# Agniveer Army GD 24 April 2024 (Shift 2) Memory-Based Paper (Previous Year Paper)

Army GD Agniveer • 2024 • 50 questions • 60 minutes • Answer key and solutions

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## GENERAL KNOWLEDGE

**Q1.** Who was the founder of Ramkrishna Mission?

**(a)** Ram Krishna Paramhans
**(b)** Swami Vivekananda
**(c)** Rabindranath Tagore
**(d)** Devendra Nath Tagore

**Q2.** Lt. Gen Anil Chauhan was related to which post?

**(a)** Chief of Naval Staff
**(b)** Chief of Defence Staff
**(c)** Attorney General of India
**(d)** Director General of ITBP

**Q3.** Who among the following is the current Chief Minister of Rajasthan?

**(a)** Naveen Patnaik
**(b)** Bhajan Lal Sharma
**(c)** Biplab Kumar Deb
**(d)** Trivendra Singh Rawat

**Q4.** Kolar fields is a major mine of which of the following elements?

**(a)** Platinum
**(b)** Gold
**(c)** Copper
**(d)** Aluminium

**Q5.** Who is known as the 'Father of the Nation' in India?

**(a)** Bhim Rao Ambedkar
**(b)** Mohandas Karamchand Gandhi
**(c)** Swami Vivekananda
**(d)** Mahadev Govind Ranade

**Q6.** Which of the following is the feature of the Constitution of India?

**(a)** Longest Written Constitution
**(b)** Dual Citizenship
**(c)** Dictatorship
**(d)** One Party Rule

**Q7.** Pushkar Temple in Rajasthan is related to which deity ?

**(a)** Shiva
**(b)** Vishnu
**(c)** Brahma

**(d)** Rama

**Q8.** Who authored the book "Gopi Diaries: Coming Home"?

**(a)** Arundhati Roy
**(b)** Chetan Bhagat
**(c)** Sudha Murty
**(d)** Amish Tripathi

**Q9.** The ‘86th amendment of Constitution’ in December 2002 led to inserting of which fundamental right?

**(a)** Freedom
**(b)** Equality
**(c)** Property
**(d)** Education

**Q10.** Which of the following has conferred with the Bharat Ratna in 2024?

**(a)** Dr. Manmohan Singh
**(b)** Mahendra Singh Dhoni
**(c)** Arvind Kejriwal
**(d)** Lal Krishna Advani

**Q11.** Chhau dance is popular in the _____ state.

**(a)** Tamil Nadu
**(b)** Andhra Pradesh
**(c)** Kerala
**(d)** West Bengal

**Q12.** Which of the following states has the lowest density of population in India as per Census 2011?

**(a)** Sikkim
**(b)** Arunachal Pradesh
**(c)** Mizoram
**(d)** Nagaland

**Q13.** Neeraj Chopra is associated with which of the following game?

**(a)** Heptathlon
**(b)** Javelin Throw
**(c)** Tennis
**(d)** Wrestling

**Q14.** Operation Polo is related to

**(a)** Liberation of Goa
**(b)** Accession of Jodhpur
**(c)** Annexation of Hyderabad
**(d)** Settlement with Mizoram

**Q15.** The hill station of ‘Pachmarhi’ is located in the state of:

**(a)** Madhya Pradesh
**(b)** Maharashtra
**(c)** Karnataka
**(d)** Bihar

## GENERAL SCIENCE

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**Q16.** The human face is made up of how many bones?

**(a)** 12
**(b)** 13
**(c)** 14
**(d)** 15

**Q17.** In plants, water is transported through?

**(a)** Stomata
**(b)** Root hair
**(c)** Phloem
**(d)** Xylem

**Q18.** In which plant does photosynthesis occurs in the stem?

**(a)** Desert Oak
**(b)** Orchid
**(c)** Cactus
**(d)** Cinchona

**Q19.** The mode of reproduction in spirogyra is _____.

**(a)** Fragmentation
**(b)** Budding
**(c)** Spore formation
**(d)** Sexual

**Q20.** Which cell organelle is known as the suicide bags of cells?

**(a)** Ribosomes
**(b)** Golgi bodies
**(c)** Lysosomes
**(d)** Nucleoli

**Q21.** The animals which lay eggs are called _____.

**(a)** Viviparous
**(b)** Carnivorous
**(c)** Oviparous
**(d)** Omnivorous

**Q22.** The most malleable metal is

**(a)** Silver
**(b)** Gold
**(c)** Aluminium
**(d)** Sodium

**Q23.** The metal present in vitamin B12 is:

**(a)** Sodium
**(b)** Cobalt
**(c)** Magnesium
**(d)** Iron

**Q24.** Which of the following non-metal is lustrous?

**(a)** Flourine
**(b)** Chlorine
**(c)** Bromine
**(d)** Iodine

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**Q25.** Atoms are held together in a molecule by _____.

**(a)** Intermolecular forces
**(b)** Intramolecular forces
**(c)** Dipole - Dipole forces
**(d)** Van der Wall's forces

**Q26.** The purpose of using an electric fuse in an electric circuit is

**(a)** to convert electric energy into light energy.
**(b)** to reduce the electrical energy consumption in the circuit.
**(c)** to close or open the electric circuit.
**(d)** to protect the electric circuit from excess electric currents.

