Agniveer Army GD 2 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. Kalamkari painting is related to which state?

(a) Andhra Pradesh
(b) Manipur
(c) West Bengal
(d) Maharashtra

Q2. What is the rank of Indian Air Force (IAF) on the World Air Power Index in terms of the total fighting strength of the various air services of different nations of the world?

(a) 2nd
(b) 3rd
(c) 4th
(d) 5th

Q3. Who founded 'Tattavabodhini Sabha'?

(a) Rabindranath Tagore
(b) Debendranath Tagore
(c) Sarojini Naidu
(d) Mahatma Gandhi

Q4. Which of the following places is Besaran Valley, where the Pahalgam attack took place, located?

(a) Himachal Pradesh
(b) Jammu and Kashmir
(c) Uttarakhand
(d) Ladakh

Q5. Who was the winner of the Orange Cap in the IPL 2025 season, having scored the highest runs?

(a) Virat Kohli
(b) Suryakumar Yadav
(c) Sai Sudharsan
(d) Shubman Gill

Q6. Santhal tribe people live in these states

(a) Andhra Pradesh, Tamil Nadu, Kerala
(b) Uttar Pradesh, Rajasthan, Madhya Pradesh
(c) Jharkhand, West Bengal, Odisha
(d) Maharashtra, Karnataka, Gujarat

Q7. Which of the following animals is found in the Himalayan region?

(a) Snow Leopard
(b) Lion-tailed Macaque
(c) Blackbuck
(d) Bengal Tiger

Q8. 'Gond' paintings are from which region of India?

(a) Western
(b) Northeastern
(c) Southern
(d) Central

Q9. Who among the following is the current President of FICCI (Federation of Indian Chambers of Commerce and Industry)?

(a) Sangita Reddy
(b) Harsha Vardhan Agarwal
(c) Sandip Somany
(d) Rashesh Shah

Q10. The words "Socialist and Secular" were added to the Preamble through which Amendment Act?

(a) 86th Amendment Act, 2002
(b) 42nd Amendment Act, 1976
(c) 69th Amendment Act, 1991
(d) 44th Amendment Act, 1978

Q11. The Union Public Service Commission of India has been established under the Article _____.

(a) 315
(b) 234
(c) 421
(d) 56

Q12. Nana Sahib was adopted son of which Peshwa?

(a) Shivaji
(b) Bala ji Vishavnath
(c) Peshwa Baji Rao I
(d) Peshwa Baji Rao II

Q13. Madhubani style of painting originated in the state of _____.

(a) Gujarat
(b) Karnataka
(c) Bihar
(d) Rajasthan

Q14. Which of the following is related to the 73rd Constitutional Amendment Act, 1992?

(a) Panchayati Raj
(b) Municipality
(c) Anti-defection law
(d) Fundamental duty

Q15. What is the key role of the Indian Air Force?

(a) to ignore the Indian aerospace resistant to attacks
(b) to keep the Indian aerospace resistant to attacks
(c) to keep the Indian army resistant to attacks
(d) to keep the Indian navy resistant to attacks

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GENERAL SCIENCE

Q16. Which is helpful in digestion of protein:

(a) Trypsin
(b) Taayalin
(c) Amylose
(d) None of these

Q17. The water is not suitable for irrigation if the total salt concentration exceeds:

(a) 2000 ppm
(b) 3000 ppm
(c) 1000 ppm
(d) 4000 ppm

Q18. Soap is sodium or potassium salt of

(a) Stearic acid
(b) Oleic acid
(c) Palmitic acid
(d) All of the above

Q19. The chemical formula of lime water is:

(a) CaO
(b) CaCO3
(c) Ca(HCO3)2
(d) Ca(OH)2

Q20. Milk of magnesia is:

(a) antacid
(b) bleaching power
(c) artificial milk
(d) NaCl

Q21. What is the SI unit of force?

(a) Kip
(b) Pascal
(c) Newton
(d) Dyne

Q22. Number of states of matter known so far is:

(a) 3
(b) 4
(c) 5
(d) 6

Q23. What is the main function of a fuse?

(a) To protect the line
(b) To save energy
(c) To open the circuit
(d) To prevent excessive currents

Q24. Malaria is caused by:

(a) Plasmodium
(b) Female Anopheles mosquito
(c) Culex mosquito
(d) Virus

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Q25. Which of the following statements about conductivity of electricity in ionic compounds is correct?

(a) Ionic compounds are bad conductors of electricity in both solid as well as in molten state.
(b) Ionic compounds conduct electricity in solid state but not in molten state.
(c) Ionic compounds conduct electricity in molten state but not in solid state.
(d) Ionic compounds conduct electricity in both solid as well as in molten state.

Q26. What is the main function of water (in our body)?

(a) Maintaining liquidity
(b) Correct metabolic activity
(c) Both 1 and 2
(d) Protect the body

Q27. Identify the fundamental parameter in physics?

(a) Weight
(b) Force
(c) Time
(d) Density

Q28. Speed (v), wavelength (λ) and the frequency (f) of sound are related as

(a) $\lambda = v \times f$
(b) $f = \lambda \times v$
(c) $v = \lambda \times f$
(d) $f = \lambda / v$

Q29. The motion of a freely falling body is an example of a:

(a) uniformly accelerated motion
(b) uniform velocity motion
(c) uniform speed motion
(d) non-uniformly accelerated motion

Q30. What do dolphins, bats and porpoise use

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

MATHEMATICS

Q31. The LCM of the three numbers 16, 28 and 42 is:

(a) 2
(b) 168
(c) 252
(d) 336

Q32. Ratio between white and black candy in a box is 5 : 6. If total number of candy in that box is 220, find the number of black candy in the box?

(a) 240
(b) 120
(c) 360
(d) 160

Q33. 4/9 of a number is 324. Find the number:

(a) 927
(b) 81
(c) 104

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(d) 729

Q34. What is the average of 5, 7, 10, and 11?

(a) 9.25
(b) 8.5
(c) 8.25
(d) 9.5

Q35. A person invests Rs. 3100 at a rate of 4% per annum under simple interest. After how many years will the total interest earned be Rs. 372?

(a) 4 Years
(b) 3 Years
(c) 5 Years
(d) 2 Years

Q36. 3/5 + 3/7 = ?

(a) 11/35
(b) 6/35
(c) 9/35
(d) 6/12

Q37. (3 - 0.2)/(0.1 × (3 + 0.2)) = ?

(a) 0.875
(b) 8.75
(c) 0.0875
(d) 87.5

Q38. 38% of 250 is equal to:

(a) 76
(b) 95
(c) 104.5
(d) 114

Q39. Which of the following is NOT a property of a regular polygon?

