Agniveer Army GD 1 July 2025 (Shift 3) Memory-Based Paper (Previous Year Paper)

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

Take this paper as a timed mock test

Practise under exam conditions, then review your answers after you submit.

yourmocktest.com/pyq/army-gd-agniveer/agniveer-army-gd-1-july-2025-shift-3-memory-based-…

Scan the QR code or click the link to open it.

YourMockTest.com — Free Study Material

GENERAL KNOWLEDGE

Q1. Where is the Army Training Command (ARTRAC), the only non-operational command of the Indian Army, located?

(a) Pune
(b) Jaipur
(c) Lucknow
(d) Shimla

Q2. Which freedom fighters are popularly known as 'Lal-Bal-Pal'?

(a) Lal Bahadur Shastri, Bal Gangadhar Tilak, Bipin Chandra Pal
(b) Lala Lajpat Rai, Baldev Singh, Gopal Krishna Gokhale
(c) Lala Amarnath, Bal Thackeray, Palwankar Baloo
(d) Lala Lajpat Rai, Bal Gangadhar Tilak, Bipin Chandra Pal

Q3. Largest river of Madhya Pradesh is

(a) Chambal
(b) Betwa
(c) Sindh
(d) Narmada

Q4. Which of the following is a primary activity in rural areas?

(a) Banking
(b) Agriculture
(c) Manufacturing
(d) Software development

Q5. 'Kathakali' dance is related to which state?

(a) Goa
(b) Gujarat
(c) Kerala
(d) Punjab

Q6. Which Article mentions about the Finance Commission?

(a) Article 245
(b) Article 260
(c) Article 290
(d) Article 280

Q7. Who is the leading wicket-taker and winner of the Purple Cap in IPL 2025?

(a) Josh Hazlewood
(b) Noor Ahmad
(c) Trent Boult

(d) Prasidh Krishna

Q8. Where is the Indian Air Force Academy located?

(a) Hyderabad, Telangana
(b) Coimbatore, Tamil Nadu
(c) Jaisalmer, Rajasthan
(d) Dundigal, Telangana

Q9. Which of the following classical dances is referred to as the dance of the storytellers?

(a) Kathak
(b) Odissi
(c) Kuchipudi
(d) Kathakali

Q10. What is the name of the recently launched autobiography of Nobel Peace Laureate Kailash Satyarthi?

(a) Flames of Freedom
(b) Light of Hope
(c) Beacon of Change
(d) Diyaslai

Q11. Padma Bhushan 2025 awardee PR Sreejesh is associated with which sport?

(a) Hockey
(b) Cricket
(c) Badminton
(d) Wrestling

Q12. _____ is a constitutional body in India.

(a) Central Information Commission
(b) Lokpal and Lokayukta
(c) National Development Council
(d) Election Commission

Q13. Which of the following is not a natural resource?

(a) mango tree
(b) wooden house
(c) snake
(d) wind

Q14. Who was the founder of the Bombay Presidency Association?

(a) Uchharangrai Navalshankar Dhebar
(b) Pherozeshah Mehta
(c) Rajendra Prasad
(d) Nellie Sengupta

Q15. As per the 2011 census, which is the least populous state in India?

(a) Assam
(b) Sikkim
(c) Jharkhand
(d) Arunachal Pradesh

GENERAL SCIENCE

YourMockTest.com — Free Study Material

Q16. Which of the following is a physical change?

(a) Melting of ice
(b) Milk is set into curd
(c) Ripening of frutis
(d) Grapes get fermented

Q17. What is the molecular formula for chalk?

(a) Ca(OH)2
(b) CaCO3
(c) Ca(SO4)2
(d) CaHCO3

Q18. What is the use of water for the body?

(a) As a insolvent and solvent
(b) As a lubricant
(c) As a regulator of body temperature
(d) All of the above

Q19. The SI unit of displacement is _____.

(a) Meter
(b) Kilometer
(c) Centimeter
(d) Meter per second

Q20. Which of the following foods is the best source of Protein?

(a) Butter
(b) Fish
(c) Lettuce
(d) Milk

Q21. Foot and mouth disease in cattle is caused by which micro organisms?

(a) Protozoa
(b) Bacteria
(c) Fungi
(d) Viruses

Q22. It transports the water & minerals from root to leaves in plants-

(a) Xylem
(b) Stomata
(c) Cambium
(d) Phloem

Q23. Which of the following reproduces through binary fission?

(a) Amoeba
(b) Frogs
(c) Hydra
(d) Snails

Q24. Assertion: Baking soda solution turns red litmus paper blue.

Reason: Baking soda is a base and increases the concentration of hydroxide ions (OH-) in solution.

(a) Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.
(b) Both Assertion and Reason are correct, but Reason is not the correct explanation for Assertion.
(c) Assertion is correct, but Reason is incorrect.
(d) Assertion is incorrect, but Reason is correct.

YourMockTest.com — Free Study Material

Q25. The value of force acting per unit area is called _____?

(a) Force
(b) Energy
(c) Joule
(d) Pressure

Q26. Which of the following contains "Lactic Acid"?

(a) Spinach
(b) Curd
(c) Tamarind
(d) Vinegar

Q27. Potential difference is measured in _____.

(a) Watt
(b) Joule
(c) Volts
(d) Ampere

Q28. Who among the following is known as Father of plant pathology?

(a) Antoni van Leeuwenhoe
(b) Anton de Bary
(c) Louis Pasteur
(d) Aristotle

Q29. Water in humans facilitates:

(a) Respiration
(b) Roughage digestion
(c) Bowel functioning
(d) Fatigue and headache

Q30. Coal is an example of _____ resource.

(a) renewal
(b) non-renewal
(c) protected
(d) reserve

MATHEMATICS

Q31. Find the average

38, 33, 46, 52, 67 and 70

(a) 48
(b) 51
(c) 53
(d) 46

Q32. What is the value of cbrt729 × √16 + √676 + √169 ?

(a) 75
(b) 64
(c) 35
(d) 60

YourMockTest.com — Free Study Material

Q33. Find the smallest 4-digit number which divided by 5 gives remainder 4.

(a) 996
(b) 1012
(c) 1006
(d) 1004

Q34. A sum becomes Rs. 15,500 in 7 years on simple interest at the rate of 30 percent per annum. What is the total interest for the 7 years?

(a) Rs. 12,200
(b) Rs. 1,47,000
(c) Rs. 10,500
(d) Rs. 11,500

Q35. If the ratio between two numbers is 5 : 9, if 8 is subtracted from each, then the ratio become 1 : 2, then the smallest number is

(a) 45
(b) 40
(c) 20
(d) 25

Q36. If a man covers a certain distance at the speed of 20 km/hr and comes back to his initial position with a speed of 30 km/hr. He takes 6 hours to complete the total distance. Find the total distance covered by him?

(a) 142 km
(b) 148 km
(c) 144 km
(d) 146 km

Q37. Find the value of:

$(11 + 4) - 9 \times 1 \div 3$ of 4

(a) 75/4
(b) 57/4
(c) 5
(d) 3

Q38. Two phone are sold at Rs. 18,000 each. The first phone sold a loss of 10% and another phone sold at a profit of 20%, then, what is the net loss/profit (in Rs.) –

(a) 800
(b) 1500
(c) 1200
(d) 1000

Q39. Find the LCM of 24, 36 and 40.

(a) 120
(b) 240
(c) 360
(d) 480

Q40. A wheel travels a distance of 44 km in 5000 revolutions. What is radius (in meter) of the wheel?

