conversion

The ratio of white to black balls here is 45:55, which simplifies to 9:11.

Q33. Answer: (a) 3 : 5

Given:

Number of girls = 45

Number of boys = 27

Formula Used:

Ratio of boys to girls = Number of boys / Number of girls

Calculation:

Ratio of boys to girls = 27 / 45

Simplify the fraction by dividing both numerator and denominator by their greatest common divisor (GCD), which is 9.

=> Ratio of boys to girls = (27 ÷ 9) / (45 ÷ 9)

=> Ratio of boys to girls = 3 / 5

The ratio of boys to girls is 3 : 5.

Q34. Answer: (c) 54

Shortcut Trick

Overall average of 12 numbers = 40

Deviation of first 7 numbers from average = 30 − 40 = −10

Total deviation to be balanced = 7 × (−10) = −70

Deviation for remaining 5 numbers = +70

Average of remaining numbers = 40 + (70 ÷ 5) = 40 + 14 = 54

Therefore The correct answer is 54.

Alternate Method

Given:

Average of 12 numbers = 40

Average of first 7 numbers = 30

Number of remaining numbers = 12 − 7 = 5

Formula used: Sum = Average × Count

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Total: 12 Numbers (Average = 40)
First 7 Numbers
Average = 30
Remaining 5
Average = ?
Total Sum = 12 × 40 = 480
Calculations:
=> Total sum of 12 numbers = 12 × 40 = 480
=> Sum of first 7 numbers = 7 × 30 = 210
=> Sum of remaining 5 numbers = 480 − 210 = 270
=> Average of remaining 5 numbers = 270 ÷ 5 = 54
Therefore The correct answer is 54.
Additional Information
Average Formula
Average = (Sum of all observations) ÷ (Total number of observations).
Weighted Average
When two groups with averages A1 and A2 and sizes n1 and n2 are combined, the combined average = (n1A1 + n2A2) ÷ (n1 + n2).
Effect of Operations on Average
If every number in a data set is increased or decreased by a constant k, the average of the set also increases or decreases by k.

Q35. Answer: (c) Rs. 7744

Given:
Income of the person = Rs. 6400
Percentage increase every year = 10%
Time = 2 years
Formula used:
If there is increase in x% then then the value after the increment = Initial value × (100 + x)/100
Calculation:
Income after one year = Initial income × (100 + 10)/100
=> Income after one year = 6400 × 11/10 = 7040
Income after second year = 7040 × (100 + 10)/100 = 7744
Therefore Income after two years will be Rs. 7744

Q36. Answer: (d) 3

Given:
Number of families = 10
Number of senior citizens (above 60 years) in 10 families = 3, 4, 2, 5, 6, 0, 1, 3, 2 and 4.
Formula Used:
Average = Sum of Observations / Number of Observations
Calculation:
Number of senior citizens = 3, 4, 2, 5, 6, 0, 1, 3, 2 and 4.
Total Number of families = 10
By using formula,
Average number of senior citizens = (3 + 4 + 2 + 5 + 6 + 0 + 1 + 3 + 2 + 4)/10
=> 30/10
=> 3
Therefore The required average number of senior citizens are 3.

Q37. Answer: (d) 8

16 ÷ 4 + 24 ÷ 6
= 4 + 4 = 8

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Q38. Answer: (b) 20

25 ÷ 5 × 6 + 31 - 41

= 5 × 6 + 31 - 41

= 30 + 31 - 41

= 61 - 41

= 20

Q39. Answer: (b) 24

Given:

0.75% of ? = 0.18

Calculation:

0.75% of ? = 0.18

Let the unknown number be x.

=> 0.75% of x = 0.18

=> 75x/10000 = 0.18

=>)75x = 1800

=> x = (1800/75 = 24

Therefore Option (2) is the correct answer.

Q40. Answer: (a) 20

The number of diagonal of a polygon = [n × (n – 3)] /2

For octagon, n = 8

Therefore Number of diagonals = (8 × 5)/ 2 = 20

Q41. Answer: (c) Rs. 200

Shortcut Trick

Effective interest percentage for the given period = Rate × Time

Effective % = 6% × 10 = 60%

According to the question, 60% of Principal = Rs. 120

Hence, 100% of Principal = (120 ÷ 60) × 100 = Rs. 200

Therefore The correct answer is Rs. 200.

Alternate Method

Given:

Simple Interest (SI) = Rs. 120

Rate of interest (R) = 6% p.a.

Time period (T) = 10 years

Formula Used:

SI = (P × R × T) ÷ 100

Calculations:

=> 120 = (P × 6 × 10) ÷ 100

=> 120 = (P × 60) ÷ 100

=> 120 × 100 = 60 × P

=> 12000 = 60 × P

=> P = 12000 ÷ 60

=> P = 200

Therefore The correct answer is Rs. 200.

Additional Information

Total Amount

The total Amount (A) at the end of the term is the sum of the initial Principal and the interest earned: A = P + SI.

Interest Calculation for Different Periods

In Simple Interest, the interest for each year is the same: SI per year = (P × R) ÷ 100. For 10 years, it is simply 10 × (annual interest).

