Agniveer Army GD 30 June 2025 (Shift 3) Memory-Based Paper (Previous Year Paper)

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

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GENERAL KNOWLEDGE

Q1. Which day is celebrated as Indian Air Force Day?

(a) 8 February
(b) 8 September
(c) 8 October
(d) 8 November

Q2. Servants of India Society was founded by

(a) G. K. Gokhale
(b) M. G. Ranade
(c) B. G. Tilak
(d) V. D. Savarkar

Q3. Which Indian state is the leader in solar power generation with its largest installed capacity?

(a) Tamil Nadu
(b) Karnataka
(c) Gujarat
(d) Rajasthan

Q4. Which sports initiative received the maximum budget allocation in 2025?

(a) Fit India Movement
(b) Khelo India Initiative
(c) National Sports Development Fund
(d) Target Olympic Podium Scheme (TOPS)

Q5. Which Constitutional Amendment is referred to as ‘mini - constitution’?

(a) 44^(th) Amendment
(b) 40^(th) Amendmen
(c) 52^(nd) Amendment
(d) 42^(nd) Amendment

Q6. Which Article of the Directive Principles of State Policy (DPSPs) is beyond court interference?

(a) Article 19
(b) Article 21
(c) Article 52
(d) Article 37

Q7. Who can legislate on the subjects which are not included in any of the lists of subjects given in the Constitution?

(a) Supreme Court
(b) Central Government
(c) State Legislature

(d) Regional Councils

Q8. When does the land breeze occur?

(a) During the night
(b) During the day
(c) Throughout the day
(d) Once in a week

Q9. Who received the Pravasi Bharatiya Samman Award 2025 in the field of Medicine?

(a) Dr. Shankar Acharya
(b) Dr. Devi Shetty
(c) Dr. Kaushik Laxmidas Ramaiya
(d) Dr. Naresh Trehan

Q10. The settlement pattern in India which appears in the form of isolated huts in remote jungles or in small hills is known as _____.

(a) Clustered Settlements
(b) Semi- Clustered Settlements
(c) Hamleted Settlements
(d) Dispersed Settlements

Q11. Which of the following memorial was built to commemorate the soldiers of British Indian Army who died during the first World War?

(a) Gateway of India
(b) National War Memorial
(c) Tawang War Memorial
(d) India Gate

Q12. Who was the first Commander-in-Chief (C-in-C) of Indian Army?

(a) Gen PP Kumaramangalam
(b) Gen KM Cariappa
(c) Field Marshal SHFJ Maneshaw
(d) Gen KS Thimayya

Q13. Eastern Naval Command headquarter is situated at:

(a) Kolkata
(b) Bhubaneshwar
(c) Guwahati
(d) Vishakhapatnam

Q14. What was the reason for the Non-Cooperation Movement?

(a) Bengal Partition
(b) Morley-Minto Reforms
(c) Jallianwala Bagh Massacre
(d) Surat Division

Q15. In which of the following dances do dancers balance pots containing lit lamps on their heads?

(a) Dhangari Gaja dance
(b) Koli dance
(c) Tamasha dance
(d) Chari dance

GENERAL SCIENCE

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Q16. Asexual reproduction takes place through budding in

(a) plasmodium
(b) leishmania
(c) amoeba
(d) yeast

Q17. The chemical substance present in bones and teeth is:

(a) Ca3(BO3)2
(b) Ca(NO3)2
(c) Ca3(PO4)2
(d) CaF2

Q18. Motion of a simple pendulum is _____.

(a) Rectilinear motion
(b) Periodic motion
(c) Circular motion
(d) Rotational motion

Q19. Which of the following constitutes a food chain?

(a) Grass, Wheat and Mango
(b) Grass, Goat and Human
(c) Goat, Cow and Elephant
(d) Grass, Fish and Goat

Q20. The process to separate impurities from water, butter from curd, small stones from wheat etc. is called

(a) Mixture
(b) Separation
(c) Filtration
(d) Sublimation

Q21. What is refraction through a prism?

(a) Bending of light at corners
(b) Reflection of light rays from the surface
(c) Bending of light ray towards normal when it travels from one medium to another
(d) Splitting of white light into its constituent colors

Q22. The Xylem in plant are responsible for

(a) Transport of oxygen
(b) Transport of water
(c) Transport of amino acid
(d) Transport of food

Q23. Which of the given changes is a chemical change?

(a) Dissolving sugar in water.
(b) Burning of Magnesium ribbon.
(c) Cutting of wood
(d) Melting of ice

Q24. Which of the following processes keeps plants cool?

(a) Transpiration
(b) Tropisms
(c) Photosynthesis
(d) Germination

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Q25. What will be formed by burning hydrogen?

(a) Oxygen
(b) Ash
(c) Soil
(d) Water

Q26. Clinometer is used to _____

(a) Examine the windpipe
(b) Measure the power of magnification
(c) View the corona of the sun
(d) Measure slopes and elevations

Q27. Which is the largest external organ of the body?

(a) Brain
(b) Skin
(c) Liver
(d) Stomach

Q28. An electric current produces

(a) Chemical effect
(b) Magnetic effect
(c) Heating effect
(d) All of the above

Q29. Compound among the following is

(a) diamond
(b) graphite
(c) ozone
(d) water

Q30. An acid is a substance which

(a) Donates a proton
(b) Accepts an electron
(c) Give H^+ in water
(d) All

MATHEMATICS

Q31. What is the length of the side of a regular hexagon, if its area is 72√3 sq. cm?

(a) 4√3 cm
(b) 16 cm
(c) 12 cm
(d) 6√3 cm

Q32. What is the average of first 19 odd number?

(a) 261
(b) 196
(c) 19
(d) 21

Q33. The LCM of the three numbers 45, 25 and 35 is:

(a) 1800
(b) 1575
(c) 1400
(d) 1225

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Q34. Compute: (18 + 2 × 3.3) + 0.003

(a) 11.200
(b) 51.00
(c) 24.603
(d) 16.103

Q35. The length and breadth of a rectangular field are in the ratio of 5 : 4. If the perimeter of the field is 90 m, then what is its breadth (in metres)?

(a) 12
(b) 15
(c) 20
(d) 30

Q36. A sum of money becomes Rs. 900 in 4 yr at 5% per annum on Simple Interest. The sum is?

(a) Rs. 550
(b) Rs. 650
(c) Rs. 750
(d) Rs. 500

Q37. 320 is how much percentage less than 400?

(a) 15%
(b) 20%
(c) 12%
(d) 18%

Q38. The cost of 2 pencil, 4 pens and 8 erasers is Rs. 12 and the cost of 8 pens, 10 pencils and 4 erasers is Rs. 36. How much will 3 pencils, 3 pens and 3 erasers cost?

(a) RS. 10
(b) RS. 15
(c) RS. 12
(d) Rs. 18

Q39. What will come in place of question mark in the following question?