(a) All sides are of equal length
(b) Angles at the centre by all sides are equal.
(c) The angle made by each side at the centre is 90°, if it is a regular polygon with four sides.
(d) The angle made by each side at the centre is 60°, if it is a regular polygon with eight sides.

Q40. A number is increased by 30% and then decreased by 25%. Evaluate the net increase or decrease in % ?

(a) Decrement 2.5%
(b) Increment 2.5%
(c) Decrement 5%
(d) Increment 5%

Q41. The square of 53 is :

(a) 2,809
(b) 2,800
(c) 2,806
(d) None of the above

Q42. A train travelling at 36 km/h crosses a pole in 25 seconds. How much time (in seconds) will it take to cross a bridge 250 m long?

(a) 56
(b) 72
(c) 48

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(d) 50

Q43. Find the number which when multiplied by 15 is increased by 196

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

Q44. Average Monthly income of P and Q is Rs. 5,050. Average Monthly income of Q and R is Rs. 6,250.and average monthly income of P and R is Rs. 5,200. The monthly income of P is

(a) Rs. 3,500
(b) Rs. 4,000
(c) Rs. 4,050
(d) Rs. 5,000

Q45. Pinky spents 3/5 of its salary every month. If her monthly salary is Rs. 2000 then find the amount left with her?

(a) 600
(b) 750
(c) 800
(d) 850

LOGICAL REASONING

Q46. How many such letter sets are there in the word REDASONING, which as many number of letters between them in the word, as in the English alphabetical series.

(a) 5
(b) 8
(c) 7
(d) 6

Q47. In a certain code language, ‘FAVOUR’ is written as ‘RUOVAF’ and ‘REVEAL’ is written as ‘LAEVER’. How will ‘MIRACLE’ be written in that language?

(a) ECLRAIM
(b) ELCARIM
(c) ECLARMI
(d) EMLCRIA

Q48. Six boys A, B, C, D, E, and F are sitting in a straight row facing north (not necessarily in the same order). B sits second to the right of D. A sits fourth to the left of F. F is not sitting on the extreme ends of the row. C sits second to the right of B. Who sits second to the right of A?

(a) F
(b) E
(c) B
(d) D

Q49. Which letter cluster will replace the question mark (?) to complete the given series?

UQMI, VOPE, WMSA, ?, YIYS

(a) XKWV
(b) KXWV
(c) XKVW
(d) XVWK

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Q50. 'Nymph' is related to 'Cockroach' in the same way as 'Tadpole' is related to '_____'.

(a) Insect
(b) Cow
(c) Bird
(d) Frog

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Andhra Pradesh

The Correct Answer is Andhra Pradesh.

Key Points

State	Names of the traditional paintings
Maharashtra	Warli, Pinguli Chitrakathi
Andhra Pradesh	Lepakshi Paintings, Kalamkari Paintings, Savara Paintings,
Manipur	Khambana Kao Phaba
West Bengal	Dokra, Kalighat painting

Q2. Answer: (b) 3rd

The correct answer is 3rd.

Key Points

• The Indian Air Force (IAF) has been placed at the third position on the World Air Power Index in terms of the total fighting strength of the various air services of different nations of the world.
• The World Directory of Modern Military Aircraft (WDMMA) published the Global Air Powers Ranking of 2022.
• IAF currently counts 1,645 total units in its active aircraft inventory.

Important Points

• According to the report, IAF has also been placed above Japan Air Self-Defense Force (JASDF), Israeli Air Force and French Air and Space Force.
• The Global Air Powers Ranking (2022) report has given the highest TvR score to the United States Air Force (USAF).
• It comprises a broad mix of aircraft types and many products are locally sourced from the massive industrial base of the country.
• Currently, the WDMMA tracks 98 countries, covering 124 air services and following a total of 47,840 aircraft.

Q3. Answer: (b) Debendranath Tagore

The correct answer is option 2 i.e., Debendranath Tagore.

Key Points

• Debendranath Tagore founded 'Tattavabodhini Sabha'.
• On 6 October 1839, Debendranath Tagore established Tattvaranjini Sabha which was shortly thereafter renamed the Tattwabodhini ('Truth-seekers') Sabha.
• Debendranath Tagore was a Hindu philosopher and religious reformer.
• Brahmo Samaj was founded by Raja Ram Mohan Roy and Debendranath Tagore
• In 1859, the Tattwabodhini Sabha was dissolved back into the Brahmo Samaj by Debendranath Tagore.
• Raja Ram Mohan Roy is regarded as the Father of Modern India.

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Additional Information

Important movements/Sabha and their founder:

Arya Samaj	**Swami Dayanand Sarswati**
Ramakrishna mission	Swami Vivekanand
Abhinav Bharat	V. Savarkar
Prarthana samaj	Atma Ram Pandurang and Dadoba Pandurang
Atmiya Sabha	Raja Ram Mohan Roy
Gadar Party	Lala Hardyal and Kashiram
Hindustan Socialist Republic Association	Chandra Shekhar Azad
Muslim League	Agha Khan & Salimullah

Q4. Answer: (b) Jammu and Kashmir

The correct answer is Jammu and Kashmir.

Key Points

• Place: Baisaran Valley (often written as Besaran/Baisaran) is a meadow located near Pahalgam in the Anantnag district of Jammu and Kashmir. This identifies the valley's location as part of the union territory of Jammu & Kashmir.

• Geography & altitude: The Baisaran Meadow sits at an elevation of roughly ~8,000 ft and is surrounded by dense pine forests and the Pir Panjal range—typical Himalayan foothill geography within Jammu and Kashmir.

• Event context: The valley was the site of the Pahalgam attack on 22 April 2025, when armed assailants targeted tourists in the Baisaran meadow. The attack, and subsequent security operations, confirm the valley's administrative location under Jammu & Kashmir.

• Administrative detail: Baisaran is administered from the Anantnag district headquarters in the Kashmir Valley, placing it squarely within the political boundaries of Jammu and Kashmir.

Additional Information

• Tourism profile: Baisaran is known as a scenic meadow and pony-ride destination for Pahalgam visitors; accessibility is primarily by foot or pony from Pahalgam town (about 5–7 km).

• Security implications: The April 22, 2025 attack prompted large-scale security operations, investigations by agencies like the NIA, and nationwide attention—underscoring the valley's significance in Jammu & Kashmir security discourse.

• Local features: The meadow's altitude (~8,000 ft), surrounding pine forests, and relative seclusion explain both its tourist appeal and the logistical challenges faced by emergency responders during the incident.

Important Points

• Spelling note: The valley is widely reported as Baisaran in media and gazetteers; the alternate spelling Besaran may appear in some accounts—both refer to the same meadow near Pahalgam.