**Q27.** Mechanical energy is _____.

**(a)** Equal to the rate of doing work
**(b)** The sum of kinetic energy and the potential energy of an object
**(c)** The energy released during mechanical work
**(d)** The energy absorbed during movement of a body

**Q28.** Newton's second law of motion introduces the concept of _____.

**(a)** force
**(b)** angular momentum
**(c)** velocity
**(d)** acceleration

**Q29.** How many seconds does the light from the moon takes to reach the Earth?

**(a)** 8 seconds
**(b)** 1.3 seconds
**(c)** 6 seconds
**(d)** 5 seconds

**Q30.** What is the name of the force with which earth pulls everything towards itself?

**(a)** Air pressure
**(b)** Thrust
**(c)** Gravity
**(d)** Resistance

## MATHS

**Q31.** What is the least common multiple (LCM) of 2 and 4?

**(a)** 2
**(b)** 4
**(c)** 12
**(d)** 8

**Q32.** What is the simplification of 80/60 ?

**(a)** 7/3
**(b)** 4/3
**(c)** 1/2
**(d)** 4/5

**Q33.** What is the average of 3, 5, & 7 ?

**(a)** 10
**(b)** 5
**(c)** 5.5
**(d)** 15

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**Q34.** Evaluate : 33 + 34 + 35 =?

**(a)** 105
**(b)** 103
**(c)** 100
**(d)** 102

**Q35.** "What is the percentage equivalent of 3/5?"

**(a)** 100%
**(b)** 60%
**(c)** 65%
**(d)** 80%

**Q36.** What is 30% of 160?

**(a)** 48
**(b)** 68
**(c)** 18
**(d)** 30

**Q37.** If a plate contains 20 eggs and 5 of them have gone bad, what is the percentage of the remaining good eggs?

**(a)** 35%
**(b)** 75%
**(c)** 95%
**(d)** 100%

**Q38.** The lengths of the legs are 60 centimetres and 80 centimetres. What is the length, in centimetres, of the hypotenuse?

**(a)** 110
**(b)** 101
**(c)** 100
**(d)** 200

**Q39.** What is the simple interest on Rs 3000 for 2 years at an annual interest rate of 10%?

**(a)** Rs.600
**(b)** Rs.550
**(c)** Rs.750
**(d)** Rs.1000

**Q40.** "If the perimeter of a square is 40 cm, what is the length of each side?"

**(a)** 15 cm
**(b)** 14 cm
**(c)** 20 cm
**(d)** 10 cm

**Q41.** What is the speed of a train that covers a distance of 220 km in 4 hours?

**(a)** 40 km/h
**(b)** 55 km/h
**(c)** 50 km/h
**(d)** 20 km/h

**Q42.** What is the ratio between the length and breadth of a rectangle if the length is 15 cm and the breadth is 5 cm?

**(a)** 1 : 3
**(b)** 2 : 5
**(c)** 3 : 1
**(d)** 5 : 3

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**Q43.** How many lines can be drawn from a single point?

**(a)** 1
**(b)** 10
**(c)** 100
**(d)** Infinite

**Q44.** If the average of three numbers is 20, and the first two numbers are respectively 20 and 22, what is the third number?

**(a)** 24
**(b)** 14
**(c)** 16
**(d)** 18

**Q45.** If the price of 16 bananas is Rs 112, what is the price of 24 bananas?

**(a)** Rs.220
**(b)** Rs.120
**(c)** Rs.168
**(d)** Rs.178

## LOGICAL REASONING

**Q46.** Choose the correct alternative from given ones that will complete the series :

1250, 250, 50, 10, ?

**(a)** 1
**(b)** 2
**(c)** 20
**(d)** 25

**Q47.** A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

C, F, J, ?, U

**(a)** M
**(b)** O
**(c)** N
**(d)** R

**Q48.** In a row of 45 students, Julie is 17th from the right end. What will be her rank from the left end?

**(a)** 28
**(b)** 29
**(c)** 30
**(d)** 27

**Q49.** Arrange the given words in alphabetical order and select the one that comes in the middle:

Cover, Code, Coin, Core, Count

**(a)** Coin
**(b)** Count
**(c)** Core
**(d)** Code

**Q50.** If in a scheme, the word 'FATHER' is coded as '104', how the word 'MOTHER' will be coded in the same scheme?

**(a)** 104
**(b)** 83
**(c)** 87
**(d)** 102

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## ANSWER KEY

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

## SOLUTIONS

**Q1. Answer: (b) Swami Vivekananda**

The correct answer is Swami Vivekananda.

Key Points

• Ramakrishna Mission is a Hindu religious and spiritual organization that was founded on 1st May 1897 by Swami Vivekananda.

• The headquarter of the organization is located at Belur Math, Howrah, West Bengal.

• Sri Ramakrishna Paramahansa Dev was a saint, and religious leader in 19th century Bengal. He was a Priest at Dakshineswar Kali Temple.

• Swami Vivekananda was one of the notable disciples of Ramkrishna Dev.

• Swami Smarananda is a senior monk (president) of the Ramakrishna Math and Ramakrishna Mission. He is its 16th president.

Additional Information

| | |
|---|---|
| **Rabindranath Tagore** | **• Rabindranath Tagore was also known as Gurudev, was a Bengali polymath- poet, writer, composer, philosopher, and painter. - He was the first non- European and first Bengali to receive the Nobel Prize for Literature (1913). - He was the author of 'Geetanjali'. - Tagore was awarded the knighthood by King George v in1915, but he repudiated it in 1919 as a protest against the Amritsar (Jallianwala Bagh) Massacre. He is sometimes referred to as "the Bard of Bengal". - He was the founder of Visvabharati University. - He is the only person who wrote the National anthem for two countries- 'Jana Gana Mana' originally written in Bengali for India in 1911 and first sung at the Calcutta Session of Congress and 'Amar Sonar Bangla' for Bangladesh in the year 1905.** |
| Devendra Nath Tagore | • Devendra Nath Tagore was Rabindranath's father and oldest son of "Prince" Dwarkanath Tagore. - He was a Hindu philosopher and religious reformer. - On 6 October 1839, he established Tattvaranjini Sabha which was shortly thereafter renamed the Tattwabodhini (Truth-seekers) Sabha. |

**Q2. Answer: (b) Chief of Defence Staff**

The correct answer is Chief of Defence Staff.

Key Points

• The Government announced Lt General Anil Chauhan (retired) as the new CDS.