30% of 90000 = ?

(a) 3000
(b) 27000
(c) 270000
(d) 2700

Q40. A train is moving at the speed of 72 km/hr. How many seconds will it take to cover a distance of 1400 m?

(a) 70
(b) 80
(c) 72
(d) 84

Q41. Find the mean value of 2, 2, 2, 4, 6, 7.

(a) 3.83
(b) 4.15
(c) 4.13
(d) 4.70

Q42. A got double the profit than B in a business. A and B invested Rs. 3200 and 2800 respectively. Find the ratio of the number of years A and B invested their amount?

(a) 5 : 7
(b) 7 : 5

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(c) 5 : 4
(d) 7 : 4

Q43. Which of the following is not a perfect square?
(a) 289
(b) 324
(c) 361
(d) 363

Q44. What will come in the place of '?' in the following question?
240 ÷ 40 ÷ 2 × 5 + 4 = ?
(a) 4.6
(b) 15
(c) 64
(d) 19

Q45. Cost price of an article is Rs. 200. If it is sold for Rs. 198 then find the loss percentage?
(a) 2%
(b) 1%
(c) 8%
(d) 12%

LOGICAL REASONING

Q46. Alok ranked 19^(th) from the top and 38^(th) from the bottom in a class. How many students are there in the class?
(a) 57
(b) 56
(c) 46
(d) 55

Q47. A series is given in which one term is wrong. Choose the wrong term from the given alternatives.
P5, J10, D20, X40, Q80
(a) J10
(b) X40
(c) D20
(d) Q80

Q48. Reeta is standing facing south-east. First, she turns 135° clockwise. After that, she turns 90° anticlockwise. Then she turns 45° clockwise, followed by a 135° anticlockwise turn. In which direction is she facing now?
(a) South
(b) South-east
(c) East
(d) North-east

Q49. Words given on the left side of(::)are related with each other by some Logic/Rule /Relation. Select the missing word/word pair on the right side of(::)from the given alternatives based on the same Logic/Rule/Relation.
Tadpole : Frog :: Caterpillar :?
(a) Dog
(b) Hen
(c) Butterfly
(d) Sheep

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Q50. Refer to the letter and symbol series, and answer the question that follows.

(Left) G H T % K & L M # S T * Q @ N U (Right)

How many symbols are there between the seventh element from the right end and the fifth element from the left end of the given series?

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

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 8 October

The correct answer is '8 October'.

Key PointsIndian Air Force Day

• The Air Force was established on October 8, 1932, in undivided India under colonial rule.
• Therefore, Indian Air Force Day is celebrated every year on 8 October.
• On this day a program is organized at Hindon Air Force Station in Ghaziabad.
• In this program, many veterans including army officers are involved and powerful aircraft are displayed in the sky.
• A parade of male and female pilots is held in Hindon on this day.
• In this ceremony, the Chief of the Air Staff felicitates the military personnel with medals.

Hence, the correct answer is 8 October.

Additional Information Indian Air Force

• The Indian Air Force is the fourth largest air force in the world.
• The Hindon Air Force Station located in Ghaziabad, Uttar Pradesh is the largest in Asia.
• Since the inception of the Indian Air Force, it has been following the path of its motto 'Nabh: Sprisham Deeptam'. It means 'To touch the sky with pride.' This motto of the Air Force has been taken from the 11th chapter of the Bhagavad Gita.
• The colors of the Indian Air Force are blue, sky blue, and white.

Important Points Let's have a look at other options:

Date	Day
8 February	Safer Internet Day
8 September	International Literacy Day
8 November	World Radiography Day

Q2. Answer: (a) G. K. Gokhale

The correct answer is G. K. Gokhale.

Key Points

• Gopal Krishna Gokhale established the Servants of India Society in 1905 for the expansion of Indian education.
• In the field of famine relief, union organization, cooperatives, and uplift of tribals and depressed, the Society did commendable work.
• Society worked in the fields of promotion of education, removal of untouchability, promotion of sanitation and healthcare, etc.
• From 1911, it also published its newsletter titled “Hitavada” in English from Nagpur.

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• The society still exists and has its headquarters in Pune.

Additional Information

M. G. Ranade	**• He was a social reformer and one of the founding members of the Indian National Congress. - He was one of the founders of the Widow Marriage Association in 1861. - He founded the Poona Sarvajanik Sabha which was a socio-political body and later was one of the originators of the Indian National Congress.**
B. G. Tilak	• Freedom fighter and lawyer, Bal Gangadhar Tilak, is also known as Lokmanya Tilak. - He is the founder of the Deccan Education Society (1884) along with his associate Gopal Ganesh Agarkar and others. - Famous Slogan: “Swaraj is my birthright and I shall have it!” - Along with Lala Lajpat Rai and Bipin Chandra Pal, he was part of the Lal-Bal-Pal trio of leaders with extremist outlooks. - All India Home Rule League was founded by Tilak in April 1916 at Belgaum. - Lucknow Pact (1916) between the INC headed by Tilak and All-India Muslim League led by Muhammad Ali Jinnah for Hindu-Muslim unity in the nationalist struggle.
V. D. Savarkar	• Vinayak Damodar Savarkar is also known as Swatantryaveer Savarkar. - Vinayak Savarkar wrote a book titled ‘The History of the War of Indian Independence’ in which he wrote about the guerilla warfare tricks used in the 1857 Sepoy Mutiny. - In 1904, Vinayak Damodar Savarkar and his brother Ganesh Damodar Savarkar had organized the Abhinava Bharat, a secret society of revolutionaries.

Q3. Answer: (d) Rajasthan

The Correct answer is Rajasthan

Key Points

• Rajasthan is the leading state in solar power generation in India.

• It has the largest installed solar power capacity in the country, contributing significantly to India's renewable energy goals.

• The state benefits from its geographical location, with abundant availability of sunlight and vast stretches of land suitable for solar energy projects.

• One of the prominent projects in Rajasthan is the Bhadla Solar Park, which is among the largest solar parks in the world.

• Bhadla Solar Park is located in the Jodhpur district of Rajasthan and spans over an area of approximately 14,000 acres.

• The state has also implemented various government policies and incentives to promote solar energy development, such as the Rajasthan Solar Energy Policy.

• Rajasthan's solar energy initiatives contribute towards achieving India's target of 175 GW of renewable energy capacity by 2022, as outlined in the National Solar Mission.

• The state's solar projects not only cater to domestic energy needs but also facilitate the export of energy to other states through the national grid.

Additional Information

• Tamil Nadu

• Tamil Nadu is one of the top states in India in terms of renewable energy generation, particularly in wind energy.

• The state has a favorable geographical location for wind power generation due to its coastal areas and wind corridors.

• While Tamil Nadu is also developing solar power projects, its installed capacity does not surpass Rajasthan.