• Verification: Multiple reputable news agencies and geographic entries (e.g., Reuters, Al Jazeera, Wikipedia, Indian national outlets) list the valley's location as Pahalgam, Anantnag, Jammu & Kashmir, corroborating the correct answer.

• Educational takeaway: When identifying places linked to incidents, check both the nearest town (Pahalgam) and the district/union territory (Anantnag, Jammu & Kashmir) for accurate administrative placement.

Q5. Answer: (c) Sai Sudharsan

The correct answer is Sai Sudharsan.

In News

• Gujarat Titans' Sai Sudharsan was the leading run-scorer in IPL 2025, securing the Orange Cap with 759 runs in 15 matches.

Key Points

• Runs Scored: Sai Sudharsan scored 759 runs in 15 matches with an average of 54.21 and a strike rate of 156.17.

• Orange Cap Leaderboard: He is followed by Suryakumar Yadav and Virat Kohli.

• Consistency: Sudharsan hit 1 century and 6 half-centuries, showcasing consistent performance throughout the season.

• Team Representation: Sai Sudharsan represents Gujarat Titans in IPL 2025.

Additional Information

• Orange Cap: Awarded to the highest run-scorer in an IPL season.

• IPL 2025: The 18th edition of IPL featured 10 teams and multiple top-performing players.

• Impact: Sudharsan's performance played a crucial role in Gujarat Titans' campaign during IPL 2025.

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Important Points of IPL 2025

• Winner: Royal Challengers Bengaluru

• Runner Up: Punjab Kings

• Most Valuable Player: Suryakumar Yadav (MI) – 717 runs, avg 65, SR 168

• Purple Cap: Prasidh Krishna (GT) – 25 wickets

• Emerging Player: Sai Sudharsan (GT) – 759 runs

• Super Striker: Vaibhav Suryavanshi (RR) – 206.6 SR

• Most Sixes: Nicholas Pooran (LSG) – 40 sixes

• Most Fours: Sai Sudharsan (GT) – 88 fours

• Most Dot Balls: Mohammed Siraj (GT) – 151 dot balls

• Catch of the Season: Kamindu Mendis (SRH) vs Dewald Brevis

• Fairplay Award: Chennai Super Kings

• Fantasy King: Sai Sudharsan (GT) – 1495 points

Q6. Answer: (c) Jharkhand, West Bengal, Odisha

The correct answer is Jharkhand, West Bengal, Odisha.

Key Points

• The Scheduled Tribe (ST) population of Jharkhand State is as per 2001 census constituting 26.3 per cent of the total population (26,945,829) of the State.

• Among all Sates and UTs, Jharkhand holds 6th and 10th ranks terms of the ST population and the percentage share of the ST population to the total population of the State respectively.

• The state has a total of thirty (30) Scheduled Tribes and all of them have been enumerated at 2001 census

• Out of thirty (30) Scheduled Tribes notified for the State, Santhal is the most populous tribe constituting 34 per cent of the total ST population of the State.

• The total population of West Bengal at 2001 Census has been 80,176,197.

• Scheduled Tribes (STs) constituting 5.5 per cent of the total population of the state. There are total thirty eight (38) notified STs in the state. The Santal represents more than half of the total ST population of the state.

• Hence, Jharkhand, Odisha, West Bengal States recorded Santhal tribe population as per census of India, 2011

Q7. Answer: (a) Snow Leopard

The correct answer is Snow Leopard.

Key Points

• Identification: The Snow Leopard (Panthera uncia) is a large felid adapted to cold, mountainous environments; its thick coat, long tail, and stocky build distinguish it from lowland big cats.

• Habitat & Altitude: Found at high elevations in the Himalayan region, typically between about 3,000–5,500 metres, inhabiting rocky ridges, alpine and subalpine zones.

• Geographic Range in Himalayas: Occurs across trans-Himalayan areas of India (e.g., Ladakh, parts of Himachal Pradesh, Uttarakhand, Sikkim), Nepal, Bhutan, and adjacent ranges in Pakistan and western China.

• Adaptations: Features such as dense fur, wide nasal passages for cold air, large paws that act like snowshoes, and a long, thick tail for balance and warmth are specialised adaptations for alpine life.

• Diet & Ecology: Carnivorous predator feeding mainly on wild ungulates such as bharal (blue sheep), Himalayan tahr and small mammals; typically solitary and crepuscular to nocturnal.

• Conservation status: Globally listed as Vulnerable (IUCN) with population concerns due to poaching, habitat fragmentation, and livestock–predator conflict.

• Why other options are incorrect: Bengal Tiger prefers lowland forests and grasslands; Lion-tailed Macaque is endemic to the Western Ghats; Blackbuck is a plains grassland antelope — none are alpine/Himalayan specialists.

Additional Information

• Distribution data: The snow leopard's range is discontinuous across high mountain systems; national populations are often estimated via camera trapping and scat genetic analysis.

• Population estimates: Global estimates are roughly around 4,000–6,500 individuals (estimates vary by source and survey year), highlighting the species' low density even across vast ranges.

• Legal protection: In India the species receives strict protection under the Wildlife (Protection) Act, 1972 (Schedule I) and is listed in international conventions such as CITES Appendix I.

• Threats & mitigation: Major threats include illegal trade, decline of wild prey, and retaliatory killings for livestock depredation; mitigation includes community-based livestock management, compensation schemes, and protected area management.

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Important Points

• Survey methods: Reliable monitoring involves camera traps, spatial capture-recapture models, and genetic analysis of scat to estimate abundance.

• Conservation actions: Protected areas in the Himalaya, transboundary cooperation, and community engagement (e.g., predator-proof corrals, insurance/compensation) are critical for long-term survival.

• Distinctiveness: Remember that the snow leopard is a specialist of cold, high-altitude ecosystems — this ecological trait is the primary reason it is the correct answer for a Himalayan species question.

Q8. Answer: (d) Central

The correct answer is Central.

Key Points

• Origin: Gond paintings originate from the Central region of India, particularly in the states of Madhya Pradesh, Chhattisgarh, and parts of Maharashtra.

• Community association: These paintings are traditionally created by the Gond tribe, one of India's largest tribal communities mainly residing in central India—especially in the regions around Mandla, Dindori, and Balaghat districts of Madhya Pradesh.

• Artistic style: Gond paintings are known for their use of vivid colors, intricate patterns, and dot and line work. They often depict nature, animals, folklore, and deities worshipped by the Gond people.

• Medium & materials: Traditionally, Gond artists used natural dyes and colors derived from plants, charcoal, and cow dung on mud walls. Modern artists, however, use acrylic paints on canvas and paper.

• Cultural meaning: Each Gond painting carries a symbolic meaning, often linked to their belief that viewing a good image brings good luck. The art form is both aesthetic and spiritual.