• He is the second CDS of India.

• General Anil Chauhan, PVSM, UYSM, AVSM, SM, and VSM assumed office as the Chief of Defence Staff (CDS) on September 30, 2022.

Additional Information

• The Chief of Defence Staff (CDS) is the military head and acts as the single-point advisor to the Government of India in matters of India's military.

• He is also the permanent Chairman of the Chiefs of Staff Committee (CoSC) of the Indian Armed Forces.

• The Chief also heads the Department of Military Affairs.

• The first Chief of Defence Staff, General Bipin Rawat took office on 1 January 2020.

• The creation of the post of CDS was first recommended after the 1999 Kargil War.

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**Q3. Answer: (b) Bhajan Lal Sharma**

The correct answer is Bhajan Lal Sharma.

Key Points

• Bhajan Lal Sharma is an Indian politician serving as the 14th and current Chief Minister of Rajasthan since December 2023.

• He is a member of the 16th Rajasthan Legislative Assembly, representing the Sanganer constituency.

**Q4. Answer: (b) Gold**

The correct answer is Gold.

Key Points

• Kolar Gold Fields

• The Kolar Gold Fields is located are in the Kolar District of Karnataka.

• The mines were nationalized in 1956 and were closed in 2001 due to environmental, pricing, and lack of investments.

• It was operated by the Bharat Gold Mines Limited (BGML), a public sector undertaking.

• The KGF was the world's second deepest gold mine at a depth of 3,000 meters.

• The mines remained active for 121 years before they experienced an unsystematic closure on February 28, 2001, partially owing to fall in gold prices.

• The late Prime Minister Jawaharlal Nehru had pledged the mines as a security deposit to the World Bank.

**Q5. Answer: (b) Mohandas Karamchand Gandhi**

The correct answer is Mohandas Karamchand Gandhi.

Mohandas Karamchand Gandhi is known as the 'Father of the Nation' in India.

Key Points

• Generally, the first President of an independent country is given such a title. Subhash Chandra Bose chose such a title because he had seen the role of Gandhiji in building India as an independent nation.

• Netaji Subhash Chandra Bose was the first person to call Mahatma Gandhi as a Father of Nation' from Azad Hind Radio on July 6th, 1944.

• He gave the famous slogan, "Jai Hind" from Free India Center, Germany.

• He formed the 'Freedom Army' which consisted of all prisoners of war captured by Germany with the help of Hitler.

• Mohandas Karamchand Gandhi:-

• He was a Barrister or Lawyer by profession.

• In 1888, MK Gandhi went to London, England, to study law.

• Apart from completing legal education from England, he had to learn Indian law in Bombay.

• During his first stay in London, from 1888 to 1891, he joined the executive committee of the London Vegetarian Society.

Additional Information

• Bhim Rao Ambedkar:-

• He is considered as the Father of the Indian Constitution.

• He was the chief architect of the Constitution of India.

• He was appointed Chairman of the Constitution Drafting Committee in 1947.

• He was independent of India's first Minister of Law and Justice.

• Swami Vivekananda:-

• He was born in 1863.

• He founded the Ramakrishna Mission in May 1897.

• He died in 1902 at Belur Math in West Bengal.

• He was influenced by Ramakrishna Paramahansa who was also his Guru.

• Mahadev Govind Ranade:-

• He was one of India's Citpavan Brahmans of Maharashtra who was a judge of the High Court of Bombay,

• He is a noted historian and an active participant in social and economic reform movements.

**Q6. Answer: (a) Longest Written Constitution**

The correct answer is the Longest Written Constitution.

Key Points

• The Constitution of India is the longest-written constitution of any country in the world.

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

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• Initially, it contained a Preamble, 395 Articles (now more due to amendments), and 8 Schedules. Amendments over the years have expanded this number.

• The Constitution of India meticulously outlines the structure, powers, and duties of both the Central and State governments and the rights and duties of the citizens.

• It is a unique document that has borrowed features from various constitutions around the world yet tailored them to fit the Indian context.

Additional Information

• Dual Citizenship: India does not offer dual citizenship in the full sense. The Indian constitution does not allow holding Indian citizenship and citizenship of a foreign country simultaneously.

• Dictatorship: The Indian Constitution establishes India as a sovereign, socialist, secular, democratic republic, ensuring the democratic governance model opposite to a dictatorship.

• One Party Rule: The Indian Democratic system encourages a multi-party system, providing a platform for multiple political parties to contest elections and rule, if elected, contrary to a one-party rule system.

**Q7. Answer: (c) Brahma**

The Correct Answer is Option 3 i.e. Brahma.

Key Points

• Brahma Temple is the only temple that is dedicated to Lord Brahma in India.

• Located near the Lake at Pushkar in Rajasthan.

• Lotus temple, Yogmaya temple, and Akshardham temple are a few famous temples in Delhi.

• Shila Devi Mandir, Galta Ji Temple, and Govind Devji Temple are a few famous temples in Jaipur.

• Neemach Mata Temple, Shri Manshapurna Karni Mata, and Eklingji Temple are a few famous temples in Udaipur.

**Q8. Answer: (c) Sudha Murty**

The correct answer is Sudha Murty.

Key Points

• Sudha Murty authored the book "Gopi Diaries: Coming Home," which is a series about a dog named Gopi.

• This book, written from the perspective of Gopi, explores the themes of love, family, and the bond between a pet and its owners, showcasing Sudha Murty's storytelling prowess.

• Sudha Murty is known for her significant contribution to children's literature and fiction in India, and "Gopi Diaries: Coming Home" is particularly appreciated for its warm narrative style.

• Through "Gopi Diaries: Coming Home," Sudha Murty provides insights into the mind of a dog, bringing out emotions and scenarios that many pet owners can resonate with.

Additional Information

• Arundhati Roy is an Indian author best known for her novel "The God of Small Things," which won the Man Booker Prize for Fiction in 1997. She is noted for her activism and detailed narratives addressing social issues.