(a) 1.4
(b) 1.2
(c) 1.5
(d) 1.8

YourMockTest.com — Free Study Material

Q41. A person bought 40 pens at the rate of Rs.50 per pen. He sold 30 pens at a loss of 20%. If 40% profit is made on all the pens together, then what will be the profit percentage on the remaining 10 pens?

(a) 80 percent
(b) 220 percent
(c) 120 percent
(d) 50 percent

Q42. What is the smallest fraction among the below given fractions?

4/9, 5/4, 3/8, 6/7

(a) 6/7
(b) 5/4
(c) 4/9
(d) 3/8

Q43. If 15% of 50 is 30% of x, then x = ?

(a) 75
(b) 100
(c) 25
(d) 60

Q44. It takes 8 people working at equal rates to finish a work in 96 days. How long will 6 workers take for the same work?

(a) 124 days
(b) 125 days
(c) 128 days
(d) 122 days

Q45. Shubham covers certain distance with 2 different speeds. He travels at the rate of 40 km/h for 6 hours and again at the rate of 45 km/h for 6 hours. Find his average speed.

(a) 22.5 km/h
(b) 32.4 km/h
(c) 37.5 km/h
(d) 42.5 km/h

LOGICAL REASONING

Q46. In a code language, if ‘LUCID’ is coded as ‘33394’, then how will ‘FRANK’ be coded in the same language?

(a) 68151
(b) 69152
(c) 59142
(d) 69153

Q47. Rakesh ranks 15^(th)from top in the class of 42 students and there are 8 students below Rajesh rank. How many students are there between Rakesh and Rajesh?

(a) 19
(b) 16
(c) 17
(d) 18

Q48. Looking at a family photo, T pointed to M and said, “His mother N’s husband O’s brother P’s mother S is my wife”. How is S related to M?

(a) Daughter-in-law
(b) Paternal grandmother
(c) Mother’s sister
(d) Mother

YourMockTest.com — Free Study Material

Q49. If TRIPPLE is coded as DMOQHSS in a code language, how is VICTORY coded in that language?

(a) ZXPSDHW
(b) UJBUNSX
(c) WHDSPQZ
(d) XSNUBJU

Q50. By interchanging the given two signs which of the following equations will be correct?

× and +

(a) 6 × 11 + 13 ÷ 11 = 17
(b) 4 + 9 × 11 ÷ 3 = 37
(c) 11 × 6 ÷ 18 + 54 = 29
(d) 13 – 12 × 5 + 11 = 46

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) Shimla

The correct answer is Shimla.

Key Points

• Army Training Command (ARTRAC) is the only non-operational command of the Indian Army and is headquartered at Shimla, the capital of Himachal Pradesh.

• It was established on 1 October 1991 with the aim of bringing all aspects of individual and collective training in the Indian Army under one umbrella.

• The main objective of ARTRAC is to ensure doctrinal consistency, training standardization, and modernization of training methods across the Indian Army.

• ARTRAC is responsible for formulating and implementing policies related to training doctrines, simulation, and evaluation systems to enhance operational preparedness.

• Unlike other commands such as the Western, Eastern, Northern, Southern, and South Western Commands, which are operational in nature, ARTRAC focuses solely on training and human resource development. Hence, the statement about ARTRAC being the only non-operational command is correct.

• ARTRAC also supervises and coordinates the activities of the Indian Military Academy (IMA), Officers Training Academies (OTAs), and various corps training centers across India.

• The command plays a crucial role in the integration of technology into training programs, including cyber warfare, information operations, and network-centric warfare modules.

• ARTRAC works towards evolving training concepts to meet the demands of modern warfare and ensures the Indian Army remains prepared for conventional, sub-conventional, and hybrid conflicts.

• Hence, the correct answer is Shimla.

Additional Information

• About ARTRAC:

• Full Name: Army Training Command (ARTRAC)

• Location: Shimla, Himachal Pradesh

• Established: 1 October 1991

• Motto: “Transformation through Training”

• Type: Non-operational Command

• Current General Officer Commanding-in-Chief (GOC-in-C): Lieutenant General (post changes periodically)

YourMockTest.com — Free Study Material

• Functions of ARTRAC:

• Formulates and reviews training doctrines to keep pace with changing warfare requirements.

• Coordinates with various Army training establishments to ensure uniformity and modernization.

• Integrates joint training doctrines for synergy with the Indian Navy and Indian Air Force.

• Introduces simulation-based and computer-assisted war-gaming and training models.

• Promotes training research and innovation through collaboration with defense institutions and universities.

• Operational vs Non-operational Commands:

• The Indian Army has six operational commands — Western Command (Chandimandir), Eastern Command (Kolkata), Northern Command (Udhampur), Southern Command (Pune), Central Command (Lucknow), and South Western Command (Jaipur).

• ARTRAC (Shimla) is the seventh and only non-operational command dedicated to training and doctrine formulation.

• This distinction ensures that while operational commands focus on defense and combat readiness, ARTRAC develops the conceptual and human capital foundation behind it.

Important Points

• Indian Army Commands Overview:

• Western Command – Chandimandir (Haryana): Responsible for defense against Pakistan in Punjab and Rajasthan sectors.

• Eastern Command – Kolkata (West Bengal): Guards borders with China, Bhutan, Myanmar, and Bangladesh.

• Northern Command – Udhampur (Jammu & Kashmir): Handles operations along the Line of Control (LoC) and Line of Actual Control (LAC).

• Southern Command – Pune (Maharashtra): Covers southern India and western coastal areas.

• Central Command – Lucknow (Uttar Pradesh): Responsible for central India's operational training and logistics.

• South Western Command – Jaipur (Rajasthan): Acts as a strategic reserve force for the Indian Army.

• ARTRAC – Shimla (Himachal Pradesh): The only non-operational command, overseeing training, doctrine, and simulation development for the entire Army.

Q2. Answer: (d) Lala Lajpat Rai, Bal Gangadhar Tilak, Bipin Chandra Pal

The correct answer is Lala Lajpat Rai, Bal Gangadhar Tilak, Bipin Chandra Pal.

Key Points

• Lala Lajpat Rai, Bal Gangadhar Tilak, and Bipin Chandra Pal are popularly known as 'Lal-Bal-Pal'.

• They were prominent leaders in the Indian freedom struggle during the late 19th and early 20th centuries.

• The trio represented the extremist faction of the Indian National Congress, advocating for Swaraj (self-rule) and rejecting moderate reformist approaches.

• Their efforts were instrumental in inspiring Indian nationalism and mobilizing the masses against British colonial rule.

• They played a key role in the Swadeshi Movement, promoting the boycott of British goods and encouraging the use of Indian-made products.

Additional Information

• Lala Lajpat Rai

• Known as the 'Lion of Punjab', he was an ardent nationalist and social reformer.

• He protested against the Simon Commission in 1928 and succumbed to injuries sustained during a lathi charge.

• Bal Gangadhar Tilak

• Referred to as the 'Father of Indian Unrest', Tilak was a fierce advocate of Swaraj.

• He popularized the Ganesh Chaturthi and Shivaji festivals to inspire nationalistic fervor among Indians.

• Bipin Chandra Pal

• A staunch nationalist, Pal was known for his fiery speeches and writings.

• He was a major proponent of radical methods to achieve independence and opposed British policies through the Swadeshi and boycott movements.

• Swadeshi Movement

• Launched in 1905, this movement emphasized the boycott of British goods and the revival of indigenous industries.