• Why other options are incorrect:

• Western India: Famous for Warli paintings of Maharashtra—not Gond. => Incorrect.

• Northeastern India: Known for bamboo crafts and tribal textiles—not Gond art. => Incorrect.

• Southern India: Known for Tanjore paintings and Kalamezhuthu art—different in theme and style. => Incorrect.

Additional Information

• Historical background: The Gond tribe has been practicing this art for centuries. The word Gond is derived from the Dravidian word "Kond", meaning "green mountain." Their paintings were originally done on walls and floors of homes during rituals and festivals.

• Popular Gond artists: Some renowned Gond artists include Jangarh Singh Shyam (considered the pioneer of modern Gond art), Durga Bai Vyam, Venkat Raman Singh Shyam, and Bhajju Shyam, whose works have gained international recognition.

• Themes and subjects: Common themes include trees, animals (like peacocks, tigers, and fish), along with mythological stories and folk tales. The Gonds believe every element of nature is sacred and has a spirit.

• Recognition: Gond art gained global prominence after Jangarh Singh Shyam's exhibition at the Mithila Museum in Japan and through national art galleries in India.

• Modern adaptation: Today, Gond art is showcased on canvases, fabrics, and murals and is supported by various government initiatives like the Tribal Cooperative Marketing Development Federation (TRIFED) to promote tribal arts.

Important Points

• Comparison with other Indian folk arts:

• Madhubani Art: Originates from Bihar, uses bright colors and geometrical patterns.

• Warli Art: From Maharashtra, uses white figures on mud walls representing daily tribal life.

• Pattachitra: From Odisha and West Bengal, known for scroll paintings of deities.

• Phad Painting: From Rajasthan, depicts heroic tales on long cloth scrolls.

• Preservation efforts: Organizations like the Lalit Kala Akademi and Indira Gandhi Rashtriya Manav Sangrahalaya (IGRMS) in Bhopal have undertaken initiatives to preserve and promote Gond paintings globally.

• Educational note: Gond art reflects the connection between humans and nature in Central India's tribal philosophy—making it an important study in Indian cultural heritage.

Q9. Answer: (b) Harsha Vardhan Agarwal

The correct answer is Harsha Vardhan Agarwal.

Key Points

• Mr Harsha Vardhan Agarwal, Vice Chairman & Managing Director, Emami Limited, today took over as FICCI President for 2024-2025, from Dr Anish Shah at the apex chamber's 97th Annual Convention held in New Delhi.

• Mr Harsha Vardhan Agarwal is a second-generation leader of the USD 3.1 bn diversified business conglomerate Emami Group.

• He was awarded as one of India's Hottest Young Business Leaders in the prestigious 'FORTY UNDER 40' list by The Economic Times & Spencer Stuart in 2016.

• With his extensive multi-functional knowledge and experience, Mr Agarwal spearheads the FMCG business of the Group - Emami Limited as its Vice Chairman & Managing Director.

• Mr Agarwal, an astute strategist, is also a key member of the diversified Emami Group's strategic think-tank that drives the organisation's growth.

Additional Information

• Federation of Indian Chambers of Commerce & Industry

• The Federation of Indian Chambers of Commerce & Industry is a non-governmental trade association and advocacy group based in India.

• Established in 1927, on the advice of Mahatma Gandhi by Indian businessman Mr. G.D. Birla and Purshottamdas Thakurdas.

• Founded: 1927

• CEO: Sangita Reddy

• Headquarters: New Delhi

• Secretary General: Dilip Chenoy

• Abbreviation: FICCI

• Founders: Ghanshyam Das Birla, Purshottamdas Thakurdas

• Sanjiv Mehta is the current president of FICCI. (May 2022).

Q10. Answer: (b) 42nd Amendment Act, 1976

The 'Preamble' of the Constitution of India is a brief introductory statement that sets out the guiding purpose and principles of the document, and it indicates the source from which the document which derives its authority, meaning, the people.

• It was adopted on 26 November 1949 by the Constituent Assembly of India and came into effect on 26th January 1950.

• After the 42nd amendment, three new terms "Socialist, Secular, and Integrity" were added to the Preamble.

• 42nd Amendment Act, 1976 is one of the most important amendments to the Indian Constitution.

• It was enacted by the Indian National Congress headed by Indira Gandhi then.

• Due to the large number of amendments this act has brought to the Indian Constitution, it is also known as the 'Mini-Constitution.'

• Only one time the Preamble was amended in 1976 till date.

Thus, we can say that the words "Socialist and Secular" were added to the Preamble through 42nd Amendment Act, 1976.

Additional Information

Term	Meaning
Socialist	Social and economical equality.
Secular	States that support in a neutral manner in affairs of all religion.
Integrity	The state of being whole and undivided.
Liberty	It is the state of being free within the society

Q11. Answer: (a) 315

The correct answer is 315.

• Union Public Service Commission (UPSC) is a Central recruiting agency responsible for the appointment and examination of All India Services and Group A and B of Central Services.

• The UPSC was formed on 1st October 1926.

• The headquarters of UPSC is in New Delhi.

• The current chairman of UPSC is Manoj Soni. (May 2022)

• The first chairman of UPSC was Sir Ross Baker.

• The chairman and other members of UPSC are appointed by the President of India.

Additional Information

Article	Related to
Article 280	Finance Commission.
Article 324	Election Commission of India.
Article 76	Attorney General of India.
Article 148	Comptroller and Auditor General (CAG).

Article 165	Advocate General of State.
Article 243 – I	State Finance Commission.
Article 243 – K	State Election Commission.
Article 243ZD	District Planning Committee.
Article 243ZE	Metropolitan Planning Committee.
Article 263	Inter-State Council.
Article 279A	Goods and Service Tax Council.
Article 315-323	Union Public Service Commission. (UPSC) and State Public Service Commission.
Article 338	National Commission for Scheduled Castes.
Article 338A	National Commission for Scheduled Tribes.
Article 338B	National Commission for Backward Classes.
Article 339	Commission for Scheduled Area and Scheduled Tribes.
Article 340	Commission for Backward Classes and National Green Tribunal.
Article 344	Official Language Commission and Official Language Committee of Parliament.
Article 350B	Special Officer for Linguistic Minorities.

Q12. Answer: (d) Peshwa Baji Rao II

• Nana Saheb Peshwa II, was an Indian Peshwa of the Maratha empire, aristocrat and fighter, who led the rebellion in Kanpur during the Indian Rebellion of 1857.

Key Points

Nana Sahib (born 1824 as Dhondu Pant) was the adopted son of the Maratha Peshwa Baji Rao II whose kingdom had been annexed by the British following the 3rd Maratha War.