• Chetan Bhagat is a contemporary Indian author who writes in English. Known for his novels targeting the urban middle class, Bhagat's books like "Five Point Someone" and "2 States" have been majorly successful and adapted into films.

• Amish Tripathi is known for mythological fiction. His books, particularly the Shiva Trilogy, are based on Hindu mythology interspersed with historical settings and moral philosophical dilemmas, making them appealing to a wide range of readers.

**Q9. Answer: (d) Education**

The correct answer is Education.

Key Points

• The Right to Education was made a fundamental right by the 86th Constitutional Amendment Act 2002.

• 86th Constitutional Amendment Act 2002 added Article 21 A which declares that the state shall provide free and compulsory education to all children of age six to fourteen years.

• It has made only elementary education a fundamental right but not professional of higher education.

Important Points

• For its implementation Parliament passed the Right of Children to Free and Compulsory Education Act in 2009.

• This act is also known as the Right of Children to Free and Compulsory Education Act because of its provision of, “the fundamental right of every child between the ages of 6 to 14 with specifies minimum norms in elementary schools.

• The RTE Act of the Parliament of India was enacted on 4 August 2009 and came into effect from 1st April 2010.

• Earlier the right was there in the constitution under article 45 in Parts IV under the directive principle of state policy.

**Q10. Answer: (d) Lal Krishna Advani**

The correct answer is Lal Krishna Advani.

Key Points

• Prime Minister Narendra Modi announced that Lal Krishna Advani will be conferred with Bharat Ratna, the highest civilian award of India, on February 3, 2024.

• PM Modi praised Advani's contribution to the development of India, his unwavering commitment to transparency and integrity, and his efforts towards furthering national unity and cultural resurgence.

• Advani served as Deputy Prime Minister from 2002 to 2004.

• He is a co-founder of the Bharatiya Janata Party (BJP).

• Advani is also a member of the Rashtriya Swayamsevak Sangh (RSS).

• He was the longest-serving Minister of Home Affairs, holding the position from 1998 to 2004.

• Advani was awarded the Padma Vibhushan, the second-highest civilian award in India, in 2015.

• The Bharat Ratna is being conferred upon Advani in recognition of his monumental contributions to India's progress, his unwavering commitment to transparency and integrity, and his efforts towards furthering national unity and cultural resurgence.

**Q11. Answer: (d) West Bengal**

The correct answer is West Bengal.

• Chau or Chhau is a semi-classical Indian dance with martial, tribal, and folk origins from Orissa, Jharkhand, and West Bengal.

• There are three subtypes of this dance form:

• Purulia Chhau - West Bengal

• Mayurbanj Chhau - Odisha

• Seraikella Chhau - Jharkhand

Key Points

• Chhau Dance is a popular form of tribal dance in India that incorporates elements of martial arts into its movements.

• Differences between the three are dependent on their regions of origin.

• This Dance originates in the Purulia district in West Bengal and draws inspiration from martial arts and combative training.

• This form of dance is a means to portray stories to the audience, which is why elaborate masks and headgear associated with battle and war are worn during the performance.

Additional Information

• It enacts episodes from epics including the Mahabharata and Ramayana, local folklore, and abstract themes.

• Over a century old, this dance form was widely endorsed by patrons belonging to the royal families, rich landlords, and British governors in the region.

• These performances are predominantly put up during the Gajan Festival, which takes place to honor Lord Shiva.

Important Points

| List of Classical dances in India | State of Origin |
|---|---|
| Bharatnatyam | Tamil Nadu |
| Kathak | Uttar Pradesh |
| Kuchipudi | Andhra Pradesh |
| Odissi | Odisha |
| Kathakali | Kerala |
| Sattriya | Assam |
| Manipuri | Manipur |
| Mohiniyattam | Kerala |

**Q12. Answer: (b) Arunachal Pradesh**

The correct answer is Arunachal Pradesh.

Key Points

• The Census is the collecting, compiling, analyzing and disseminating of demographic, economic and social data on basis of population.

• It is conducted by the Office of the Registrar General and Census Commissioner, Ministry of Home Affairs.

• Its significance is in providing administration, planning, demarcation of constituency and policy-making to the government.
• According to the census of 2011, Arunachal Pradesh has the lowest population density in India.
• Arunachal Pradesh has a population density of 17 persons per sq km as per the census 2011.

Additional Information

• Population density is the number of people per square km in a geographical area.
• 1st census was conducted in 1872 by Viceroy Lord Mayo.
• Census 2021 was postponed owing to the outbreak of the Covid-19 pandemic.

Important Points As per the 2011 census

• Bihar has the highest population density in India.
• Uttar Pradesh is the highest populous state.
• Sikkim is the less populous state.
• Kerala has the highest sex ratio and Haryana with lowest sex ratio.

**Q13. Answer: (b) Javelin Throw**

The correct answer is Javelin Throw.

Key Points

• Neeraj Chopra is an Indian track and field athlete.
• He is associated with the javelin throw game.
• He is a gold medalist in the 2018 Asian games.
• He was the flag-bearer of India at the opening ceremony in the 2018 Asian games.
• He won the gold medal for India in the 2018 Commonwealth games.
• India's Neeraj Chopra became only the second individual Indian athlete after Abhinav Bindra to be crowned Olympic champion as he won gold in the men's javelin throw at the Tokyo Olympics.
• Neeraj Chopra threw a best attempt of 87.58m to win the Olympic gold.
• Czech Republic's Jakub Vadlejch won silver and fellow Czech Vitezslav Vesely won bronze to complete the podium.
• Neeraj Chopra had also finished top of qualifying - began with an 87.03m throw at the Olympic Stadium in Tokyo, the best of anyone after their first attempts.