• Lal-Bal-Pal were key leaders in promoting the Swadeshi ideology during the partition of Bengal.

Q3. Answer: (d) Narmada

The correct answer is Narmada.

• Narmada is the largest river in Madhya Pradesh.

• Madhya Pradesh falls in five major river basins.

• The northern part of the state falls within the Ganges Basin where the Betwa, Chambal, and Son flow.
• Narmada river mainly flows in Madhya Pradesh and the Gujarat state of India.
• It is also known as the "Life Line of Madhya Pradesh and Gujarat" for its huge contribution to the state of Madhya Pradesh and Gujarat in many ways.
• Narmada rises from Amarkantak Plateau in Anuppur district Madhya Pradesh.

• About Madhya Pradesh:
• Chief Minister - Dr. Mohan Yadav
• Governor - Mangubhai C. Patel (July 2021)
• Capital - Bhopal
• Total Districts - 52 districts
• Literacy Rate - 69.32%
• Largest district - Chhindwara
• Smallest district - Niwari

Q4. Answer: (b) Agriculture

The correct answer is Agriculture.

Key Points

• Agriculture is the primary activity in rural areas and forms the backbone of the rural economy in India.
• It involves cultivation of crops, animal husbandry, and other allied activities that provide direct employment to a majority of the rural population.
• India is one of the leading producers of crops such as rice, wheat, pulses, and spices due to its extensive agricultural practices.
• About 58% of India's population is dependent on agriculture for their livelihood, according to government statistics.
• Agriculture also contributes significantly to India's GDP and supports industries like textiles, food processing, and export businesses.

Additional Information

• Primary Activities: These are activities directly related to natural resources, such as agriculture, fishing, forestry, and mining.
• Importance of Agriculture: It ensures food security, provides employment, and supports rural development in India.
• Green Revolution: Introduced in the 1960s, it significantly improved agricultural productivity through the use of high-yield crop varieties, fertilizers, and irrigation techniques.
• Allied Activities: Activities like dairy farming, poultry farming, and horticulture are also considered part of the agricultural sector.
• Initiatives like Pradhan Mantri Krishi Sinchai Yojana and PM-KISAN aim to support farmers and boost agricultural productivity in India.

Q5. Answer: (c) Kerala

Key Points

Kathakali:

• Kathakali is a classical Indian dance form which is a story play genre of art is the folk dance form of Kerala.
• Kathakali is the most difficult style of the traditional dance form.
• In this, the actors speak ‘sign language’ where hand gestures are used to dictate word part of the character and facial and eye movements express emotions and mood.
• Kathakali is based on the epics of Ramayana and Mahabharata.
• There are 24 main mudras, and numerous more minor ones in Kathakali.
• There are nine facial expressions called Navarasas, which each actor masters through facial muscle control during his education, in order to express the emotional state of the character in the play.
• Famous proponents: Guru Kunchu Kurup, Gopi Nath, Kottakal Sivaraman, Rita Ganguly among others.

Additional Information

The Sangeet Natak Akademi recognizes eight classical dances in India.

Dances	Origin	Main Reviving Personals	Famous Proponents
Bharatnatyam	Tamil Nadu	E. Krishna Iyer, Rukmini devi Arindel	Yamini Krishnamurthy, Lakshmi Vishwanathan, Padma Subramaniam, Mrinalini Sarabhai, Mallika Sarabhai

YourMockTest.com — Free Study Material

Kuchipudi	Andhra Pradesh	Balasaraswati, Ragini devi	Radha Reddy And Raja Reddy, Yamini Krishnamurthy, Indrani Rehman
Kathakali	Kerala	V. N. Menon	Guru Kunchu Kurup, Gopinath, Kottakal Sivaraman, Rita Ganguly
Odissi	Odisha	Indrani Rehman, Charles Fabri	Guru Pankaj Charan Das, Kelu Charan Mohapatra, Sonal Mansingh, Sharon Lowen, MYrla Barvie
Manipuri	Manipur	Raja bhag Chandra, Rabindranath Tagore	Nayana, Suverna, Ranjana and Darshna, Guru Bipin Singha
Kathak	Uttar Pradesh	Lady Leela Sokhey	Birju Maharaj, Lacchu Maharaj, Sitara Devi, Damyanti Joshi
Sattriya	Assam	Shankaradeva	•
Mohiniattam	Kerala	V. N. Menon, kalayani Amma	Sunanda Nair, Kalamandalam kshmavathy, Madhuri Amma, Jayaprabha Menon

Q6. Answer: (d) Article 280

The correct answer is Article 280.

Key Points

• The President of India constitutes the Finance Commission every 5 years.

• The finance commission is a constitutional body mandated by article 280 of the constitution.

• The recommendations made by the Finance Commission are of an advisory nature only and therefore, not binding upon the government.

• It submits its report to the President of India.

• The first Finance Commission was constituted in 1951.

• The eligibility of members of the Finance Commission is determined by the Parliament of India.

• Composition: Chairman and 4 members.

• They make recommendations on

• net proceeds distribution between the union and the state.

• grant-in-aid from CFI (Consolidated Fund of India).

• Principles and measures needed for augmentation of CFS (Consolidated Fund of State).

• Resources to panchayats and municipalities.

• Any other matter referred to the commission by President in the interest of sound finance.

• Procedure and powers are defined by parliament law.

Q7. Answer: (d) Prasidh Krishna

The correct answer is Prasidh Krishna.

In News

• Gujarat Titans' Prasidh Krishna leads the Purple Cap race with 25 wickets in IPL 2025.

Key Points

• Wicket Tally: Prasidh Krishna has taken 25 wickets in 15 matches, making him the top wicket-taker of the season.

• Economy Rate: He maintains an economy rate of 8.27, showcasing effective bowling.

• Performance Impact: Krishna's bowling has been crucial to Gujarat Titans' campaign in IPL 2025.

Additional Information

• Purple Cap: Awarded to the highest wicket-taker in an IPL season.

• IPL 2025 Season: Featured strong bowling performances with close competition for the Purple Cap.

• Key Players: Other top contenders include Noor Ahmad, Josh Hazlewood, and Trent Boult.

Important Points

• The IPL 2025 season came to an end with Royal Challengers Bengaluru triumphing over Punjab Kings in a memorable final, with Krunal Pandya winning his second Final player of the match award for a special display of defensive spin bowling to finish with

YourMockTest.com — Free Study Material

figures of 2-17.

• 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

Q8. Answer: (d) Dundigal, Telangana

The correct answer is Dundigal, Telangana.

Key Points

• Indian Air Force Academy, Dundigal is a Defence Service training institute located in Medchal-Malkajgiri district in the Indian state of Telangana.

• The foundation stone of the Air Force Academy was laid by the then President of India Dr. Zakir Hussain on 11 October 1967. The academy was established in 1969 and started operations in 16 Jan 1971.

• The current Commandant of the Academy is Seethepalli Shrinivas.

Additional Information

• The Indian Air Force was officially established on 8 October 1932.

• Indian Air Force is headquartered in New Delhi.

• The Indian Air Force is divided into several commands: Western, Eastern, Central, South Western, Southern, Training, and Maintenance Commands.

• Indian Air Force Day is celebrated on 8^(th) October every year.

Important Points

• The National Defence Academy is located in Khadakwasla, Pune.

• The Indian Naval Academy is located in Ezhimala, Kerala.

• The Officers Training Academy is located in Chennai, Tamil Nadu.

Q9. Answer: (a) Kathak

The correct answer is Kathak.

• Kathak is one of the classical dances of India.