• He was brought up in exile in Bithur.

• The British refused to recognize him as the heir to his father's honours and pension despite an appeal to the government in Britain.

• At the outbreak of the Indian Mutiny, Nana Sahib seized the treasury at Cawnpore and besieged the British garrison.

• This resulted in the massacre at Satichaura Ghat and the murder of the hostages in the Bibigarh.

• General Henry Havelock recaptured Cawnpore forcing Nana Sahib to retreat to Bithur which Havelock also attacked and occupied.

• Nana Sahib escaped and was never found. Rumour said that he died in Nepal.

Hence, the correct answer is Peshwa Baji Rao II.

Additional Information

Shivaji Bhosale:

• He is also referred to as Chhatrapati Shivaji, was an Indian ruler and a member of the Bhonsle Maratha clan.

• Shivaji carved out an enclave from the declining Adilshahi sultanate of Bijapur that formed the genesis of the Maratha Empire.

Balaji Vishwanath Bhat:

• He was better known as Shrimant Peshwa Balaji Vishwanath, the first of a series of hereditary Peshwas.

• They hailed from the Bhat family who gained effective control of the Maratha Empire during the 18th century.

Baji Rao I:

• He was born as Visaji, also known as Bajirao Ballal, was the 7th Peshwa of the Maratha empire.

• In his 20-year military career, he never lost a battle and is widely considered the best Indian cavalry general.

Q13. Answer: (c) Bihar

The correct answer is Bihar.

Key Points

• Madhubani painting is the folk painting of Bihar.

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• Jitwarpur village of Madhubani district is the main centre.

• In this painting, the Kohbar (traditional room of the married couple) in the folklore of the Bihar region is drawn as a painting.

• In this style of folk painting, the scenes of Ramayana and the images of Hindu God-Goddesses are depicted on the canvas.

• Mahasundari Devi is a famous artist of Madhubani painting.

Additional Information

• Madhubani painting, also referred to as Mithila Art (as it flourishes in the Mithila region of Bihar), is characterized by line drawings filled in with bright colours and contrasts or patterns.

• This style of painting has been traditionally done by the women of the region, though today men are also involved to meet the demand.

• These paintings are popular because of their tribal motifs and use of bright earthy colours.

• These paintings are done with mineral pigments prepared by the artists.

• The work is done on freshly plastered or a mud walls.

Q14. Answer: (a) Panchayati Raj

The correct answer is Panchayati Raj.

Key Points

• The 73rd Constitutional Amendment Act, 1992 deals with Panchayati Raj.

• The 73rd Amendment envisages the Gram Sabha as the foundation of the Panchayat Raj system, which carries out the functions and powers assigned by the State Legislatures.

• The 73rd Amendment 1992 added a new Part IX to the Constitution, titled "Panchayats", which includes provisions from Articles 243 to 243(O), and a new Eleventh Schedule covering 29 subjects within the functions of Panchayats.

• This amendment invokes Article 40 of the DPSP which states that "the State shall take steps to organize village panchayats and to endow them with such powers and authority as may be necessary to enable them to function as units of self-government". "

• This has upgraded them from the non-justiciable to the just and put a constitutional obligation on the states to implement the Panchayati Raj Acts in accordance with the provisions of Part IX.

Additional Information

• The positive impact of the 73rd Amendment in rural India is clearly visible as it has changed power equations significantly. Elections to the Panchayats in most states are being held regularly.

• It makes provisions for the reservation of seats at all three levels in favor of women, the scheduled castes, the scheduled tribes, and the other backward classes.

Q15. Answer: (b) to keep the Indian aerospace resistant to attacks

The solution is in Hindi. Read it online.

Q16. Answer: (a) Trypsin

Correct Answer: Trypsin

Rationale:

• Trypsin is a crucial enzyme in the digestive system, specifically involved in the breakdown of proteins. It is produced in the pancreas and released into the small intestine.

• In the small intestine, trypsinogen (the inactive form of trypsin) is activated to trypsin by the enzyme enterokinase. Once activated, trypsin helps break down proteins into smaller peptides, which can then be further digested into amino acids by other proteases.

• The amino acids produced from this process are absorbed by the intestinal lining and transported into the bloodstream, where they can be used by the body for various functions such as building and repairing tissues.

Explanation of Other Options:

Taayalin

• Rationale: There seems to be a spelling mistake here. The correct term might be "Ptyalin," which is another name for salivary amylase. Ptyalin is an enzyme found in the saliva that initiates the digestion of starches (carbohydrates) by breaking them down into simpler sugars. It does not play a role in protein digestion.

Amylose

• Rationale: Amylose is a polysaccharide and a form of starch. It is not an enzyme but a carbohydrate that requires enzymatic action to be broken down. Enzymes like amylase help in digesting amylose into glucose. Amylose itself does not contribute to protein digestion.

None of these

• Rationale: This option is incorrect because trypsin is indeed an enzyme that aids in the digestion of proteins, as explained above.

Conclusion:

• Among the given options, trypsin is the enzyme specifically involved in the digestion of proteins. It breaks down protein molecules into smaller peptides and amino acids, facilitating their absorption and utilization by the body.

Q17. Answer: (a) 2000 ppm

Concept:

The total concentration of soluble salts in irrigation water:

• Salts of sodium, calcium, magnesium, and potassium may prove to be injurious in irrigation water.

• In excessive quantities, these salts reduce the osmotic activity of the plant, thus preventing the absorption of nutrients from the soil.

• In addition, they may have indirect chemical effects on the metabolism of the plant and may reduce soil permeability.

• The salt concentration is generally expressed by ppm or by mg/l.

• The critical salt concentration in the irrigation water in excess of 700 ppm is harmful to some plants, and more than 2000 ppm is injurious to all crops.

• Salt concentration and electrical conductivity are directly proportional to each other.

• The salt concentration is generally measured by determining the electrical conductivity of water.

The salinity concentration of soil solution(C_s) can be determined from the following formula

$C_s = (C \times Q)/(Q-(C_u - P_{(eff)}))$

Where C = Concentration of salt in irrigation water

Q = Total quantity of water applied to the soil

C_u = Consumptive use of water

P_(eff) = Useful rainfall

The classification of irrigation water based on salt concentration is as follows:

Electrical conductivity at 25^oC in micromhos per centimeter	Class	Uses
< 250	Low salinity water	Can be used for all crops
250 - 750	Medium salinity water	Can be used if leaching is done
750 - 2250	High salinity water	High salt-tolerant plant can be grown with special measures to control salinity
2250	Very high salinity water	Not suitable for irrigation

Q18. Answer: (d) All of the above

The correct answer is option 4.