• Some notable solar projects in Tamil Nadu include the Kamuthi Solar Power Plant, which is one of the largest solar plants in the country.

• Karnataka

• Karnataka is another leading state in renewable energy, especially in terms of solar power generation.

• It hosts the Pavagada Solar Park, one of the largest solar parks in India, spanning over 13,000 acres.

• The state has actively pursued policies to promote solar energy, but its installed capacity is less than Rajasthan's.

• Despite this, Karnataka remains a major contributor to India's solar energy sector.

• Gujarat

• Gujarat is known for its pioneering efforts in renewable energy, including solar power.

• The state was among the first in India to establish a large-scale solar park, the Charanka Solar Park.

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• Gujarat's solar energy initiatives are significant, but its installed capacity is lower compared to Rajasthan.

• The state has also been recognized for its efforts in promoting rooftop solar installations.

Q4. Answer: (b) Khelo India Initiative

The Correct answer is Khelo India Initiative.

Key Points

• The Khelo India Initiative was launched by the Government of India in 2018 to revive the sports culture in India and to identify as well as nurture young talent.

• It aims to build a strong framework for all sports played in the country and to make India a great sporting nation.

• In the Union Budget 2025-26, the scheme received a major push with an allocation of Rs. 1000 crore, the highest among all sports initiatives.

• The funding supports activities such as Khelo India Youth Games, Khelo India University Games, Khelo India Winter Games, and Khelo India Women's League.

• The initiative also covers creation of sports infrastructure, talent identification, coaching support, and scholarships for promising athletes.

• It includes the National Centre of Excellence (NCOE) and State Centres of Excellence to provide scientific training and modern facilities.

• By increasing the budget, the government emphasizes grassroots-level promotion, with a vision to prepare athletes for Olympics, Asian Games, and Commonwealth Games.

Additional Information

• Fit India Movement

• Launched in 2019 by the Prime Minister of India.

• It is a nationwide campaign to encourage people to include physical activity and healthy eating habits in their daily lives.

• It focuses more on health and fitness awareness rather than direct sports development.

Q5. Answer: (d) 42^(nd) Amendment

• The 42^(nd) Amendment of 1976 is referred to as 'mini - constitution' as it brought most widespread changes to the Constitution.

• The 42nd Amendment was enacted during the Emergency (25 June 1975 – 21 March 1977) by Indian National Congress government headed by Indira Gandhi.

• The amendment added words like 'Socialist', 'Secular' and 'Integrity' in the preamble, laid down the Fundamental Duties of Indian citizens in Part IV A and made obligatory for the President to act on the advice of the council of Ministers among others.

Q6. Answer: (d) Article 37

The Correct answer is Article 37.

Key Points

• Article 37 of the Indian Constitution clearly states that the Directive Principles of State Policy (DPSPs) are not enforceable by any court of law.

• It emphasizes that while DPSPs are non-justiciable, they are still fundamental in the governance of the country.

• DPSPs act as guidelines to the state for framing policies and laws aimed at achieving social, economic, and political justice.

• The purpose of making DPSPs non-enforceable was to allow flexibility for governments in law-making, based on resources and practical conditions of the state.

• Article 37 bridges the moral and political responsibility of the state with the aspiration of creating a welfare state.

• Although not enforceable in courts, DPSPs are often used by the judiciary for interpreting laws and ensuring that legislation aligns with constitutional goals.

• Some landmark cases like Kesavananda Bharati (1973) and Minerva Mills (1980) recognized DPSPs as an essential feature of the Constitution.

Additional Information

• Fundamental Rights

• Fundamental Rights are enshrined in Part III of the Indian Constitution.

• They are justiciable, meaning they can be enforced by the Supreme Court and High Courts under Articles 32 and 226.

• They provide essential freedoms such as Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, and Right to Constitutional Remedies.

• The Supreme Court acts as the guardian of Fundamental Rights and can strike down any law that violates them.

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Q7. Answer: (b) Central Government

The correct answer is Central Government.

Key Points

• The congruent list given in the 7^(th) schedule of the Indian Constitution deals with the distribution of power between Union and State governments.

• It contains 3 lists, the Union List(100 subjects), the State List(61 subjects), and the Concurrent List(52 subjects).

• Central Government can legislate on the subjects which are not included in any of the lists of subjects given in the Constitution. This is termed as Residuary Power.

• Article 248 deals with the Residuary powers of legislation.

1. Parliament has exclusive power to make any law with respect to any matter not enumerated in the Concurrent List or State List.

2. Such power shall include the power of making any law imposing a tax not mentioned in either of those Lists.

• Both the Central and state governments can make laws on the subjects of Concurrent List and in case any conflict occurs the law made by the Central Government exists.

• The concurrent list contains those topics which are desirable but are not essential to be kept in union list and state list topics.

Additional Information

• Parliament:-

• In India, it is the supreme body of the country's legislature.

• This is a bicameral system.

• The President has the authority to summon or adjourn either House of Parliament or dissolve the Lok Sabha.

• Supreme court:-

• The Constitution of India, mentioned in Articles 124 to 147 is the foundation of the structure and jurisdiction of the Supreme Court.

• The Supreme Court is the highest court that hears appeals against the decisions of the High Courts of the States and Union Territories.

• State Legislature:-

• The Legislature of each state is made up of the Governor and the Legislature of the state.

• The State Legislature is provided by Article 168 of the Constitution. According to this article, the State Legislature consists of one or both houses of the Legislature in addition to the Governor.

• Regional Councils:-

• It is a public organization.

• Its main functions are to coordinate among neighboring countries and to provide a regional approach to those concerns crossing local boundaries.

Q8. Answer: (a) During the night

The correct answer is During the night.

Key Points:

• Land breeze:

• It is an offshore wind system that flows from land to water after sunset. It occurs during the night.

• It is a low-pressure situation that develops over the sea as the temperature above it is higher when compared to the land.

• Sea breeze:

• It is an onshore wind system that flows from a large body of water body towards the landmass. It occurs during the day time.

• The temperature over the land surface increases and in turn heats up the surrounding air.

Q9. Answer: (c) Dr. Kaushik Laxmidas Ramaiya

The Correct answer is Dr. Kaushik Laxmidas Ramaiya.

Key Points

• Dr. Kaushik Laxmidas Ramaiya is a physician from Tanzania recognized for his exceptional contributions in the field of Medicine.

• He was awarded the Pravasi Bharatiya Samman Award 2025 for his outstanding services and impact on the community through medical practice.

• The award was conferred by the President of India, Smt. Droupadi Murmu, during the 18th Pravasi Bharatiya Divas Convention held in Bhubaneswar.

• The award recognizes the achievements of Non-Resident Indians (NRIs), Persons of Indian Origin (PIOs), and Overseas Citizens of India (OCI) who have made significant contributions in their respective fields.