• Kathak dance originated from Uttar Pradesh (U.P) in North India.

• It was primarily a temple or village performance wherein the dancers narrated stories from ancient scriptures.

• Usually a solo performance, the dancer often pauses to recite verses followed by their execution through movement.

• Kathak is the only form of classical dance that belongs to North Indian music.

• The foundations of Kathak are rooted in Natya Shastra

Additional Information

• Odissi:

• Odissi is similar to Bharatnatyam in the mudras and posture to express emotions.

• During h Odissi dance the lower body remains static and there is movement in the torso.

• Odissi is also known as a mobile sculpture.

• Kuchipudi:

• It is a classical dance of Andhra Pradesh.

• Kuchipudi derives its name from the village Kusselevapuri in Andhra Pradesh.

• Vijaynagar and Golcando's rulers patronized the dance form.

• Kathakali:

• It is the most difficult style of the traditional dance form in which actors speak sign language and hand gestures are used to dictate words.

YourMockTest.com – Free Study Material

• Kathakali is based on the epics of Ramayana and Mahabharata.

Q10. Answer: (d) Diyaslai

The correct answer is Diyaslai.

In News

• A special discussion on Nobel Laureate Kailash Satyarthi's autobiography Diyaslai was held at the Indira Gandhi National Centre for the Arts (IGNCA).

Key Points

• Diyaslai is an autobiography by Kailash Satyarthi that chronicles his fight against child exploitation and his journey to winning the Nobel Peace Prize.

• Former President Ram Nath Kovind described Diyaslai as more than just a book, but a movement for child rights.

• Satyarthi, the son of a police constable from Vidisha, dedicated his life to advocating for child welfare and education.

• He chose to dedicate his Nobel Prize to the nation, emphasizing his commitment to India's future.

Additional Information

• Kailash Satyarthi

• Born: January 11, 1954, in Vidisha, Madhya Pradesh

• A social activist known for his work in child labor eradication

• Founder of Bachpan Bachao Andolan, which has rescued thousands of child laborers

• Received the Nobel Peace Prize in 2014, jointly with Malala Yousafzai

• Indira Gandhi National Centre for the Arts (IGNCA)

• Founded in 1987 to promote Indian art and culture

• Located in New Delhi

• Hosts discussions, exhibitions, and research initiatives

Q11. Answer: (a) Hockey

The correct answer is Hockey.

Key Points

• PR Sreejesh is an Indian professional field hockey player who serves as the goalkeeper for the Indian national hockey team.

• He was instrumental in India's victory at the 2021 Tokyo Olympics, where India clinched the bronze medal in hockey after 41 years.

• Sreejesh has been honored with prestigious awards like the Padma Shri in 2017 and the Khel Ratna in 2021 for his exceptional contributions to Indian hockey.

• He has represented India in several major tournaments, including the Asian Games, Hockey World Cups, and Commonwealth Games.

• Sreejesh's expertise as a goalkeeper and his leadership on the field have earned him recognition as one of the best goalkeepers in the world.

Additional Information

• Hockey in India

• Hockey is one of the oldest and most celebrated sports in India, with the national team winning multiple Olympic gold medals historically.

• India's golden era in hockey spanned from 1928 to 1956, during which the team won six consecutive Olympic gold medals.

• The Hockey India League (HIL), launched in 2013, aims to popularize hockey in the country and promote young talent.

• Goalkeeping in Hockey

• The goalkeeper's primary role in hockey is to prevent the opposition from scoring by blocking shots on goal using a combination of physical agility and tactical positioning.

• Goalkeepers wear specialized protective gear, including helmets, pads, and gloves, to ensure safety during play.

• Key skills for hockey goalkeepers include reflexes, hand-eye coordination, and the ability to anticipate and react swiftly to opponents' moves.

• International Recognition for Indian Hockey

• India's resurgence in international hockey was marked by the bronze medal win at the 2021 Tokyo Olympics.

• Players like PR Sreejesh and Manpreet Singh have been instrumental in reviving the glory of Indian hockey globally.

• India's hockey teams consistently participate in global tournaments such as the FIH Hockey World Cup and Champions Trophy.

• Padma Awards

• The Padma Awards are among the highest civilian honors in India, recognizing achievements in various fields, including sports.

YourMockTest.com — Free Study Material

• PR Sreejesh was awarded the Padma Shri in 2017 and is set to receive the Padma Bhushan in 2025 for his contributions to Indian hockey.

• The awards are categorized into Padma Shri, Padma Bhushan, and Padma Vibhushan, based on the level of excellence demonstrated by the awardees.

Q12. Answer: (d) Election Commission

The correct answer is the Election Commission of India

Key Points

• The Election Commission of India:-

• It is a Constitutional Body created under Article 324 of the Constitution of India.

• It is an autonomous constitutional authority of India which is responsible for administering election processes in India

• Article 324 of the Indian constitution defined the Election commission of India.

• The election commission of India conducts the election for Lok Sabha, Rajya Sabha, State legislative assemblies, President and vice-president.

• The office of the election commission of India was formed on 25th January 1950.

• This day is also celebrated as "National voters day".

• The removal of the chief election commissioner is the same as the judge of the Supreme court of India.

• The term of chief election commissioner is of six years or up to the age of 65 years.

• The election commission of India is responsible to allocate the symbol to the political parties.

• The election commission gives recognition to the National parties, State parties, and regional parties.

• The present chief election commissioner of India is Shri Sushil Chandra. (July 2021).

Additional Information

Constitutional Bodies	Non-Constitutional Bodies
• Election Commission - Union Public Service Commission - State Public Service Commission - Finance Commission - National Commission for Scheduled Tribes - National Commission for SCs - Special Officer for Linguistic Minorities - CAG of India - Attorney General of India - Advocate General of the State	• NITI Aayog - National Human Rights Commission - State Human Rights Commission - Central Information Commission - State Information Commission - Central Vigilance Commission - Central Bureau of Investigation - Lokpal and Lokayuktas

Q13. Answer: (b) wooden house

The correct answer is a wooden house.

Key Points

• Natural resources are resources that exist without any actions of humankind.

• This includes the sources of valued characteristics such as commercial and industrial use, aesthetic value, scientific interest, and cultural value.

• On Earth, it includes sunlight, atmosphere, water, land, all minerals along with all vegetation, and animal life.

• Natural resources can be part of our natural heritage or protected in nature reserves.

Additional Information

• Natural Resources can be sorted into two categories: biotic and abiotic.

• Biotic resources are gathered from the biosphere or may be grown.

• Abiotic resources are non-living, like minerals and metals.

Mistake Points

Since wood is a natural resource, but a wooden house is made from effects of humans. So, it is not a natural resource.

Q14. Answer: (b) Pherozeshah Mehta

The correct answer is option 2 i.e. Pherozeshah Mehta.

Pherozeshah Mehta established the Bombay Presidency Association in 1885.

• It was formed in response to the controversy over the Ilbert Bill which would allow Indians to try Europeans in courts.

• The organization was started to help Indians obtain western education and embrace its culture to uplift India.

• The other founding members were Badruddin Tyabji and K.T. Telang.

• Mehta was also the President and one of the founding member of the Indian National Congress.

• Mehta also started the 'The Bombay Chronicle', an English newspaper.

Q15. Answer: (b) Sikkim

The correct answer is Sikkim.

Key Points

• According to the state census 2011, the most populated state in India is Uttar Pradesh.

• The least populated state in the country is Sikkim with a population of 60,7688.