Saponification

• Soap is sodium or potassium salt of fatty acid produced by saponification reaction using sodium or potassium hydroxide with vegetable or animal oil or fatty acid.

• The fatty acids like stearic, palmitic, myristic, lauric and oleic acids, contribute to lathering and washing properties of the soaps. Hence option 4 is correct.

• Sodium salts of fatty acids are known as hard soaps and potassium salts of fatty acids are known as soft soaps.

• Soap is prepared by heating vegetable oil or animal fat containing Glyceryl stearate with concentrated sodium hydroxide solution.

• Hydrolysis of fat takes place and a mixture of sodium salts of fatty acids and glycerol is formed.

• The salts of fatty acids thus formed are used as soap.

Q19. Answer: (d) Ca(OH)2

The correct answer is Ca(OH)2.

Key Points

• When quick lime (CaO)reacts with water, lime water is produced.

• $CaO + H2O \rightarrow Ca(OH)2$

• Here the product is Ca(OH)2, which is slaked lime or lime water.

• Mainly Calcium carbonate disassociates to produce quick lime and carbon dioxide.

• Then the quick lime reacts with water and produces lime water.

• Calcium hydroxide is used in many applications, including food preparation.

• Limewater is the common name for a saturated solution of calcium hydroxide.

Q20. Answer: (a) antacid

Milk of magnesia Mg(OH); is an Antacid. An Antacid is a substance which helps in the neutrilization of the acidity in stomach.

Explanation:

Milk of Magnesia is the magnesium compound which acts as an antacid.

• The term milk of magnesia was first used by English pharmacist Charles Henry Phillips in 1872.

• Milk of Magnesia is basic in nature.

• The pH value of the Milk of Magnesia is 10.5.

The scale used to express the acidic or alkaline nature of a substance based on the concentration of hydrogen ions in its solution is called a pH scale.

Additional Information

pH scale was discovered by Soren Sorensen.

• The pH value of the acids are less than 7 (0 to 7)

Acid substances usually produce a sour taste.

• The pH value of the Bases are greater than 7 (7 to 14)

Base substances usually produce a bitter taste.

The pH value of the neutral substance is equal to 7.

The pH value of the pure water is 7.

The pH value of the blood is close to 7.4.

Q21. Answer: (c) Newton

The correct answer is Newton.

• Newton is the SI unit of force.

Key Points

• Force:

• Force is that external cause which when acts on a body, changes or tries to change the initial state of the body.

• Force = mass × acceleration

• Its S.I. unit is Newton (kg. ms^(-2)).

• Force is a vector quantity.

• Dyne is the CGS unit of force.

Additional Information

• Pressure is defined as a force acting normally on the unit area on the surface.

• SI unit of pressure is N/m^2 also called Pascal (Pa).

• Pressure is a scalar quantity.

Q22. Answer: (c) 5

The correct answer is 5.

• There are four natural states of matter: Solids, liquids, gases, and plasma.

• Solids:

• Molecules are arranged in repeating, regular patterns.

• Molecules are fixed in place or in another case they vibrate in a certain area.

• Types: crystalline, noncrystalline (amorphous), quasi-crystalline.

• Liquid:

• In a liquid, particles will flow or glide over one another.

• No regular pattern follows.

• They are roaming apart by a low attractive force between them.

• It gets the shape of their containers.

• Gas:

• In gases, the particles move rapidly in all directions, frequently colliding with each other.

• Molecules are so apart, therefore the attractive force is negligible.

• Plasma:

• With an exciting position (high temperature) atoms lose their electrons and that electron mixed up with nuclei which results in

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plasma.

• Plasma consists of charged particles.

• The fifth state is the Bose-Einstein condensates, which are man-made.

• Scientists, Eric Cornell and Carl Weiman discover BEC matter by a combination of lasers and magnets.

• At a temperature of absolute zero (0 K, − 273.15 °C, or − 459.67 °F; K = kelvin), it separates atoms or subatomic particles.

• It is an exotic quantum phenomenon, observed in dilute atomic gases for the first time in 1995.

• BEC only exists for “bosons” – particles with a total spin that is an integer multiple of h, the Planck constant divided by 2 pi.

Q23. Answer: (d) To prevent excessive currents

Fuse wire

• An electrical fuse is a metal wire or strip that melts when excess current flows through it.

• The primary use of an electric fuse is to protect electrical equipment from excessive current and to prevent short circuits or mismatched loads.

• Electrical fuses play the role of miniature circuit breakers.

• Under normal conditions, the fuse wire is a part of the circuitry, contributing to a complete loop for charges to flow through it.

• However, when an excessive amount of current flows through the fuse wire, the heating effect of the current causes the fuse wire to melt.

• This is because the fuse wire is chosen such that it has a low melting point.

Q24. Answer: (a) Plasmodium

The correct answer is Plasmodium.

Explanation:

• Malaria is an infectious- mosquito disease spread by mosquitos that affect humans and other animals.

• It is caused by a protozoan Plasmodium (Plasmodium vivax, Plasmodium malariae, and Plasmodium falciparum).

• The most serious and fatal form of malaria is caused by Plasmodium falciparum.

• The vector of Plasmodium is the female Anopheles mosquito which transfers the sporozoites (infectious form).

• Plasmodium requires two hosts to complete its life cycle- human and mosquito.

• The infected female Anopheles mosquito transfers the infectious form of Plasmodium, i.e., sporozites to the human body by biting.

• Antimalarial drugs such as quinine and chloroquine are used to treat the disease.

• Malaria can be prevented by killing mosquitoes by spraying DDT (Dichlorodiphenyltrichloroethane), BHC (benzene hexachloride), etc, and using insect repellents, mosquito nets, etc.

• Symptoms of malaria:

• High temperature

• Headaches

• Feeling hot and shivery

• Diarrhoea

• Vomiting

• Abdominal pain

• Muscle pains

Thus, Malaria is caused by Plasmodium.

Q25. Answer: (c) Ionic compounds conduct electricity in molten state but not in solid state.

The correct answer is Ionic compounds conduct electricity in molten state but not in solid state.

Key Points

• Ionic compounds conduct electricity in molten state but not in solid state because in molten state their ions are free to move from place to place.

• ionic compounds cannot conduct electricity in solid state because their ions are fixed together and cannot move.

Additional Information

• Ions of opposite charges are tightly packed together to create crystalline solids known as ionic compounds.

• Ionic compounds often result from reactions between metals and non-metals.

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Q26. Answer: (c) Both 1 and 2

Key Points

• Around 65% of the human body is water.

• It is the most essential component of our body as it controls the body temperature and regulates biochemical reactions etc.

Important Points

Functions of water in the body:

• It moistens the tissues such as the mouth, nose, and eyes.

• It regulates body temperature.