• The award highlights the applications of medical knowledge and community service in improving healthcare standards globally.

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• Dr. Ramaiya's work exemplifies the importance of medical innovation, outreach programs, and professional excellence in enhancing healthcare access and quality.

• This recognition also strengthens India's global engagement by honoring Indians abroad who contribute to international development and human welfare.

Q10. Answer: (d) Dispersed Settlements

The Correct Answer is Option (4) i.e. Dispersed Settlements.

• The dispersed or isolated settlement pattern in India appears in the form of isolated huts or hamlets or few huts in remote jungles, or on small hills with farms or pasture on the slopes.

• Many areas of Meghalaya, Uttrakhand, Himachal Pradesh, and Kerala have this type of settlement.

• There are four types of rural settlements in India - Clustered, Semi-Clustered, Hamleted, and Dispersed.

Settlement Type	Meaning	Areas
Clustered	It is a compact or closely built-up area of houses. In this type of village, the general living area is distinct and separated from the surrounding farms and pastures.	Rajasthan, Nagaland, Bundelkhand region, etc.
Semi-Clustered	It may result from the tendency of clustering in a restricted area of dispersed settlement.	Gujarat Plain, and some parts of Rajasthan.
Hamleted Settlements	Sometimes a settlement is fragmented into several units physically separated from each other bearing a common name. These units are called panna, para, palli, nagla, Dhabi, etc.	Lower Ganga Plain, Chhattisgarh, lower valleys of Himalayas.

Q11. Answer: (d) India Gate

The correct answer is India Gate.

Important Points

• India Gate:

• It was constructed by the British government in the memory of 84,000 Indian soldiers who died fighting for the empire in World War-I and the Afgan war. So, option 4 is correct.

• The Amar Jawan Jyoti, on the other hand, was built to honor 3,843 Indian soldiers, who died in the 1971 war that led to the creation of Bangladesh.

• Sir Edwin Lutyens was the chief designer.

• It was inaugurated on February 12, 1931, by Viceroy Lord Irwin.

• It is 42 meters high and bears some resemblance to the 'Arc de Triomphe', situated in Paris.

Additional Information

• The Gateway of India:

• It is an arch monument built during the 20th century in Bombay, India.

• The monument was erected to commemorate the landing of King George V and Queen Mary at Apollo Bunder on their visit to India in 1911.

• George Wittet was the chief architect of the Gateway of India.

• It serves as a "monumental memento" of British rule in India and also known as the “Taj Mahal of Mumbai”.

• National War Memorial:

• Prime Minister Narendra Modi inaugurated it in New Delhi on 26 January 2020.

• Commemorated for the soldiers who were martyred during the wars after independence namely the 1947-48 Pakistan, 1962 China, 1999 Kargil, Operation Parakram in 2002-04.

• Tawang Monastery:

• It is one of the most incredible places to visit in Tawang, Arunachal Pradesh.

• It is one of the holiest sites for the faith of Mahayana Buddhism.

• It was built in memory of soldiers of the Indian Army who gave up their life in the 1962 Indo-Sino War.

Q12. Answer: (b) Gen KM Cariappa

The correct answer is Gen KM Cariappa.

Key Points

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• Indian Army

• On 15^(th) January 1949, Field Marshal Kodandera M. Cariappa, who was then a Lieutenant General, took over as the first Indian Commander-in-Chief of the Indian Army from General Sir Francis Butcher, the last British person to hold that post. Hence, Option 2 is correct.

• K. M. Cariappa adopted the slogan 'Jai Hind' which means 'Victory of India'. He is also one of only two Indian Army officers to hold the Five-star rank of Field Marshal, the other being Field Marshal Sam Manekshaw.

• Army Day :

• Army Day is celebrated every year to honor the soldiers of the country, who have set the greatest example of selfless service and brotherhood and more than anything the love for the country.

• In the celebration of Army Day, the parade is organized every year at the Cariappa Parade Ground of Delhi Cantonment.

• Indian Army:

• The Indian Army originated from the forces of the East India Company, which later became the 'British Indian Army', and eventually, after Independence, the Indian Army.

• The Indian Army was founded almost 126 years ago by the British on 1^(st) April 1895.

• According to the Global Fire Power Index 2021, India's army is considered the world's fourth strongest army.

• Global Fire Power Index: The rankings for the index are reached after judging the countries on 50 parameters, including military resources, natural resources, industry, and geographical features, and available manpower.

Additional Information

• General Paramasiva Prabhakar Kumaramangalam

• He was the 6th Chief of the Army Staff of the Indian Army from 1967 to 1969.

• He was among the last of the King's Commissioned Indian Officers trained in England in the Indian Army, and the last King's Commissioned Indian Officer to lead the Indian Army.

• Field Marshal Sam Hormusji Framji Jamshedji Manekshaw

• Widely known as Sam Manekshaw and Sam Bahadur, was the Chief of the Army Staff of the Indian Army during the Indo-Pakistani War of 1971, and the first Indian Army officer to be promoted to the rank of field marshal.

• General Kodendera Subayya Thimayya

• He was a distinguished soldier of the Indian Army who served as Chief of Army Staff from 1957 to 1961 in the crucial years leading up to the conflict with China in 1962.

Q13. Answer: (d) Vishakhapatnam

The correct answer is Vishakhapatnam.

Key Points

• The Navy has the following three Commands, each under the control of a Flag Officer Commanding-in-Chief:

• The Western Naval Command (Headquarters at Mumbai).

• The Eastern Naval Command (Headquarters at Visakhapatnam).

• The Southern Naval Command (Headquarters at Kochi).

• The Indian Navy is a well-balanced and cohesive three-dimensional force, capable of operating above, on, and under the surface of the oceans, efficiently safeguarding our national interests.

Q14. Answer: (c) Jallianwala Bagh Massacre

The correct answer is Jallianwala Bagh Massacre.

Key Points

• Mahatma Gandhi started this movement because of the following reasons:

• Jallianwala Bagh Massacre and Resultant Punjab Disturbances in the whole Punjab region.

• Dissatisfaction with Montagu-Chelmsford Reforms, 1919.

• The Khilafat Agitation.

Additional Information

• The non-cooperation was launched on 5th September 1920 by the Indian National Congress (INC) under the leadership of Mahatma Gandhi.

• In September 1920, in a Congress session in Calcutta, the party introduced the Non-Cooperation programme.

The main aim of the Non-Cooperation movement was:

• Adopt Swadeshi principles.

• Adopt Swadeshi habits including hand spinning and weaving.

• Work for the eradication of untouchability from society.

Q15. Answer: (d) Chari dance

The correct answer is Chari dance.