• Mizoram is the second least populous state in India.

• Sikkim is a state in northeast India.

• It borders the Tibet autonomous region of China in the north and northeast, Bhutan in the east, Province no.1 of Nepal in the west and West Bengal in the south.

Thus, we can say that as per the 2011 census, Sikkim is the least populous state in India.

Q16. Answer: (a) Melting of ice

The correct answer is option 1, i.e., Melting of ice.

• The melting of ice is a physical change.

• The change that does not lead to changes in the chemical composition of a substance is termed as physical change.

• Physical changes lead to changes in the physical properties and are generally reversible in nature.

• Examples of physical changes are: melting of ice, transition into gas, textural changes, changes in size, shape, color, etc.

Additional Information

• In the case of the melting of ice, only a phase transition takes place, the chemical composition of ice does not change.

• Chemical changes lead to the transformation in the chemical composition of the substance. Either a new substance is synthesized or a substance is decomposed.

• The setting of milk into curd, the ripening of fruits, and fermentation of grapes all are examples of chemical changes since the chemical properties of each are changed.

Q17. Answer: (b) CaCO3

The correct answer is CaCO3.

Key Points

• Chalk is primarily composed of calcium carbonate (CaCO3), a naturally occurring compound.

• Calcium carbonate is a white, insoluble solid found in sedimentary rocks such as limestone and chalk.

• It is formed mainly by the accumulation of marine organism shells, particularly those of plankton, over millions of years.

• Chalk is widely used in various industries, including construction (as a component of cement), agriculture (to neutralize acidic soil), and in classrooms (as blackboard chalk, although modern chalk is often synthetic).

• The molecular formula CaCO3 represents one calcium atom, one carbon atom, and three oxygen atoms.

Additional Information

• Calcium Carbonate Usage:

• It is used in the production of lime (CaO) and cement.

• In the pharmaceutical industry, it acts as a calcium supplement and an antacid.

• In the food industry, it is used as an additive (E170) for acidity regulation.

• Properties of Calcium Carbonate:

• It has a molar mass of approximately 100.09 g/mol.

• It is relatively insoluble in water but reacts with acids, releasing carbon dioxide.

• Its crystalline forms include calcite and aragonite.

• Formation of Chalk:

• Chalk is formed from the microscopic remains of planktonic organisms such as coccolithophores.

• The accumulation of these remains over geological time leads to the formation of chalk beds.

• Other Forms of Calcium Carbonate:

• Marble is a metamorphic form of calcium carbonate.

• Limestone is a sedimentary form, widely used in construction.

• Environmental Importance:

• Calcium carbonate plays a role in carbon cycling by trapping carbon dioxide in rock formations.

• It is also used to combat ocean acidification by neutralizing excess acidity in seawater.

YourMockTest.com — Free Study Material

Q18. Answer: (d) All of the above

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:

• The unique qualities and properties of water are what makes it so important and basic to life.

• The cells in our bodies are full of water.

• The excellent ability of water to dissolve so many substances allows our cells to use valuable nutrients, minerals, and chemicals in biological processes.

• Water is a main component of saliva. It's essential for breaking down solid food and keeping the mouth healthy.

• Staying hydrated is crucial to maintaining body temperature.

• The body loses water through sweat during physical activity and in hot environments.

• Water consumption helps lubricate and cushion your joints, spinal cord, and tissues.

• This will help in enjoying physical activity and lessen the discomfort caused by conditions like arthritis.

• Water carries helpful nutrients and oxygen to your entire body.

• Reaching the daily water intake will improve circulation and have a positive impact on overall health.

Hence, water is used as an insolvent and solvent, as a lubricant, and as a regulator of body temperature.

Additional Information

Some organs and their composition

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

Q19. Answer: (a) Meter

The correct answer is Meter.

Key Points

• The Sl unit of displacement is meter (m).

• Displacement is a vector quantity.

• It can be positive, negative, or zero.

Important Points

• Displacement (S"):

• The minimum path length between starting point to the final point is called displacement.

Q20. Answer: (b) Fish

The correct answer is Fish.

Though milk a good source of protein but it's not as high in protein as fish.

Key Points

Protein Source:

• A protein is made up of 20 distinct kinds of amino acids, which are chemical substances bonded to one another. 11 different kinds of amino acids are naturally produced by our bodies.

• However, humans must obtain the remaining nine varieties of amino acids, known as "essential amino acids," from other sources, such the food we consume.

• The nine essential amino acids are valine, tryptophan, phenylalanine, isoleucine, leucine, lysine, methionine, and phenylalanine.

Incomplete Protein:

• An "incomplete protein" is defined as protein that does not include all nine types of amino acids that must be obtained from diet.

• Examples of incomplete proteins include:

YourMockTest.com — Free Study Material

• Seeds and Nuts
• Complete grains (like brown rice or whole-wheat bread)
• Vegetables
• legumes, such as beans, peas, and lentils.

Complete Protein:

• A protein is referred described as being "complete" if it contains all nine different types of amino acids that you must obtain from diet.
• Animal sources provide a complete source of protein (i.e. containing all essential amino acids), whereas vegetable sources generally lack one or more of the essential amino acids.
• Great sources of complete proteins are:
• Fish
• Poultry (chicken, duck, or turkey)
• Eggs
• Dairy products (milk, yogurt, or cheese, for example)
• Beef or pork
• Soy products, such as tofu and edamame.

Additional Information

Proteins:

• Proteins are the building blocks of life. Every cell in the human body contains protein. The basic structure of a protein is a chain of amino acids.
• Protein foods are broken down into parts called amino acids during digestion. The human body needs a number of amino acids in large enough amounts to maintain good health.
• Amino acids are found in animal sources such as meats, milk, fish, and eggs.
• They are also found in plant sources such as soy, beans, legumes, nut kinds of butter, and some grains (such as wheat germ and quinoa).
• You do not need to eat animal products to get all the protein you need in your diet.
• The rich sources of proteins are egg, milk, yoghurt, fish and seafood, soya, pistachio nuts, pork, chicken.
• They are also found in plant sources such as soy, beans, legumes, nut kinds of butter, and some grains (such as wheat germ and quinoa).
• Amino acids are classified into three groups:
• Essential
• Nonessential
• Conditional
• Essential amino acids cannot be made by the body and must be supplied by food.
• They do not need to be eaten at one meal.
• The balance over the whole day is more important.
• Nonessential amino acids are made by the body from essential amino acids or in the normal breakdown of proteins.
• Conditional amino acids are needed in times of illness and stress.

Q21. Answer: (d) Viruses

Explanation:

• Foot and mouth disease (FMD) in cattle is caused by a virus - picornavirus. The virus has seven serotypes A, O, C, SAT1, SAT2, SAT3 and Asia1
• It is a highly infectious disease that affects the cloven-hoofed animals (animals having divided hoofs) like cows, buffalo, deer, pigs, goats, etc.
• It can be spread through the breath, saliva, mucus, milk & feces of the infected animal.
• Symptoms include the appearance of vesicles (fluid-filled blisters) between the toes and heel, lack of appetite, shivering & reduced milk production.
• This is a fatal disease in young animals.
• It is majorly reported in the Middle East, Asia, South America.

Additional Information

• Common diseases in cattle:

Causal agent	Disease

Bacteria	Tuberculosis, Paratuberculosis, Brucellosis, hemorrhagic septicemia, etc.
Protozoa	theileriosis
Fungi	RIngworm

Q22. Answer: (a) Xylem

The correct answer is Xylem.