Additional Information

| Game | Players |
|---|---|
| Javelin Throw | • Annu Rani. - Shivpal Singh. - Devendra Jhajharia. - Kashinath Naik. - Sundar Singh Gurjar. - Vipin Kasana. |
| Tennis | • Sania Mirza. - Leander Paes. - Mahesh Bhupathi. - Rohan Bopanna. - Prajnesh Gunneswaran. - Sumit Nagal. - Yuki Bhambri. - Ankita Raina. |
| Wrestling | • Vinesh Phogat. - Sakshi Malik. - Sushil Kumar. - Bajrang Punia. - Deepak Punia. - Yogeshwar Dutt. - Geeta Phogat. - Vinesh Phogat. |
| Heptathlon | • Swapna Barman. - Soma Biswas. - J. J. Shobha. - Pramila Aiyappa. - Sushmitha Singha Roy. - Purnima Hembram. |

**Q14. Answer: (c) Annexation of Hyderabad**

The correct answer is option 3, i.e. Annexation of Hyderabad.

Operation Polo referred to as 'Police Action' against the state of Hyderabad.

• It was a five days long military action that Indian Union took against Hyderabad.
• The battle began on 13th September and ended on 18th September 1948.
• The Indian forces outnumbered the Nizam's army.
• After the 5th day, Nizam's army surrendered to the Indian army and Hyderabad became a part of the Union of India.

**Q15. Answer: (a) Madhya Pradesh**

The correct answer is Madhya Pradesh.

Key Points

• Pachmarhi is a hill station in the Hoshangabad district of Madhya Pradesh.

• Pachmarhi is situated at an altitude of 1067 meters.

• This scenic town is a part of the UNESCO Biosphere Reserve and is one of the most visited hill stations in Madhya Pradesh.

• This is widely known as Satpura ki Rani or "Queen of Satpura".

• Dhupgarh, the highest point (1,352 m) in Madhya Pradesh, and the Satpura range are located here.

• The name Pachmarhi is believed to be derived from the Hindi words Panch (five) and Marhi (caves).

• It is believed that these caves were built by five Pandava brothers of the Mahabharatha era during their thirteen years of exile.

• Before the British, the Pachmarhi region came under the kingdom of the Gond king Bhawut Singh, although it was not a populated village or town at that time.

• Captain James Forsyth of the British Army along with Subhedar Major Nathoo Ramji Powar who was later made the Kotwal (Incharge of the armory of Pachmarhi), spotted the plateau in the Pachmarhi region in 1857.

**Q16. Answer: (c) 14**

• There are fourteen bones in the human face, including the lacrimal bones, the zygomatic bones, the vomer, the nasal bones, the inferior nasal conchae, the mandible, the maxillae, and the palatine bones. Several of these bones exist in pairs, like the zygomatic bones of our cheeks.

• The bones of the face offer protection for our sense organs as well as our brain.

• The maxillae and mandible are also responsible for breaking up foods through chewing.

**Q17. Answer: (d) Xylem**

The correct answer is xylem.

Key Points

Xylem

• It is a type of tissue in vascular plants that transports water and some nutrients from the roots to the leaves.

• The tissue consists of a variety of specialized, water-conducting cells known as tracheary elements.

Phloem

• It is the complex tissue that acts as a transport system for soluble organic compounds within vascular plants.

• It transports the food made in leaves to other parts of plants.

• It is made up of living tissue, which uses turgor pressure and energy in the form of ATP to actively transport sugars to the plant organs.

Root hairs

• These are cylindrical extensions of root epidermal cells.

• The primary function is to collect water and mineral nutrients from the soil. It takes the solution up by the roots to the rest of the plant.

Additional Information

• Xylem is one of the two types of transport tissue in vascular plants, the other being phloem. The basic function of the xylem is to transport water from roots to stems and leaves, but it also transports nutrients.

• The term was introduced by Carl Nägeli in 1858.

**Q18. Answer: (c) Cactus**

The correct answer is Cactus.

• In the Cactus plant does photosynthesis occurs in the stem.

Key Points

• In the cactus, leaves are modified into spines.

• It is the green stem that performs all the functions to be performed by leaves including photosynthesis.

• The green stem of the cactus plant contains chlorophyll.

• Thus, the stem is the centre of photosynthesis in the cactus plants instead of the leaves.

• In cacti, spines are wholly transformed leaves that protect the plant from herbivores, radiate heat from the stem during the day, and collect and drip condensed water vapour during the cooler night.

Important Points

• Plants prepare their food by the process called photosynthesis.

• During photosynthesis, plants trap solar energy or light energy with the help of chloroplast present in the green leaves and convert it into Chemical energy

• A pigment called chlorophyll is present in the chloroplasts which are required in trapping sunlight

• Plants utilize Carbon dioxide and Water for the synthesis of carbohydrates during photosynthesis, oxygen is liberated as a side

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product

• This gaseous exchange occurs through the stomata present on the leaf surface

• These events can be demonstrated by the following equation:

$6CO_2 + 6H_2O \rightarrow$ (Sunlight, Chlorophyll) $C_6H_{12}O_6 + 6O_2$

Additional Information

About Desert Oak:

• It is found in the dry and arid regions of Australia.

• It grows almost 10 ft tall.

• It has very few leaves

• Its roots go very deep in search of water.

• The depth of these roots is nearly 30 times the height of the tree.

• This water is stored in the tree trunk.

• Local people use a thin pipe to drink this water.

• Cinchona:

• Malaria is caused by protozoan Plasmodium.

• In early times, the dried and powdered bark of the Cinchona tree was used to make medicine for malaria.

• Earlier people used to boil the bark powder and strain the water which was given to patients.

• Now tablets are made from this in the form of quinine, chloroquine is given to patients.

Orchids:

• Orchids belong to the plant family Orchidaceae, one of the largest families of flowering plants with at least 25,000 species. Orchids are found throughout the world from the tropics to montane cloud forests. Hence statement 1 is correct.