Key Points

• Chari dance is one of the popular folk dances in Rajasthan India.
• In chari dance, women hold chari or pots on their heads, and a lighted lamp is then placed in the pot.
• The famous Chari dance belongs to Gujjar community of Kishangarh and only women perform in this dance.
• These ladies carry brass pots on their heads balancing them to perfection.
• These pots are kept ignited with the cotton seeds dipped in oil.
• These lit pots display beautiful effects in the dark night.
• This dance does not have any particular movements except balancing the pots on their heads.
• This dance is also known as a welcome dance and is a sign of goodness.
• It can also be considered the traditional fire dance of Rajasthan.

Additional Information

• Dhangari Gaja dance
• It is a folk dance of Maharashtra.
• Dhangari Gaja dance is performed in traditional Marathi dresses - dhoti, angarakha, and pheta with colorful handkerchiefs.
• The Dhangars of the Sholapur district of Maharashtra herd in green pastures for grazing their cattle.
• They become acquainted with nature.
• They honor God Biruba once every year when they return home.
• They spend their time with their families and beloved ones.
• And this is the time when the Dhangari Gaja dance is performed to please their God for His blessings.
• Koli dance
• Koli is the dance form of the Koli fisher folk of Maharashtra.
• The community has its own distinct identity and lively dances.
• The dance incorporates elements that this community is most familiar with - sea and fishing.
• The dance is performed by both men and women divided into two groups
• Fishermen stand in two rows holding oars in their hands.
• The dancers move in unison, portraying the movement of the rowing of a boat.
• Tamasha dance
• Kolhati and Mahar communities are associated with Tamasha.
• Tamasha is generally started with a devotional song and is followed by the dramatic sequence known as 'Gaulan'.
• Love songs like lavanis are the spirit of Tamasha and are very much popular.
• Musical instruments like:
• dholki drum, tuntuni (a single string instrument), manjeera cymbals, daf are used to increase the aestheticism of the dance.

Q16. Answer: (d) yeast

The correct answer is yeast

Key Points Budding:

• The small bulb-like projection coming out from the yeast cell is called a bud.
• The bud gradually grows and gets detached from the parent cell and forms a new yeast cell.
• Example-yeast, sponges, and hydra.

Additional Information

• Amoeba reproduces by binary fission.
• Plasmodium is the causative agent of malaria.

Q17. Answer: (c) Ca3(PO4)2

The chemical substance present in bones and teeth is Calcium Phosphate or Ca3(PO4)2.

• Calcium phosphate is fundamental to the formation of bone and teeth.
• It is essential for achieving optimal peak bone mass in the first 2–3 decades of life and for the maintenance of bone in later life.
• Bones:-
• Bones are mostly made of collagen, a type of protein.
• Calcium phosphate, a mineral, is the other main component of the bones.

• Collagen gives the bones a soft framework, while calcium phosphate is what makes them hard and strong.

• Bones are made of living tissues, so old bone tissue is broken down and removed, and then new tissue is created to replace the old.

• Teeth:-

• Enamel – the hard, outer layer of your teeth – is made of minerals like calcium phosphate.

• Enamel is harder than the bones. It's the hardest substance in the whole body.

• However, unlike the bones, the teeth enamel doesn't contain any living tissues and so can't heal on its own.

Q18. Answer: (b) Periodic motion

Concept:

Simple Pendulum

• A simple Pendulum is a device that oscillates at a fixed time period under influence of Gravity.

• The pendulum moves in a to and fro motion with a fixed time period.

• It repeats itself after certain interval of time.

• One oscillation can also be defined as the pendulum starting from the mean position, going to one extreme, and coming back to the same mean position.

• The time duration to compete for one oscillation is called time period and the reciprocal of time period is frequency.

Time Period of Simple Pendulum is given as:

$T = 2\pi \sqrt{(l/g)}$

Where l is the length of the string, and g is the acceleration due to gravity.

Types of Motion

Types of Motion	Definition	Example
Straight Line or Linear Motion	Motion along a straight line	Motion of a car on straight road.
Circular Motion	The motion of an object on a circular track	Giant wheel
Periodic Motion	Motion repeats itself after a period of time.	Pendulum, swing
Vibratory Motion	Motion in which the object vibrates along an axis	The motion of string of the guitar
Rotational Motion	Motion in which the body rotates along an axis	The motion of the wheel of a cycle.

Conclusion:

Pendulum is oscillating at a fixed time period, so it's motion is Periodic.

Q19. Answer: (b) Grass, Goat and Human

The correct answer is Grass, Goat and Human.

Concept:

• Food chain:

• A food chain depicts the feeding relationship between various organisms in a specific environment.

• The transfer of energy from producers to top consumers, and from consumers to decomposers through a series of organisms is called a food chain.

• Each step or level of the food chain forms a trophic level.

• The autotrophs or the producers are at the first trophic level.

• The herbivores or the primary consumers come at the second, small carnivores or the secondary consumers at the third, and larger carnivores or the tertiary consumers form the fourth trophic level.

Explanation:

• Primary producers: (Autotrophs)

• Primary producers are at the first tropic level.

• They produce food on their own with the help of photosynthesis.

• Example: plants, trees, grass.

• Primary Consumers (Heterotrophs)

• Primary Consumers are the herbivore's animals, whose nutrition is directly based on plant products.

• Example- Goat, cow, deer, grasshoppers.
• Secondary consumers
• Secondary consumers are carnivorous animals that eat meats whether it is of live animals or dead ones.
• Example- small birds, wolfs, humans etc.
• Tertiary Consumers
• Tertiary Consumers are also carnivorous but they feed on secondary consumers.

Additional InformationTwo types of food chains can be observed in the ecosystem:

• Grazing food chain (GFC):
• It starts with green plants called producers as the first trophic level.
• Energy for the food chain comes from the sun.
• Example: Grass → Goat→ Human
• Detritus food chain (DFC):
• It begins with dead organic matter and decomposers called saprophytes at the first trophic level.
• Energy for the food chain comes from organic remains or detritus.
• Example: Dead leaves → Woodlouse → Blackbird

Q20. Answer: (b) Separation

• Separation is a process that is used to separate two substances that once formed a mixture.
• The type of separation process used depends on the mixture's properties and components.
• For example, separate impurities from water, butter from curd, small stones from wheat etc.

Key Points

Types of Separation:

Evaporation:

• It is the process by which an element or compound transitions from its liquid state to its gaseous state below the temperature at which it boils.
• For example, drying clothes under the sun, drying of wet hairs, etc.

Distillation:

• It is the process of purifying a liquid by a process of heating and cooling.
• For example, water purification.

Sedimentation:

• Particles tend to settle to the bottom of a vessel under their own weight.
• For example, mud settles down at the bottom of a pond.

Thus, it becomes clear from the above definitions and examples, the process to separate impurities from water, butter from curd, small stones from wheat etc. is called separation.

Additional Information

Mixture:

• It is a combination of different things in which the component elements are individually distinct.
• For example, combinations of salt and sand, sugar and water.