Key Points

• Xylem transports water, minerals, and nutrients from the soil to all the plant parts.

• Through the diffusion process, water enters the root hairs.

• There are two types of transport tissue in plants, the xylem, and phloem.

• Water and solutes are transported by the xylem from the roots to the leaves, and food is transported from the leaves to the rest of the plant by phloem.

Additional Information

• The process by which water evaporates from the leaves and draws more water from the roots is called transpiration.

• The xylem is a vascular tissue.

• It is also used to replace water lost during transpiration.

Q23. Answer: (a) Amoeba

The correct answer is Amoeba.

Key Points

• Amoeba reproduces through binary fission.

• Amoeba is a unicellular organism, and just like bacteria.

• It reproduces through binary fission.

• After replicating its genetic material through mitotic division, the cell divides into two equal-sized daughter cells.

• In this method, two similar individuals are produced from a single parent cell.

• Binary fission

• Binary fission is a form of asexual reproduction in which an organism divides into two, each part carrying one copy of genetic material.

• Binary fission is a type of asexual reproduction typically observed in prokaryotes and a few single-celled eukaryotes.

• In this method of asexual reproduction, there is a separation of the parent cell into two new daughter cells.

• This process happens with the division and duplication of the parent's genetic matter into two parts. Here, each daughter cell receives one copy of its parent DNA.

Additional Information

• Multiple fission

• multiple fission is a proocess of asexual reproduction, in which instead of two daughter cells many daughter cells are produced from a parent cell.

• In this process nucleous ubdergoes multiple division to produce a large number of nuclei.

• Each nucleus along with the little bit of cytoplasm forms a membrane around it.

• All the dauighter cells are equal sized and similar.

• Plsomodium, true slime molds (Myxomycetes) exhibit this type of asexual reproduction.

Binary fission	**Multiple fission**
2 daughter cells are formed from the splitting of the parent's cell or Nucleus.	Many daughter cells are formed from the splitting of the parent's cell or Nucleus.
Occurs during favourable conditions.	Occurs during unfavourable conditions.
Divides only once.	Divides repeatedly.
Both the Nucleus and cytoplasm divide simultaneously.	First, the nucleus divides and is surrounded by cytoplasm.
Includes a definite pattern of division.	Has no definite pattern of division.
Example: Amoeba, Bacteria, Euglena, etc.	Example: Plasmodium, Sporozoans, Algae, etc

YourMockTest.com – Free Study Material

Q24. Answer: (a) Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

The Correct answer is Both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

Key Points

• Baking soda, chemically known as sodium bicarbonate (NaHCO3), is classified as a weak base.

• When dissolved in water, baking soda reacts to release hydroxide ions (OH^-), which increase the basicity of the solution.

• The basic solution changes the color of red litmus paper to blue, which is a standard test to identify bases.

• The Reason provided, stating that baking soda increases the concentration of hydroxide ions, is scientifically accurate and explains why the solution behaves as a base.

• The Assertion is also correct because baking soda solution does indeed turn red litmus paper blue due to its basic nature.

• Since the Reason directly explains the Assertion, the correct option is that both Assertion and Reason are correct, and Reason is the correct explanation for Assertion.

• This reaction and explanation are an important concept in understanding the properties of bases in acid-base chemistry.

Additional InformationBleaching Powder - Calcium Chlorohypochlorite

• Caustic Soda - Sodium Hydroxide

• Washing Soda - Sodium Carbonate

• Table Salt - Sodium Chloride

Q25. Answer: (d) Pressure

option(4)

CONCEPT:

• Pressure: It is those scalar quantities which is defined as the force acting perpendicular to the surface of the body per unit area is known as Pressure.

EXPLANATION:

• Pressure: It is defined as Force acting per unit area

P = F/A

Where F is force and A is area

• The S.I unit of pressure is Pascal.

Additional Information

• Force: It is those vector quantity which is a vector product of mass and acceleration.

Force = mass × acceleration

• Energy: It is that physical quantity that is defined as the capacity to doing work.

Energy = Power × Time, the S.I unit of power is Watt.

Q26. Answer: (b) Curd

The correct answer is Curd.

• Lactic acid is present in Sour milk or curd.

• The Sourness of the milk is due to the presence of lactic acid.

• Human beings feel tired due to the accumulation of lactic acid in the muscles.

• Acids are basically categorized into Organic and inorganic acids.

• Organic acids: All the sour things that we use in our daily life are organic acids. Ex- lemon, apple, vinegar, etc.

• Inorganic acids: The acids used in laboratories which are basically very strong acids are inorganic in nature. Ex- Hydrochloric acid (HCl), Sulphuric acid (H2SO4), etc.

Q27. Answer: (c) Volts

• Potential difference is measured in volts

• Energy is measured in joules

• Power is measured in watts

• Current is measured in amperes

Additional Information

We can extend the range of ammeter by keeping a shunt resistance.

Here Rm = internal resistance of the coil

Rsh = Shunt resistance

I = Required full-scale range

Im = Full scale deflection of current

As the two resistances, Rm and Rsh are in parallel, the voltage drop across the resistance is equal.

$I_mR_m = (I - I_m)R_{(sh)}$

$R_m = (I/I_m - 1)R_{(sh)}$

$\Rightarrow R_{(sh)} = R_m/((I/I_m - 1))$

$\Rightarrow R_{(sh)} = R_m/((m - 1))$

Where $m = I/I_m$

'm' is called multiplying power

To increase the range of a voltmeter, we need to the series resistance and it is given by

$R_{(se)} = R_m(V/V_m - 1)$

Where V is the required voltmeter range

Vm is the voltmeter range

Rm- is the meter internal resistance

Note:

• To increase the ranges of ammeter, we need to connect a small shunt resistance in parallel with ammeters.

• To increase the ranges of a voltmeter, we need to connect a high series of multiplier resistance in series with voltmeters.

Q28. Answer: (b) Anton de Bary

The correct answer is Anton de Bary

Key Points

Anton de Bary

• Anton de Bary, a German botanist who did research on the roles of fungi and other agents in causing plant diseases earned him distinction as a founder of modern mycology and plant pathology.

• He founded the developmental biology of fungi and identified the sequence of sexual and asexual stages and their fructified organs.

Important Points

Scientist	Contributions
Antoni van Leeuwenhoek	• He is acknowledged as the father of microbiology. - He discovered both protists and bacteria
Louis Pasteur	• He is best known for inventing the process of pasteurization. - It kills microbes and prevents spoilage in beer, milk, and other goods
Aristotle	• He is called the Father of biology. - His "Aristotle's biology" describes five major biological processes, namely, metabolism, temperature regulation, inheritance, information processing & embryogenesis
Antoine Laurent Lavoisier	• He was considered the founder of modern chemistry. - He discovered that mass is conserved in a chemical reaction.

Q29. Answer: (c) Bowel functioning

The correct answer is Bowel functioning.

Key Points

• Water in humans facilitates Bowel functioning.

• As you drink water, it enters your stomach and is quickly processed through to your small intestine.

• The large intestine (colon) also absorbs some water.

• Nearly all the water is absorbed into the bloodstream from the small intestine.

Additional Information

• Respiration is the chemical process by which organic compounds release energy.

• The compounds change into different ones by exergonic reactions.

• Roughage is the fibrous indigestible material in food that aids the passage of food and waste products through the gut.

• It also absorbs water as it moves through the large intestine and this allows the faecal matter to be released easily.

YourMockTest.com — Free Study Material

Q30. Answer: (b) non-renewal

The correct answer is "non-renewal".