• It helps in protecting the body organs and tissues by maintaining the correct metabolic activity.

• It helps in preventing constipation by maintaining the liquidity position of the body.

• It carries nutrients and oxygen to the cells.

• It lessens the burden on the kidneys and liver by flushing out the waste products.

Thus, maintaining liquidity and correct metabolic activity is the main function of water (in our body).

Additional Information

Some organs and their composition

Organs	Percentage of Water
Lungs	83%
Brain & Heart	73%
Skin	64%
Kidneys	79%
Bones	31%

Q27. Answer: (c) Time

The correct answer is 3) Time.

Key Points

• Time is one of the fundamental quantities in physics, essential for describing the sequence and duration of events.

• It is a scalar quantity, meaning it has magnitude but no direction.

• The unit of time in the International System of Units (SI) is the second (s).

• Time is a dimension in which events occur in a linear sequence, from the past through the present to the future.

• Accurate measurement of time is crucial in various fields, including physics, astronomy, and everyday activities.

Additional Information

• Atomic Clocks:

• Atomic clocks are the most accurate timekeeping devices available, using the vibrations of atoms to measure time precisely.

• They are used in global positioning systems (GPS), telecommunications, and scientific research.

• Relativity of Time:

• According to Einstein's theory of relativity, time is relative and can vary depending on the speed at which an observer is moving.

• This leads to phenomena such as time dilation, where time appears to pass more slowly for an object moving at high speeds.

• Time Measurement:

• Historically, time has been measured using various devices like sundials, water clocks, and mechanical clocks.

• Modern timekeeping relies on electronic and atomic clocks for greater accuracy.

• Importance of Time in Physics:

• Time is crucial for understanding and describing the motion of objects, calculating speeds, and determining periods of oscillations.

• It plays a fundamental role in the laws of physics, including Newton's laws of motion and the equations of quantum mechanics.

Q28. Answer: (c) $v = \lambda \times f$

CONCEPT:

• Wave: It can be defined as the transport of energy without the transport of matter.

• The properties of waves are:

• Wavelength (λ): The distance between two crests or troughs of a wave is known as wavelength. One wavelength equals the

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distance between two consecutive crests.

• Frequency (f): The number of oscillations or the number of waves passes a given point in one sec. Its SI unit is Hertz.

• Time period (T): The time taken by the wave to complete one cycle.

• The relation between velocity, wavelength, and frequency of a wave is

=> v = λ × f

That is, spee d = wavelength × frequency

Q29. Answer: (a) uniformly accelerated motion

The Correct answer is uniformly accelerated motion.

Key Points

• A freely falling body is an object that is moving under the influence of gravity alone.

• The acceleration due to gravity, denoted by 'g', is approximately 9.8 m/s² near the Earth's surface.

• This acceleration is constant and acts vertically downwards.

• As the body falls, its velocity increases uniformly because of this constant acceleration.

• Thus, the motion of a freely falling body is an example of uniformly accelerated motion.

• In uniformly accelerated motion, the velocity of the object changes at a constant rate.

Additional Information

• Uniform velocity motion

• Uniform velocity motion refers to motion where an object moves with a constant speed in a straight line.

• In this type of motion, there is no change in the speed or direction of the object.

• Uniform speed motion

• Uniform speed motion occurs when an object covers equal distances in equal intervals of time, regardless of the direction.

• This differs from uniformly accelerated motion, where the speed changes due to acceleration.

• Non-uniformly accelerated motion

• Non-uniformly accelerated motion refers to motion where the rate of acceleration is not constant.

• In such motion, the velocity of the object changes at a varying rate over time.

Q30. 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.

Q31. Answer: (d) 336

Shortcut Trick

Perform Prime Factorization of the given numbers: 16 = 2^4, 28 = 2² × 7, and 42 = 2 × 3 × 7.

The LCM is obtained by multiplying the highest power of every prime factor present in the numbers.

Highest power of 2 is 2^4 = 16, power of 3 is 3¹ = 3, and power of 7 is 7¹ = 7.

=> LCM = 16 × 3 × 7 = 48 × 7 = 336.

Therefore The correct answer is 336.

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Alternate Method
Given numbers: 16, 28, and 42.
Method: Common Division Method
=> Divide by 2: 8, 14, 21
=> Divide by 2: 4, 7, 21
=> Divide by 2: 2, 7, 21
=> Divide by 2: 1, 7, 21
=> Divide by 3: 1, 7, 7
=> Divide by 7: 1, 1, 1
=> LCM = 2 × 2 × 2 × 2 × 3 × 7
=> LCM = 16 × 21
=> LCM = 336
Therefore The correct answer is 336.
Additional Information
LCM and HCF Relationship
For any two numbers a and b, their product is equal to the product of their LCM and HCF (a × b = LCM × HCF).
HCF (Highest Common Factor)
The HCF of 16, 28, and 42 is 2, as it is the largest number that divides all three given integers without a remainder.
LCM of Fractions
The LCM of fractions = (LCM of numerators) ÷ (HCF of denominators).

Q32. Answer: (b) 120

Given:
Ratio between white and black candy in a box = 5 : 6
Total number of candy = 220
Calculation:
Let, number of white candy = 5x
Number of black candy = 6x
According to the question,
=> 5x + 6x = 220
=> 11x = 220
=> x = 20
Therefore Number of black candy = 6x = 6 × 20 = 120

Q33. Answer: (d) 729

Calculation:
Let assume that number is x
According to the question
=> 4/9 × x = 324
=> x = 324 × 9/4
=> x = 729
Therefore 4/9 of 729 is 324.
The correct option is 4 i.e. 729
Shortcut Trick
4/9 of a number is 324
Here,
4 units = 324
1 unit = 81
9 units = 9 × 81 = 729
Therefore Number is 729

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Q34. Answer: (c) 8.25

Given:

Numbers = 5, 7, 10, and 11

Formula Used:

Average = (Sum of all numbers) ÷ (Total numbers)

Calculation:

Sum = 5 + 7 + 10 + 11 = 33

Total numbers = 4

Average = 33 ÷ 4 = 8.25

Therefore The average is 8.25.

Q35. Answer: (b) 3 Years

Given:

Principal (P) = Rs. 3100

Rate (R) = 4%

Simple Interest (SI) = Rs. 372

Formula Used:

SI = (P × R × T) / 100

Calculation:

=> 372 = (3100 × 4 × T) / 100

=> 372 = 124T

=> T = 372 ÷ 124

=> T = 3 years

The correct answer is 3 years.