• Orchids have long been valued for their beautiful and unique flowers, scents, foliage, and medicinal uses.

• Orchids are either terrestrial (growing on the ground) or epiphytic (growing on other plants, such as a tree), and require mycorrhizal fungi (fungi on their roots) to provide the plant with minerals and carbohydrates.

**Q19. Answer: (a) Fragmentation**

The correct answer is Fragmentation.

Key Points

• Spirogyra is a free-floating green algae.

• Such algae can be observed on

• It belongs to the Chlorophyta kingdom.

• Spirogyras are filamentous algae that consist of thin unbranched chains of cylindrical cells.

• The mode of reproduction in spirogyra is Fragmentation.

• The body of the organism breaks into smaller pieces, called fragments and each segment grows into an adult individual. like Algae etc.

Additional Information

| **Yeast** | **Yeast is single-cell organisms which are classified under fungus kingdom. They reproduce through Budding.** |
|---|---|
| Spirogyra | It is a green algae which is also called White Silk. |
| Hydra | They reproduce through Regeneration and budding. |
| Planaria | They reproduce asexually through regeneration. it possesses the highest power of regeneration. |

**Q20. Answer: (c) Lysosomes**

The correct answer is Lysosomes.

Key Points

• Lysosomes are called Suicide bags of the cell because they secrete the digestive enzymes that degrade the cell itself.

• A Chromosome is a threadlike structure of nucleic acids and a protein found in the nucleus of most living cells, carrying genetic information in the form of genes.

• Ribosomes comprise a complex macromolecular machine, found within all living cells, that serves as the site for biological protein synthesis.

• The Mitochondria is a double-membrane-bound organelle that generates energy in the ATP for the cell to survive.

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• It is also called the Powerhouse of the Cell.

**Q21. Answer: (c) Oviparous**

The correct answer is Oviparous.

Key Points

• Oviparous animals are the animals that lay eggs.

• Oviparous animals are female animals that lay their eggs, with little or no other embryonic development within the mother.

• This is the reproductive method of most fish, amphibians, most reptiles, and all pterosaurs, dinosaurs (including birds), and monotremes.

Additional Information Viviparous:

• Man is a viviparous animal.

• Viviparous animals are organisms that give birth to live offspring/children.

• The female of the species takes on the responsibility of giving birth to the new offspring.

• Fertilization and embryo development are completed inside the female reproductive organ.

• Once fetal development is complete, the mother (female of the species) gives birth to the offspring.

Carnivorous:

• A carnivore is an organism that mostly eats meat or the flesh of animals.

• Carnivores are called predators.

• Organisms that carnivores hunt are called prey.

• They have long, pointed teeth to grip their prey and sharp teeth for cutting up meat.

• These animals do not have flat chewing teeth because they swallow their food in chunks.

• Carnivores eat a smaller amount of food compared to herbivores.

• it is in the form of high-energy molecules which are relatively easy to digest, compared to the plant material that herbivores eat, which contains cellulose.

• carnivores have a smaller intestines.

• e.g Pitcher Plant, Lion, Jackals, Tigers, etc.

Omnivorous:

• These organisms obtain food by feeding on both plants as well as animals.

• Omnivorous plays an important role in maintaining a healthy ecosystem by recycling waste.

• Examples of omnivores include Humans, Bears, Birds, etc.

**Q22. Answer: (b) Gold**

The correct answer is Gold.

Key Points

Gold

• Gold is the most malleable metal.

• Malleability is a physical property of metals that decides their hammering, pressing or rolling ability without breaking into thin sheets.

• In other words, deforming under compression is the product of metal, and takes on a new shape.

• Items made from these metals may also show malevolence, like gold leaf, lithium foil, and shot from the indium.

• Gold is a transitional element of group 11 in a periodic table with atomic number 79 and atomic mass 196.996. This is a reddish-yellow alloy and is also a strong heat and electricity conductor.

**Q23. Answer: (b) Cobalt**

The correct answer is Cobalt

Important Points

• Vitamin B12 is also known as cobalamin.

• It is also called cobalamin because of cobalt (Co).

• Vitamin B12 is the largest and complex vitamin of all.

• It is having molecular formula, $C_{63}H_{88}CoN_{14}O_{14}P$

• It is naturally found in animal foods, including meats, fish, poultry, eggs, and dairy.

• Vitamin B12 contains a metal component.

• It is required for the formation and maturation of RBCs.

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• Pernicious anaemia is a Vitamin B12 deficiency disease

Additional Information.

• Vitamin A is also called Retinol(Chemical name).
• Helps for good vision and maintains healthy eyes.
• Deficiency diseases: Night blindness and Xerophthalmia.
• Vitamin C is a water-soluble vitamin.
• Chemical name: Ascorbic acid.
• Helps for keeping teeth, gums, and joints healthy.
• Deficiency diseases: Scurvy.
• Vitamin E is a fat-soluble vitamin.
• Chemical name: Tocopherol.
• Act as an antioxidant to protect body tissue from damage caused by unstable substances called free radicals.
• Deficiency diseases: Sterility.

**Q24. Answer: (d) Iodine**

The correct answer is Iodine.

Key Points

• Iodine
• It was first discovered by Courtois in 1811 from the ashes of seaweeds.
• Its atomic number is 53 and its mass number is 126.9.
• It is found in compound form in seawater and seaweeds as iodides.
• It is a non-metallic shining solid (possesses metallic lustre).
• In the human body, it exists in the form of Thyroxin, an organic compound secreted by the thyroid gland.
• Its deficiency in the Human body disturbs the working of the thyroid gland and leads to a goitre.