Key Points

• Coal is an example of a non-renewable resource.

• It is a fossil fuel that is formed from the remains of ancient plant material over millions of years and is found in limited quantities in the Earth's crust.

• Once coal is mined and used, it cannot be easily replaced, and the extraction and burning of coal can have various environmental and social impacts.

• Therefore, coal is considered a non-renewable resource.

Additional InformationResources can be categorized into two main types based on their availability and ability to be replenished over time: renewable resources and non-renewable resources.

• Renewable resources: Renewable resources are those that can be replenished naturally or artificially over time, allowing for their sustained use without depletion. These resources have the potential to be used indefinitely as long as they are managed sustainably. Examples of renewable resources include sunlight, wind, water (such as rivers and rainfall), biomass, and geothermal heat.

• Non-renewable resources: Non-renewable resources are those that are finite in nature and cannot be replenished over a short period of time, as they are formed at a much slower rate than their consumption. Once non-renewable resources are depleted, they cannot be easily replaced or renewed. Examples of non-renewable resources include fossil fuels such as coal, oil, and natural gas, as well as minerals like iron, copper, and uranium.

Q31. Answer: (b) 51

Shortcut Trick

Assume a base average of 50 and calculate deviations.

Deviations: (38−50), (33−50), (46−50), (52−50), (67−50), (70−50)

Sum of deviations = −12 − 17 − 4 + 2 + 17 + 20 = +6

Net adjustment = Total deviation ÷ Number of terms = 6 ÷ 6 = +1

Correct Average = Assumed Average + Adjustment = 50 + 1 = 51

Therefore The correct answer is 51.

Alternate Method

Given observations: 38, 33, 46, 52, 67, 70

Formula Used: Average = (Sum of all observations) ÷ (Total number of observations)

33

38

46

52

67

70

51

Mean (Balance Point)

Values distribution and their central tendency

=> Sum = 38 + 33 + 46 + 52 + 67 + 70

=> Sum = 306

=> Number of observations = 6

=> Average = 306 ÷ 6

=> Average = 51

Therefore The correct answer is 51.

Additional Information

Weighted Average

When items have different weights: Average = (w1x1 + w2x2 + ...) ÷ (w1 + w2 + ...).

Average of Arithmetic Progression (AP)

For a series with common difference, Average = (First term + Last term) ÷ 2.

Properties of Average

If every number is increased by a constant 'k', the average also increases by 'k'.

Q32. Answer: (a) 75

Calculation:

=> cbrt729 × √16 + √676 + √169

=> 9 × 4 + 26 + 13

=> 36 + 26 + 13

=> 75

Therefore The correct answer is 75.

Q33. Answer: (d) 1004

Given:

Smallest 4-digit number which is divisible by 5 = 1000

But, gives remainder 4

=> The number is 1000 + 4 = 1004

Therefore Smallest 4-digit number which divided by 5 gives remainder 4 is 1004.

Q34. Answer: (c) Rs. 10,500

Shortcut Trick

Total percentage of Simple Interest = Rate × Time = 30% × 7 = 210%

Total Amount percentage = 100% (Principal) + 210% (Interest) = 310%

According to the question, 310% = Rs. 15,500 => 1% = Rs. 50

Total Interest for 7 years (210%) = 210 × 50 = Rs. 10,500

Therefore The correct answer is Rs. 10,500.

Alternate Method

Given: Amount (A) = Rs. 15,500, Rate (R) = 30% p.a., Time (T) = 7 years

Formula used: A = P + (P × R × T) ÷ 100

=> 15500 = P + (P × 30 × 7) ÷ 100

=> 15500 = P + (210P ÷ 100)

=> 15500 = P + 2.1P

=> 15500 = 3.1P

=> P = 15500 ÷ 3.1 = 5000

=> Total Interest = Amount − Principal = 15500 − 5000 = 10500

Therefore The correct answer is Rs. 10,500.

Additional Information

Simple Interest (SI) Formula

The formula to calculate SI is (P × R × T) ÷ 100, where P is Principal, R is Rate per annum, and T is Time in years.

Difference between SI and CI

For 2 years, the difference between Compound Interest and Simple Interest is $P(R/100)^2$.

Effective Rate of Interest

In simple interest, the total percentage interest earned over the entire period is simply the product of Rate and Time (R × T).

Q35. Answer: (b) 40

Given:

The initial, Ratio between numbers is 5 : 9

After, subtraction of 8 from each number, then the ratio is 1 : 2

Concept Used:

A ratio indicates how many times one number contains another.

Calculation:

Let the numbers are 5x and 9x respectively

So, (5x - 8)/(9x - 8) =(1)/2

=> 2 × (5x - 8) = 9x - 8

=> 10x - 16 = 9x - 8

=> x = 8

The Smallest number = 5x = 40

YourMockTest.com — Free Study Material

Therefore The smallest number is 40.

Q36. Answer: (c) 144 km

Given:

Speed S1 = 20 km/hr

Speed S2 = 30 km/hr

Total time taken = 6 hours

Formula used:

speed = distance/time

Calculation :

Let the total distance = d (one side)

=> d/s1 + d/s2 = total time

=> d/20 + d/30 = 6

=> (3d + 2d)/60 = 6

=> 5d = 360

=> d = 72 km

=> total distance (both sides) = 2d = 2 × 72 = 144 km

Therefore The correct answer is 144km.

Q37. Answer: (b) 57/4

Given:

(11 + 4) − 9 × 1 ÷ 3 of 4

Concept used:

Follow BODMAS rule to solve this question, as per the order given below,

Calculation:

(11 + 4) − 9 × 1 ÷ 3 of 4

=> 15 - 9 ÷ 12 = ?

=> 15 - 3/4 = ?

=> ? = 57/4

Therefore The value of ? is 57/4.

Q38. Answer: (d) 1000

Given:

SP for each phone = Rs. 18,000

Loss on the first phone = 10%

Profit on the second phone = 20%

Concept Used:

Profit = SP – CP

Loss = CP – SP

Profit% or Loss% = [(Profit or Loss)/CP] × 100

CP = (100 × SP)/(100 - loss%)

CP = (100 × SP)/(100 + profit%)

Calculation:

Phone	SP	CP
First Phone	Rs. 18,000	Rs. 18,000 × 100/90 = Rs. 20,000
Second Phone	Rs. 18,000	Rs. 18,000 × 100/120 = Rs. 15,000

Net SP = Rs. 18,000 + 18,000 = Rs. 36,000

Net CP = Rs. 20,000 + 15,000 = Rs. 35,000

Here, SP > CP

So, Profit = 36,000 – 35,000 = Rs. 1000

YourMockTest.com — Free Study Material

Q39. Answer: (c) 360

Concept used:

LCM - The smallest common multiple of two or more numbers.

Calculation:

The LCM of 24, 36 and 40

=> 2 × 2 × 2 × 3 × 3 × 5

=> 360

Therefore The LCM of 24, 36 and 40 is 360

Q40. Answer: (a) 1.4

Shortcut Trick

Distance = Number of Revolutions × Circumference

44000 = 5000 × 2 × (22/7) × Radius

44 = 5 × 2 × (22/7) × Radius

Radius = (44 × 7) ÷ (10 × 22) = 1.4 m

Therefore The correct answer is 1.4 m.