Variable Formulas

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To find Time (T) when SI, P, and R are given: T = (SI × 100) ÷ (P × R).

Q42. Answer: (c) 6 : 10 : 15

Shortcut Trick

Multiply the first ratio by the first term of the second ratio (2) and the second ratio by the last term of the first ratio (5) to equalize B.

A : B = 3 × 2 : 5 × 2 = 6 : 10

B : C = 2 × 5 : 3 × 5 = 10 : 15

Combining the terms gives A : B : C = 6 : 10 : 15.

Therefore The correct answer is 6 : 10 : 15.

Alternate Method

Given:

Ratio 1: A : B = 3 : 5

Ratio 2: B : C = 2 : 3

Calculations:

=> To combine, B must be the same in both ratios. LCM of 5 and 2 is 10.

=> A : B = (3 × 2) : (5 × 2) = 6 : 10

=> B : C = (2 × 5) : (3 × 5) = 10 : 15

=> A : B : C = 6 : 10 : 15

Therefore The correct answer is 6 : 10 : 15.

Additional Information

Compound Ratio

The compound ratio of (a : b) and (c : d) is (ac : bd). It is obtained by multiplying the corresponding terms.

Continued Proportion

Three quantities a, b, c are in continued proportion if a : b = b : c, which implies $b^2 = ac$.

Duplicate Ratio

The duplicate ratio of a : b is $a^2 : b^2$. For example, duplicate ratio of 2 : 3 is 4 : 9.

Q43. Answer: (b) 72 m²

Given:

Perimeter = 36 metres

Formula used:

Perimeter = 2(Length + Breadth)

Area of rectangle = l × b

Calculation:

According to the question,

36 = 2(l + b)

=> l + b = 18

=> 6 + b = 18

=> b = 12

Area = 6 × 12 = 72 m²

Therefore The area of the rectangle is 72 m².

Q44. Answer: (c) 12 years

Given:

Anil Age = 2 × Sunita age

Three years ago, Anil = 3 × Sunita age

Calculations:

Let the age of Sunita be x

Anil age at present = 2x

Three years ago Sunita age = x - 3

Three years ago Anil age = 3 × (x - 3)

According to first condition

Anil age three years ago = 2x - 3

By equating both conditions

2x - 3 = 3 × (x - 3)

=> 2x - 3 = 3x - 9

=> 3x - 2x = 9 - 3

=> x = 6 years

Present age of Anil = 2 × 6 = 12 years

Therefore The present age of Anil is 12 years

Q45. Answer: (c) 18

Shortcut Trick

Speed in m/s = 90 × 5/18 = 25 m/s.

Total Distance = Train length + Platform length = 150 + 300 = 450 m.

Time required = Total Distance ÷ Speed = 450 ÷ 25 = 18 sec.

Therefore The correct answer is 18 sec.

Alternate Method

Given:

Length of the Train (L1) = 150 m

Length of the Platform (L2) = 300 m

Speed of the train (S) = 90 km/h

Formula Used:

1. Speed (m/s) = Speed (km/h) × (5/18)

2. Time = Total Distance ÷ Speed

3. Total Distance = Length of Train + Length of Platform

Calculations:

=> Converting Speed into m/s:

=> Speed = 90 × (5/18) m/s

=> Speed = 5 × 5 = 25 m/s

=> Total Distance to cross the platform = 150 + 300 = 450 m

=> Time taken = 450 ÷ 25

=> Time taken = 18 seconds

Therefore, the correct answer is Option 3.

Therefore The correct answer is 18 sec.

Additional Information

Unit Conversion

To convert km/h to m/s, multiply the speed by 5/18. To convert m/s to km/h, multiply by 18/5.

Crossing Point Objects

When a train crosses a stationary point object like a pole, tree, or standing man, the distance covered is equal to the length of the train itself.

Relative Speed

If two objects move in the opposite direction, relative speed is the sum of their speeds (S1 + S2). If they move in the same direction, it is the difference (S1 − S2).

Q46. Answer: (a) 46th

Total number of students = Position of a student from top + Position of a student from bottom - 1

70 = 25 + position of Aashna from bottom – 1

Position of Aashna from bottom = 70 – 25 + 1 = 46

Hence, 46 is correct.

Q47. Answer: (a) 155

The logic followed here is:

Thus, '155' is the missing number in the given series.

Hence, the correct answer is "Option 1".

Q48. Answer: (a) KQR

The logic followed here is:

For, PAN : SCP

Similarly, for HOP:

So, 'HOP' will be coded as 'KQR'.

Hence, the correct answer is "Option 1".

Q49. Answer: (a) Mother

By using the symbols in the table given below, we can draw the following family tree:

Clearly, the woman in the photograph is mother of the man.

Hence, ‘Mother’ is the correct answer

Q50. Answer: (b) two

As asked in the question to eliminate all 7.

3 4 5 8 8 3 9 5 6 2 3 5 8 8 5 8 6 8 9 7

Hence there are two consecutive pairs of 8.

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