Filtration:

• It is a technique of separation that is used to separate solids from liquids or gases using a filter medium that allows the fluid to pass through but not the solid.
• For example, the water we drink is almost certainly filtered to remove particles, chemicals, heavy metals and more.

Sublimation:

• Sublimation is the transition from the solid phase to the gas phase without passing through an intermediate liquid phase.
• For example, dry ice, arsenic, naphthalene sublimates.

Q21. Answer: (c) Bending of light ray towards normal when it travels from one medium to another

CONCEPT:

Refraction of light:

• It is the bending of light when it goes from one medium to another.
• when a ray of light passes through a glass prism, refraction of light occurs both, when it enters the prism as well as when it leaves the prism.
• The band of seven colours is known as the spectrum of light.

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• Newton discovered that light is made up of seven different colours.

EXPLANATION:

• From the above, it is clear that the bending of a composite beam of light towards normal when it travels from one medium to another is

called the refraction of light.

Therefore option 3 is correct.

Additional Information

• When white light is passed through a glass prism it splits into its spectrum of colours (in order violet, indigo, blue, green, yellow, orange, and red) and this process of white light splitting into its constituent colours is termed as dispersion.

• The ability of the light to bend at corners is called diffraction.

Q22. Answer: (b) Transport of water

The correct answer is Transport of water.

Key Points

• Xylem is a specialized tissue in vascular plants responsible for the transport of water and dissolved minerals from the roots to different parts of the plant.

• The movement of water through the xylem occurs due to a process called transpiration pull, which is driven by water evaporation from the stomata in leaves.

• Xylem consists of tracheids and vessel elements, which are the primary water-conducting cells. These cells are dead at maturity, forming hollow tubes for efficient water transport.

• The direction of water movement in xylem is unidirectional (upward from roots to shoots).

• In addition to water transport, xylem also provides mechanical support to the plant due to the presence of lignin in its cell walls.

Additional Information

• Phloem: Another vascular tissue in plants responsible for the transport of food, such as sugars, from sources (like leaves) to sinks (like roots or fruits).

• Transpiration: The process of water evaporation from the aerial parts of plants, primarily through stomata, creating a negative pressure that facilitates the upward movement of water in xylem.

• Lignin: A complex organic polymer found in the cell walls of xylem tissues, providing strength and waterproofing to the plant's vascular system.

• Root Pressure: A phenomenon where osmotic pressure in the roots pushes water upward through the xylem, particularly at night or when transpiration is low.

• Vascular Bundle: A structural unit in plants that contains both xylem and phloem, enabling efficient transport of water, nutrients, and food throughout the plant.

Q23. Answer: (b) Burning of Magnesium ribbon.

The correct answer is the Burning of Magnesium ribbon.

CONCEPT:

Chemical change	**• A change in which one or more new substance is formed is a chemical change. - It is a permanent change**
Physical change	• Physical change: A change in which the physical properties of a substance undergoes change is called a physical change. - It is a temporary change and no new substances are formed. - It is generally reversible.

EXPLANATION:

• The burning of magnesium ribbon is a chemical change.

• Magnesium ribbon when introduced to a flame burns by forming a white powder of Magnesium oxide.

• $2Mg + O2 \rightarrow 2MgO$

• This reaction produces intense heat and light.

• All the other given changes are physical changes because no new substance is formed; only a change of state takes place.

Q24. Answer: (a) Transpiration

Plants cool themselves by performing Transpiration process. When the surrounding atmosphere heats up, plants will often release excess water into the air from their leaves. By releasing evaporated water, plants cool themselves and the surrounding environment.

Q25. Answer: (d) Water

The correct answer is water.

• Burning hydrogen in pure oxygen just produces H2O.

• However, hydrogen would normally be burnt in air and some of the ferociously active oxygen atoms combine with nitrogen in the air to form NO x.

• There are no carbon atoms for the oxygen atoms to combine with, so a higher proportion combine with nitrogen from the air to form NO x.

• $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$

Q26. Answer: (d) Measure slopes and elevations

The correct answer is to Measure the slopes and elevations.

• The Clinometer was invented by William Abney before 1880 for measuring slopes and elevations.

Name of the Instrument	Used for/ Functions
Alkalimeter	Measure the strength of alkaline.
Arthroscope	Examine the interior of a joint.
Acidometer	Measure concentration of acids.
Auxometer	Measure magnifying power.
Bronchoscope	Examining the windpipe.
Cratometer	Measure the power of magnification.
Coronagraph	Viewing the corona of the sun.
Clinometer	Measures slopes and elevations.
Ceilometer	Measure the height of the cloud above the earth.
Cathetometer	Measure short vertical distances.

Additional Information

Name of the Instrument	Functions/ Used for
Dendrometer	Measures plant growth.
Dynamometer	Measures mechanical force.
Electroscope	Detecting electrical changes in the body.
Evaporimeter	Measures the rate of evaporation.
Konimeter	Amount of dust in the air.
Magnetometer	Measure the intensity of magnetic fields.
Osmometer	Measure osmotic pressure.
Kymograph	Record fluid pressure.
Durometer	Measures hardness of substance.
Dilatometer	Measures changes in the volume of substances.

Q27. Answer: (b) Skin

The correct answer is Skin.

Key Points

• An organ is a group of tissues that has a unique purpose.

• They perform vital life-supporting functions, like pumping blood or eliminating toxins.

• Skin is the largest external organ of the body, as it covers entire body.

• It protect your body from environmental stressors like germs, pollution, radiation from the sun.

• It store water, fat, and vitamin D.

Additional Information

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• The brain is an organ, and a very unusual and complex one at that.
• It also contains fat and is the fattiest organ in the body, nearly 60 percent fat.
• The majority of Brain's weight, 85 percent of it, is the cerebrum, which is divided in two halves.
• Liver is vital to the body's metabolic functions and immune system.
• The stomach stores food and prepares it for digestion. In the stomach, food mixes with digestive juices.

Important Points

• Liver is your body's largest solid cum internal organ.
• The majority of Brain's weight, 85 percent of it, is the cerebrum, which is divided in two halves.
• Skin regulates the body temperature and receive sensory information.

Q28. Answer: (d) All of the above

The correct answer is All of the above.

Important Points

• Electric Current is the rate of flow of electrons in a conductor.
• It is the amount of charge flowing through a particular area in unit time.
• A continuous and closed path of an electric current is called an electric circuit.
• The direction of the current is taken opposite to the direction of the flow of electrons.
• The electric current is expressed by a unit called ampere (A).
• An instrument called ammeter measures electric current in a circuit.

Key Points An electric current produces:

Chemical effect:

The passage of an electric current through a conducting solution causes chemical reactions:

• Bubbles of gas may be formed on the electrodes.
• Deposits of metal may be seen on electrodes.
• Changes in the colour of solutions may occur.