Alternate Method

Given:

Total Distance = 44 km = 44000 m

Number of Revolutions (n) = 5000

Formula Used:

Distance = n × 2πr

Calculations:

=> 44000 = 5000 × 2 × (22/7) × r

=> 44 = 5 × 2 × (22/7) × r

=> 44 = (220/7) × r

=> r = (44 × 7) ÷ 220

=> r = 308 ÷ 220

=> r = 1.4 m

Therefore The correct answer is 1.4 m.

Additional Information

Circumference of a Circle

The distance around a circular wheel is its circumference, calculated as 2 × π × r or π × d.

Unit Conversion

Always ensure units are consistent; 1 km = 1000 m. If the distance is in km and radius is required in meters, convert km to m first.

Revolution Concept

In one complete revolution, a wheel covers a linear distance equal to its outer circumference.

Q41. Answer: (b) 220 percent

Shortcut Trick

Let the Cost Price (CP) of each pen be 1 unit.

Total pens = 40. Total Profit required = 40 × 40% = 16 units.

Loss on 30 pens = 30 × (−20%) = −6 units.

Profit needed on remaining 10 pens = Total Profit − Profit/Loss already made.

Profit needed = 16 − (−6) = 22 units.

Profit percentage on 10 pens = (22 ÷ 10) × 100 = 220%.

Therefore The correct answer is 220 percent.

Alternate Method

Given: Total pens = 40, CP per pen = Rs. 50, Total Profit% = 40%, Loss on 30 pens = 20%.

Formulas: Total SP = Total CP × (100 + Profit%) ÷ 100 | Profit = SP − CP

=> Total Cost Price (CP) = 40 × 50 = Rs. 2000.

=> Total Selling Price (SP) required = 2000 × (140 ÷ 100) = Rs. 2800.

YourMockTest.com — Free Study Material

=> SP of 30 pens = 30 × 50 × (80 ÷ 100) = 1500 × 0.8 = Rs. 1200.
=> SP required for remaining 10 pens = 2800 − 1200 = Rs. 1600.
=> CP of remaining 10 pens = 10 × 50 = Rs. 500.
=> Profit on 10 pens = 1600 − 500 = Rs. 1100.
=> Profit percentage = (1100 ÷ 500) × 100 = 220%.
Therefore The correct answer is 220 percent.
Additional Information
Weighted Average Method
The overall profit percentage is the weighted average of individual parts: (n1p1 + n2p2) ÷ (n1 + n2) = Total P%.
Profit and Loss Basics
Profit is calculated on the Cost Price. A loss of 20% means the Selling Price is 80% of the Cost Price.

Q42. Answer: (d) 3/8

CONCEPT:
Here we need to make the denominators same by taking LCM so that we can compare to find the smallest fraction.
CALCULATION:
LCM of (9, 4, 8 7) = 504
4/9 can be written as (4 × 56)/(9 × 56) = 224/504
5/4 can be written as (5 × 126)/(4 × 126) = 630/504
3/8 can be written as (3 × 63)/(8 × 63) = 189/504
6/7 can be written as (6 × 72)/(7 × 72) = 432/504
Therefore 3/8 is the smallest fraction

Q43. Answer: (c) 25

Solution:
15% of 50 is 30% of x
=> (15/100) × 50 = (30/100) × x
=> 15 × 50 = 30x
=> x = 25

Q44. Answer: (c) 128 days

Shortcut Trick
Total Work is constant: M1 × D1 = M2 × D2
8 × 96 = 6 × Required Days
Required Days = (8 × 96) ÷ 6 = 8 × 16 = 128 days
Therefore The correct answer is 128 days.
Alternate Method
Given:
=> Initial number of workers (M1) = 8
=> Initial days (D1) = 96 days
=> New number of workers (M2) = 6
Formula Used:
=> Work = Number of workers × Days taken (W = M × D)

Person	Days	Total Work	Efficiency
8 Workers	96	768	8
6 Workers	128	6	

Calculations:
=> Total work done by 8 workers in 96 days = 8 × 96 = 768 units
=> Since work remains the same, work for 6 workers = 768 units
=> Time taken by 6 workers = Total Work ÷ Efficiency (Number of workers)
=> Time = 768 ÷ 6 = 128 days

YourMockTest.com — Free Study Material

Therefore The correct answer is 128 days.

Additional Information

Chain Rule Formula

The general formula for work is (M1×D1×H1)÷W1 = (M2×D2×H2)÷W2, where M is workers, D is days, H is hours, and W is work.

Inverse Variation in Work

When total work is constant, the number of workers is inversely proportional to the time taken (M prop. to 1÷D).

Man-Days Concept

One man-day is the amount of work done by one person in one day. Total work is often expressed in man-days units.

Q45. Answer: (d) 42.5 km/h

Given:

Two speeds are 40 km/h and 45 km/h and times are 6 hours each time.

Formula used:

If time(1) = time(2), and two different speed are given, then formula for calculation average speed is as follows:

Average speed = Sum of speed/2

Calculation:

Average speed = (40 + 45)/2

= 85/2

= 42.5 km/h

Detailed solution

Total distance = 45 × 6 + 40 × 6 = 270 + 240 = 510 km

Total time = 6 + 6 = 12 hrs

Therefore Average speed = 510/12 = 42.5 km/h

Q46. Answer: (b) 69152

Here, the pattern followed is,

LUCID:

L → 12 = 1 + 2 = 3

U → 21 = 2 + 1 = 3

C → 3

I → 9

D → 4

Similarly,

FRANK:

F → 6

R → 18 = 1 + 8 = 9

A → 1

N → 14 = 1 + 4 = 5

K → 11 = 1 + 1 = 2

So, FRANK is coded as ‘69152’

Hence, ‘69152’ is the correct answer.

Q47. Answer: (d) 18

Given:

Rakesh ranks 15th from top

Rajesh's rank from top = 42 - 8 = 34^(th).

The total number of students between Rakesh and Rajesh is 34 - 15 - 1 = 18

Drawing the diagram,

There are ‘18’ students are there between Rakesh and Rajesh.

Hence, “18” is the correct answer.

Mistake Points There are 8 students below Rajesh rank - it means the rank of Rajesh is 9th from the bottom.

YourMockTest.com — Free Study Material

Q48. Answer: (b) Paternal grandmother

Family Chart:

Given: Looking at a family photo, T pointed to M and said, “His mother N’s husband O’s brother P’s mother S is my wife”.

So, S is 'Paternal grandmother' of M.

Hence, the correct answer is "Option 2".

Q49. Answer: (d) XSNUBJU

The table shows the place value of the alphabet from A to Z.

The logic followed here is:

TRIPPLE is coded as DMOQHSS

Similarly, VICTORY coded as

Therefore, VICTORY is coded as 'XSNUBJU'.

Hence, the correct answer is "Option (4)".

Q50. Answer: (c) 11 × 6 ÷ 18 + 54 = 29

By interchanging the given two signs × and + then,

1) 6 × 11 + 13 ÷ 11 = 17

6 + 11 × 13 ÷ 11 = 17

6 + 13 = 17

19 = 17 (False)

2) 4 + 9 × 11 ÷ 3 = 37

4 × 9 + 11 ÷ 3 = 37

4 × 9 + 3.67 = 37

36 + 3.67 = 37

39.67 = 37 (False)

3) 11 × 6 ÷ 18 + 54 = 29

11 + 6 ÷ 18 × 54 = 29

11 + 18 = 29

29 = 29 (True)

So, option 3 is true therefore no need to check the other options.

Thus, the correct answer is “11 × 6 ÷ 18 + 54 = 29”.

More previous year papers and mock tests: **www.yourmocktest.com/pyq**

YourMockTest.com — Free Study Material