Additional Information

• Fluorine
• It was isolated by Moissan(1886).
• It is a pale yellow gas.
• Its atomic number is 9 and its mass number is 19.
• It is the most reactive element among halogens.
• It is the most electronegative element.
• Chlorine
• It is also called Oxymuriatic acid which was discovered by Scheele (1774).
• Its atomic number is 17 and its mass number is 35.45.
• It reacts with lime to give bleaching powder (CaOCl2).
• Bromine
• It was first prepared by Ballard in 1826.
• Its atomic number is 35 and its mass number is79.9.
• It is used in the production of salts of bromine like bromide, bromate, hydrobromide, etc.
• It is also used in the manufacturing of toxic and tear gases.

**Q25. Answer: (b) Intramolecular forces**

The correct answer Intramolecular forces

Key Points

• There are two kinds of forces, or attractions, that operate in a molecule—intramolecular and intermolecular.
• Intramolecular forces are the forces that hold atoms together within a molecule. Hence, option 2 is correct
• Intramolecular forces may be ionic, covalent, or metallic in nature.
• Types of intramolecular forces of attraction:
• Metallic bond
• Ionic bond
• Polar covalent bond
• Nonpolar covalent bond

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• Intermolecular forces (IMF) are electrostatic attractions arising from charge-charge interactions between molecules.

• The strength of the intermolecular force is influenced by the distance of separation between molecules. The forces significantly affect the interactions in solids and liquids, where the molecules are close together.

• Intermolecular forces are much weaker compared to intramolecular forces. Hence, option 1 is incorrect

• Types of intermolecular forces that exist between molecules:

• Dipole-dipole attraction

• Hydrogen bonding

• London dispersion attraction. Hence, options 3 & 4 are incorrect.

**Q26. Answer: (d) to protect the electric circuit from excess electric currents.**

The correct answer is to protect the electric circuit from excess electric currents.

Key Points CONCEPT:

Fuse:

• A fuse is an electrical safety device that operates to provide overcurrent protection of an electrical circuit.

• It is used in a series of equipment as a safety device.

• The material used for making a fuse wire is an alloy of lead and tin.

Working of fuse:

• The fuse is used to provide protection against overcurrent.

• In normal operation, the fuse contacts are closed as shown in the figure.

• When a high current is flowing in the circuit as shown in the below figure.

• Then the fuse is operated and breaks the circuit to provide protection against overcurrent.

EXPLANATION:

• When a high current is flowing in the household the fuse breaks the circuit by opening its contact. It works as a safety device.

• Hence, a fuse is used to break the circuit if the current is too high in the household. Therefore, option 3 is correct.

Additional Information

• Properties of fuse:

• High resistance: The resistance of the fuse must have high so that it can carry a short circuit current when a fault occurs.

• Low melting point: The meting point of fuse wire should be low so that it can melt immediately when excess current flows through it.

• It is used in a series of equipment as a safety device.

• The material used for making a fuse wire is an alloy of lead and tin.

**Q27. Answer: (b) The sum of kinetic energy and the potential energy of an object**

• Mechanical energy is defined as the sum of kinetic energy and potential energy in an object that is utilized to do work.

• Mechanical energy is a combination of kinetic energy and potential energy.

• Mechanical energy is the form of energy that is related to the position and motion of an object.

• Kinetic energy: The energy possessed by an object has because of its motion.

K. E. = (½) $mv^2$

• Potential energy: The energy stored in an object because of its specific state or position.

P.E. = mgh

**Q28. Answer: (a) force**

• Newton's second law of motion gives the concept of force as it states that the rate of change in the momentum of a body is directly proportional to the applied force.

• Also, this change is in the direction of the applied force.

**Q29. Answer: (b) 1.3 seconds**

The Correct Answer is 1.3 seconds.

Key Points

• Moon:

• The average distance between the Earth and the Moon is 3,84,400 km.

• The Moon is an average of 2,38,855 miles away from Earth.

• The Moon is the only natural satellite of the Earth.

• The light from the Moon takes 1.3 seconds to reach the Earth.

• The most abundant element found on the Moon is oxygen (about nearly 42%) among others.

• Iron, Silicon, Magnesium, Calcium, Titanium, etc are the elements found on the surface of the Moon.

Additional Information

• The light from the Sun takes 8 minutes 52 seconds to reach the Earth.

**Q30. Answer: (c) Gravity**

The correct answer is Gravity.

• Gravity is the force by which a planet or other body draws objects toward its center.

• The force of gravity keeps all of the planets in orbit around the sun.

• Anything that has mass also has gravity. Objects with more mass have more gravity. Gravity also gets weaker with distance. So, the closer objects are to each other, the stronger their gravitational pull is.

• Earth's gravity comes from all its mass.

• All its mass makes a combined gravitational pull on all the mass in an object in its gravitational area.

• This gravitational pull causes an object to come back to earth if we throw it up in the air.

• We experience weight because for the same reason. And if we were on a planet with less mass than Earth, we would weigh less than we do on earth. That's the reason why our weight on the moon becomes 1/6th of our weight on earth.

• The planets revolve around the sun because of the gravitational force between the sun and the planet.

Additional Information

• Thrust:

• The force acting perpendicular to the surface of the object is called thrust.

• When any object is put into the water then the object will replace the water the same as its volume and the cause of which there is a force acting upwards, to balance this weight is called the thrust force.

• The effect of thrust is more on the smaller surface area than the thrust acting on a larger surface area.

• Thrust Force (FT) = Pressure (P) × Area (A)

• Resistance:

• The resistance of a metal conductor is always directly proportional to its length as the longer the conductor, the more will be its resistance.

• Resistance = Resistivity × Length / Area

**Q31. Answer: (b) 4**

Given:

First number = 2

Second number = 4

Formula Used:

LCM of two numbers = (Product of the numbers) / GCD (Greatest Common Divisor) of the numbers

Calculation

First, find the GCD of 2 and 4.

=> GCD of 2 and 4 = 2

Then, use the formula to find the LCM.

=> LCM = (2 × 4) / 2

=> LCM = 8 / 2

=> LCM = 4

Hence, the LCM of 2 and 4 is 4.