Magnetic effect:

• Electric current flowing through a conductor produces a magnetic field.

Heating effect:

• The heating effect of electric current is utilised in devices such as electric heaters, electric iron, etc.

Q29. Answer: (d) water

Concept:

Elements

• Elements are substances that are made up of the same type of atoms.
• Some elements exist in nature with the smallest particle as a single atom.
• For example, Metals, Inert gases.
• Some elements exist as molecules of the same atoms like Oxygen gas (O2), Ozone gas (O3).

Compounds

• Compounds are formed when two atoms combine chemically and form a new molecule.
• Compounds are made up of the same types of molecules.
• For example water (H20), Carbon dioxide (CO2), Iron oxide (Fe2O3)

Explanation:

Diamond:

• Each carbon atom shares electrons with four other carbon atoms forming a tetrahedral unit.
• This molecular structure of diamonds makes it so hard.
• It is made up of carbon atoms only.

Graphite

• It is also a form of carbon.
• It is having a structure as hexagonal sheets.

ozone (O3)

• It is an element.
• It is made of the same times of atoms of oxygen.

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• One molecule of ozone contains 3 oxygen atoms.

Water

• Water is a compound formed by oxygen and hydrogen.

• A molecule of water contains 2 hydrogen atoms and 1 oxygen atom.

• So, it has 1 atom of oxygen and 2 atoms of hydrogen chemically combined to form one molecule of water.

So, water is compound, and rest options are elements.

Q30. Answer: (d) All

The correct answer is All.

Concept:

• In chemistry, organic and inorganic substances can be classified as acids, bases, and salts.

• This classification is grounded on certain properties unique to each kind.

Acid	Base
Arrhenius acid: Any substance that carries a readily removable proton (H^+ ion) is identified as an Arrhenius acid. For example, HCl, H2SO4, HNO3.	Arrhenius base: Any substance that carries a readily removable hydroxide (OH^- ion) is identified as an Arrhenius base. For example, NaOH, KOH, Mg(OH).
Bronsted-Lowry acid: Any substance that readily gives away a proton (H+ ion) in an aqueous medium is identified as a Bronsted-Lowry acid. For example, HCl, H2SO4, HNO3.	Bronsted-Lowry base: Any substance that readily accepts a proton (H+ ion) in an aqueous medium is identified as a Bronsted-Lowry base. For example, NH3, CH3OH.
Lewis acid: Any substance that readily accepts electron pair is identified as a Lewis acid. For example, AlCl3, FeBr3, etc.	Lewis base: Any substance that readily gives away its electron pair is identified as a Lewis base. For example,, FeCl3, etc. H2O, NH3, OH^-, etc.

Explanation:

• According to the Arrhenius definition, acid is something that donates a proton.

• According to the Bronsted-Lowry definition, acid is something that gives H^+ ions in water.

• According to the Lewis definition, acid is something that accepts a pair of electrons.

• Therefore, all of these represent the properties of acids.

Additional Information

• Salt is a product of the reaction between an acid and a base.

• For example, the production of NaCl is a result of the reaction between HCl and NaOH.

• HCl+NaOH→ NaCl+H2O

• The pH of an acid is always less than 7 while that of a base is always greater than 7.

• The acid in the litmus test turns the blue litmus red while a base turns the red litmus blue.

Q31. Answer: (a) 4√3 cm

Given:

The area of hexagon = 72√3 sq. cm

Concept used:

Area of regular hexagon = $3\sqrt{3}a^2/2$

Where a → The side of regular hexagon.

Calculations:

Area of regular hexagon = 3√3a2/2

=> $72\sqrt{3} = 3\sqrt{3}a^2/2$

=> $a^2 = 144/3$

=> $a = 4\sqrt{3}$

Therefore Length of the side of a regular hexagon is 4√3 cm

Q32. Answer: (c) 19

Given:

Number of terms = 19

Formula used:

Sum of odd number = n^2

Where, n is number of terms.

Average = Sum/Number

Calculation:

Sum of odd number = $19^2 = 361$

According to the question:

Average = 361/19 = 19

Therefore The average of first 19 odd number is 19.

Given:

Number of terms(n) = 19

Formula used:

Average of n odd number = n

Calculation:

Average of 19 odd number = 19

Therefore The average of first 19 odd number is 19

Q33. Answer: (b) 1575

Shortcut Trick

Identify the highest powers of prime factors across all numbers.

Numbers: $45 = 9 \times 5 = 3^2 \times 5^1$

$25 = 5^2$

$35 = 5 \times 7$

LCM = $3^2 \times 5^2 \times 7 = 9 \times 25 \times 7 = 1575$.

Therefore The correct answer is 1575.

Alternate Method

Given: Three numbers 45, 25, and 35.

Formula Used: LCM (Least Common Multiple) is the smallest number which is exactly divisible by each of the given numbers.

=> Prime factorization of $45 = 3 \times 3 \times 5 = 3^2 \times 5$

=> Prime factorization of $25 = 5 \times 5 = 5^2$

=> Prime factorization of $35 = 5 \times 7$

=> LCM = $3^2 \times 5^2 \times 7$

=> LCM = $9 \times 25 \times 7$

=> LCM = $225 \times 7 = 1575$

Therefore The correct answer is 1575.

Additional Information

HCF and LCM Relation

For two numbers a and b, the product of the numbers is equal to the product of their HCF and LCM: $a \times b = HCF(a, b) \times LCM(a, b)$.

LCM of Fractions

LCM of fractions = (LCM of Numerators) ÷ (HCF of Denominators).

HCF of Fractions

HCF of fractions = (HCF of Numerators) ÷ (LCM of Denominators).

Q34. Answer: (c) 24.603

$(18 + 2 \times 3.3) + 0.003$

$= (18 + 6.6) + 0.003$

$= 24.6 + 0.003$

$= 24.603$

Q35. Answer: (c) 20

Shortcut Trick

Sum of Length and Breadth = Semi-perimeter = 90 ÷ 2 = 45 m.

Ratio sum (5 + 4) = 9 units.

9 units = 45 m → 1 unit = 5 m.

Breadth = 4 units = 4 × 5 = 20 m.
Therefore The correct answer is 20 m.
Alternate Method
Given:
Ratio of Length (L) to Breadth (B) = 5 : 4
Perimeter of the rectangular field = 90 m
Formula Used:
Perimeter of a rectangle = 2 × (Length + Breadth)
Length (L) = 5x
Breadth (B) = 4x
Perimeter = 90 m
Breadth = 4 × 5 = 20 m
Calculations:
=> Let Length = 5x and Breadth = 4x
=> 2 × (5x + 4x) = 90
=> 2 × 9x = 90
=> 18x = 90
=> x = 90 ÷ 18 = 5
=> Breadth = 4x = 4 × 5 = 20 m
Therefore The correct answer is 20 m.
Additional Information
Area of Rectangle
The total space occupied by the rectangle is calculated as Area = Length × Breadth.
Diagonal of Rectangle
The distance between opposite corners is given by the Pythagorean theorem: Diagonal = √(Length² + Breadth²).
Perimeter of a Square
If the length and breadth are equal (side a), the perimeter is given by P = 4 × a.