Q36. Answer: (a) 11/35

=> ? = 3/5 + 3/7

=> ? = (7 × 3 + 5 × 3) / (5 × 7)

=> ? = (21 + 15) /35

=> ? = 36/35

=> ? = 11/35

Q37. Answer: (b) 8.75

(3 - 0.2)/(0.1 × (3 + 0.2)) = (3 - 0.2)/(0.1 × 3.2) = 2.8/0.32 = 8.75

Q38. Answer: (b) 95

38% of 250 = 38/100 of 250 = 38/100 × 250 = 95

Q39. Answer: (d) The angle made by each side at the centre is 60°, if it is a regular polygon with eight sides.

Calculation:

Option (1): All sides are of equal length.

This is TRUE for a regular polygon as all sides are equal by definition.

Option (2): Angles at the centre by all sides are equal.

This is TRUE because in a regular polygon, all central angles are equal as the sides are symmetrically placed.

Option (3): The angle made by each side at the centre is 90°, if it is a regular polygon with four sides.

For a square (4-sided polygon):

=> Central Angle = (360°)/4 = 90° This is CORRECT.

Option (4): The angle made by each side at the centre is 60°, if it is a regular polygon with eight sides.

For an octagon (8-sided polygon):

=> Central Angle = (360°)/8 = 45° This is INCORRECT because it's not 60°.

Therefore The correct answer is option (4).

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Q40. Answer: (a) Decrement 2.5%

Given:

Number increased = 30%

Number decreased = 25%

Formula Used:

Net increase/decrease = Increase% – Decrease% - (Increase %× Decrease%)/100

Calculation:

Net increase/decrease = Increase% – Decrease% - (Increase %× Decrease%)/100

=> 30 – 25 – (30 × 25)/100

=> 5 – 7.5

=> - 2.5%

Therefore Net decrement 2.5%

The correct option is 1 i.e. Decrement 2.5%.

Q41. Answer: (a) 2,809

Given:

Square of 53 is

Calculation:

The square of 53 can be found by multiplying 53 by itself.

=> 53 × 53 = 2809

Therefore, the square of 53 is 2809.

Q42. Answer: (d) 50

Shortcut Trick

Speed in m/s = 36 × 5/18 = 10 m/s.

Length of Train = Speed × Time = 10 × 25 = 250 m.

Total Distance to cross bridge = Train length + Bridge length = 250 + 250 = 500 m.

Required Time = Total Distance ÷ Speed = 500 ÷ 10 = 50 seconds.

Therefore The correct answer is 50 seconds.

Alternate Method

Given:

Speed of train = 36 km/h

Time to cross pole (t1) = 25 seconds

Length of bridge (L_b) = 250 m

Formula Used:

Speed (m/s) = Speed (km/h) × 5/18

Distance = Speed × Time

Calculations:

=> Speed of train = 36 × (5/18) = 10 m/s

=> Length of train (L_t) = Speed × Time to cross pole

=> L_t = 10 × 25 = 250 m

=> Total distance to cross bridge = L_t + L_b

=> Total distance = 250 + 250 = 500 m

=> Time to cross bridge = Total distance ÷ Speed

=> Time = 500 ÷ 10 = 50 seconds

Therefore The correct answer is 50 seconds.

Additional Information

Unit Conversion

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

Relative Speed

When two objects move in the same direction, relative speed = S1 − S2. In opposite directions, relative speed = S1 + S2.

Crossing Stationary Objects

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Total distance = Length of train + Length of object (If object is a point like a pole or man, its length is taken as 0).

Q43. Answer: (c) 14

Given:

A number when multiplied by 15 is increased by 196

Calculation:

Let the number be x

We know that

15 × x = x + 196

=> 15x – x = 196

=> 14x = 196

=> x = 14

Therefore The number is 14.

Q44. Answer: (b) Rs. 4,000

Given:

The average monthly income of:

P and Q = Rs. 5,050

Q and R = Rs. 6,250

P and R = Rs. 5,200

Formula Used:

Average = Sum of the terms/Number of terms

Calculation:

Total Monthly Income :

=> P + Q = Rs.5,050 × 2 = Rs. 10,100 ----(1)

=> Q + R = Rs.6,250 × 2 = Rs. 12,500 ----(ii)

=> P + R = Rs.5,200 × 2 = Rs. 10,400 ----(iii)

Therefore Adding equations (i), (ii) and (iii) we get,

=> 2(P + Q + R) = 10,100 + 12,500 + 10,400 = 33,000

=> P + Q + R = 33,000/2 = Rs. 16,500

Therefore The monthly income of P = (P + Q + R) - (Q + R)

=> 16,500 - 12,500 = Rs. 4,000

Therefore The monthly income of P is Rs. 4,000.

Q45. Answer: (c) 800

Given : Pinky's monthly salary = Rs. 2000

and She spends 3/5 of her salary.

Calculations :

=> The amount of money spend by Pinky = 3/5 ×(2000)

=> Rs. 1200

=> The amount she saved = Rs. (2000 - 1200)

=> Rs.800

Hence the amount left with her is Rs. 800.

Q46. Answer: (a) 5

According to the English alphabet series and its positional value

Therefore, 5 pairs are formed from the given word.

Hence, the correct answer is 5.

Q47. Answer: (b) ELCARIM

The logic followed here is:

'FAVOUR’ is written as ‘RUOVAF',

‘REVEAL’ is written as ‘LAEVER’

Similarly, for 'MIRACLE'

So, 'MIRACLE' will be coded as 'ELCARIM'.

Hence, the correct answer is "Option 2".

Q48. Answer: (b) E

According to the given information, six boys A, B, C, D, E, and F are sitting in a straight row facing north.

Case 1): Given that, B sits second to the right of D. That means there is one place between B and D.

D _ B

Case 2): Also, A sits fourth to the left of F and F does no sit at the extreme ends of the row. This means there are three places between A and F.

A _ _ _ F _

Case 3): Also, C sits second to the right of B. Thus, there is also a place between C and B.

B _ C

By combining the above cases we can conclude that,

Now, option 1 gives that F sits second to the right of A, which is an impossibility since F sits fourth to the right of A.

Now, option 2 gives that E sits second to the right of A. This is correct since then, the arrangement will be A D E B F C which goes at par with the given arrangement in the question.

A D E B F C

Now, option 3 gives that B sits second to the right of A, which is an impossibility since B has to sit second to the right of D.

Now, option 4 gives that D sits second to the right of A, which is an impossibility since then B will sit second to the right of D which will not allow F to sit fourth to the right of A.

Hence, the correct answer is E.

Q49. Answer: (c) XKVW

Explanation :

Table of english alphabet positional value

The pattern followed here is :

Hence, XKVW is the correct answer.

Q50. Answer: (d) Frog

The logic followed here is:

Logic: Nymph is a young form of a Cockroach.

Similarly, Tadpole is a young form of a Frog.

Hence, the correct answer is "Frog".

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