Q36. Answer: (c) Rs. 750

Given:
Amount = Rs. 900
Time = 4 years
Rate of interest = 5%
Formula used:
Amount = Principal + Interest
S.I = PRT/100
Calculation:
S.I = PRT/100
S.I = (P × 4 × 5)/100
=> P/5
Now, According to the question,
Amount = Principal + Interest
=> P + (P/5) = Rs. 900
=> 6P/5 = Rs. 900
=> P = Rs. 150 × 5
=> Rs. 750
Therefore The sum is Rs. 750

Q37. Answer: (b) 20%

The difference between the number = 400 - 320 = 80
According to the question,
We have to find the percentage with respect to 400

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Required percentage = [(400 – 320)/400] × 100%

Therefore The required percentage is 20%

Q38. Answer: (c) RS. 12

Let the cost of 1 pencil, 1 pen and 1 eraser be x, y and z respectively.

2x + 4y + 8z = 12 ----(1)

10x + 8y + 4z = 36 ----(2)

Adding (1) and (2), 12x + 12y + 12z = 48

=> 3x + 3y + 3z = 48/4 = 12

Therefore Cost of 3 pencils, 3 pens and 3 erasers is Rs. 12

Q39. Answer: (b) 27000

We can write from the expression that,

=> 30% of 90000 = ?

=> 90000 × 30/100 = ?

=> ? = 27000

Hence the answer is 27000

Q40. Answer: (a) 70

Speed of train = 72 km/hr = 72 × (5/18) m/sec = 20 m/sec

Distance to be covered = 1400 m

Now,

Speed = Distance/time

Therefore Time = Distance/speed = 1400/20 = 70 seconds

Q41. Answer: (a) 3.83

Sum of the given numbers = 2 + 2 + 2 + 4 + 6 + 7 = 23

Mean of the given values = 23/6 = 3.83

Q42. Answer: (d) 7 : 4

Shortcut Trick

Profit Ratio A : B = 2 : 1

Capital Ratio A : B = 3200 : 2800 = 8 : 7

Time Ratio = (Profit / Capital) Ratio = (2/8) : (1/7)

Time Ratio = (1/4) : (1/7) = 7 : 4

Therefore The correct answer is 7 : 4.

Alternate Method

Given:

Profit of A (P_A) = 2 × Profit of B (P_B)

Investment of A (C_A) = Rs. 3200

Investment of B (C_B) = Rs. 2800

Formula Used:

Profit Ratio = (Capital_A × Time_A) : (Capital_B × Time_B)

Partner A

Cap: Rs. 3200

Time: T_A

Profit: 2 Units

Partner B

Cap: Rs. 2800

Time: T_B

Profit: 1 Unit

Ratio of Time (T_A : T_B) = ?

Calculations:

=> P_A / P_B = (C_A × T_A) / (C_B × T_B)

=> 2 / 1 = (3200 × T_A) / (2800 × T_B)

=> 2 / 1 = (8 × T_A) / (7 × T_B)

=> 2 × 7 = 8 × (T_A / T_B)

=> 14 = 8 × (T_A / T_B)

=> T_A / T_B = 14 / 8

=> T_A / T_B = 7 / 4

Therefore The correct answer is 7 : 4.

Additional Information

Partnership Profit Distribution

In a partnership, the profit is shared among the partners in the ratio of the product of their investments and the time period for which they invested. Profit = Capital × Time.

Ratio of Investment and Time

If the profit ratio and investment ratio are known, the time ratio can be calculated as T1 : T2 = (P1 / C1) : (P2 / C2).

Simple vs Compound Partnership

A simple partnership involves investment for the same duration, while a compound partnership involves different capitals for different time periods.

Q43. Answer: (d) 363

Concept:

√289 = 17, √324 = 18, √361= 19 and √363 ≈ 19.05.

Explanation:

Option 1: The square root of 289 is √289 = 17

Since 17 is an integer, 289 is a perfect square.

Option 2:

The square root of 324 is √324 = 18

Since 18 is an integer, 324 is a perfect square.

Option 3:

The square root of 361 is √361= 19

Since 19 is an integer, 361 is a perfect square.

Option 4:

The square root of 363 is approximately

√363 ≈ 19.05

Since 19.05 is not an integer, 363 is not a perfect square.

Thus, the correct option is Option 4.

Q44. Answer: (d) 19

Given:

240 ÷ 40 ÷ 2 × 5 + 4 = ?

Concept used:

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

Calculations:

240 ÷ 40 ÷ 2 × 5 + 4 = ?

=> 6 ÷ 2 × 5 + 4 = ?

=> 3 × 5 + 4 = ?

=> 15 + 4 = ?

=> 19 = ?

Therefore The value of ? is 19.

Q45. Answer: (b) 1%

Given:

C.P = Rs. 200

S.P = Rs. 198

Formula used:

Loss = S.P - C.P
Loss% = (Loss/C.P) × 100%
Loss occurs when S.P > C.P
Where, C.P = Cost Price
S.P = Selling Price
Calculation:
According to the given condition
S.P > C.P
So, Loss = 200 – 198 = 2
According to the formula used
Loss% = (2/200) × 100%
=> 1%
Therefore The loss percentage is 1%.

Q46. Answer: (b) 56

According to the given information:-
Alok ranked 19th from the top and 38th from the bottom in a class.
Number of students in the class = 38 + 19 - 1
Number of students in the class = 57 - 1
Therefore Here, Number of students in the class = 56
Hence, the correct answer is "56".

Q47. Answer: (d) Q80

The logic follows here is:
Thus, the wrong term is 'Q80'.
Hence, the correct answer is "Q80".

Q48. Answer: (c) East

The logic followed here is :-
1) Reeta is standing facing south-east. First, she turns 135° clockwise. After that, she turns 90° anticlockwise.
2) Then she turns 45° clockwise, followed by a 135° anticlockwise turn.
Therefore Here, At last Reeta is facing towards 'East'.
Hence, the correct answer is "East".

Q49. Answer: (c) Butterfly

The pattern followed here is:
Tadpole : Frog → A tadpole is the juvenile form of a frog.
Similarly,
Caterpillar : Butterfly → A caterpillar is the juvenile form of a butterfly.
Hence, the correct answer is "Option 3".

Q50. Answer: (c) 2

The given series can be represented as:
So, there are 2 symbols: & and # in the series which are between the seventh element from the right end and the fifth element from the left end of the given series.
Hence, the correct answer is '2'.

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