**Q32. Answer: (b) 4/3**

Given:

Fraction: 80/60

Concept used:

To simplify, we look for the greatest common divisor (GCD) of 80 and 60.

Calculation:

The GCD of 80 and 60 is 20.

Now, we divide both the numerator and the denominator by the GCD:

Numerator: 80 / 20 = 4

Denominator: 60 / 20 = 3

Thus, the simplified form of 80/60 is 4/3.

**Q33. Answer: (b) 5**

Given:

Numbers: 3, 5, 7

Concept:

Average = (Sum of all numbers) / (Number of items)

Calculation:

Sum of numbers = 3 + 5 + 7 = 15 Number of items = 3

Average = 15 / 3 = 5

Therefore, the average is 5.

**Q34. Answer: (d) 102**

To find the sum of 33, 34, and 35, simply add them together:

[33 + 34 + 35 = 102]

So, the result is 102.

**Q35. Answer: (b) 60%**

Given:

Fraction = 3/5

Concept:

Percentage = (Fraction) × 100%

Calculation:

=> (3/5) × 100%

=> 0.6 × 100%

=> 60%

Therefore, the percentage equivalent is 60%.

**Q36. Answer: (a) 48**

Given:

Percentage (p) = 30% = 0.30

Total (T) = 160

Concept:

Finding a percentage of a total, (Amount = p × T)

Calculation:

(Amount = 0.30 × 160)

=> (Amount = 48)

Therefore 30% of 160 is 48.

**Q37. Answer: (b) 75%**

Calculation:

To find the percentage of the remaining good eggs:

Total eggs = 20 & Bad eggs = 5

Therefore, good eggs = Total eggs - Bad eggs = 20 - 5 = 15

To find the percentage of good eggs out of the total:

Percentage of good eggs = (Good eggs / Total eggs) × 00

Percentage of good eggs = (15 / 20) × 100

Percentage of good eggs = 0.75 × 100

Percentage of good eggs = 75%

So, the percentage of the remaining good eggs is 75%.

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**Q38. Answer: (c) 100**

Given:

Base (a) = 80

Height (b) = 60

Calculation:

You calculate the hypotenuse (c) as follows:

$c^2 = 80^2 + 60^2$

$c^2 = 6400 + 3600$

$c^2 = 10000$

To find c, take the square root of both sides:

$c = \sqrt{(10000)}$

$c = 100$

So, the length of the hypotenuse is 100.

**Q39. Answer: (a) Rs.600**

Given:

Principal (P) = 3000

Rate (R) = 10%

Time (T) = 2 years

Concept:

Simple Interest (SI) = P × R × T

Calculation:

=> Simple Interest = Rs 3000 × 10/100 × 2

=> Simple Interest = Rs 600

Therefore The simple interest is Rs 600.

**Q40. Answer: (d) 10 cm**

Given:

Perimeter of square = 40 cm

Concept:

Perimeter of a square = 4 × side length

Calculation:

Side length = Perimeter / 4

Side length = 40 cm / 4

Side length = 10 cm

Therefore, the length of each side is 10 cm.

**Q41. Answer: (b) 55 km/h**

Given:

Distance = 220 km

Time = 4 hours

Concept:

Speed = Distance / Time

Calculation:

Speed = 220 km / 4 hours

Speed = 55 km/h

Therefore, the speed of the train is 55 km/h.

**Q42. Answer: (c) 3 : 1**

Shortcut Trick

The ratio between two quantities is found by directly dividing their given values.

Required Ratio = Length ÷ Breadth

Required Ratio = 15 ÷ 5

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Simplifying the ratio, we get 3 : 1.

Therefore The correct answer is 3 : 1.

Alternate Method

Given:

Length of the rectangle (L) = 15 cm

Breadth of the rectangle (B) = 5 cm

Length = 15 cm

Breadth = 5 cm

Ratio = 15 : 5 => 3 : 1

Calculations:

We need to find the ratio of the length to the breadth.

=> Ratio = Length : Breadth

=> Ratio = 15 : 5

Divide both antecedent (15) and consequent (5) by their Highest Common Factor, which is 5.

=> Ratio = (15 ÷ 5) : (5 ÷ 5)

=> Ratio = 3 : 1

Therefore The correct answer is 3 : 1.

Additional Information

Area of a Rectangle

The area is the total space enclosed by the boundary of the rectangle. It is given by the formula: Area = Length × Breadth.

Perimeter of a Rectangle

The perimeter is the total length of the outside boundary of the rectangle. It is given by the formula: Perimeter = 2 × (Length + Breadth).

Properties of a Ratio

A ratio a : b behaves exactly like a fraction a/b. Its numerical value remains unchanged when both terms are multiplied or divided by the same non-zero number.

**Q43. Answer: (d) Infinite**

An infinite number of lines can be drawn from a single point, as lines can extend in unlimited directions around the point, allowing for endless possibilities.

So, From a single point, you can draw infinite lines.

**Q44. Answer: (d) 18**

Given:

Average of three numbers = 20

First number = 20

Second number = 22

Concept:

Average = (Sum of all numbers) / (Number of items)

Calculation:

Average = 20 Sum of all numbers = 20 × 3 = 60

Sum of first two numbers = 20 + 22 = 42

To find the third number: Sum of all numbers = Sum of first two numbers + Third number

=> 60 = 42 + Third number

Solve for the third number:

Third number = 60 - 42 = 18

Therefore The third number is 18.

**Q45. Answer: (c) Rs.168**

Calculation:

First, find the price of one banana:

Price of one banana = Rs 112 / 16 bananas

=> Rs 7 per banana

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Next, calculate the price of 24 bananas:
Price of 24 bananas = 24 bananas × Rs 7 per banana = Rs 168
Therefore The price of 24 bananas Rs.168

**Q46. Answer: (b) 2**

To complete the series: 1250, 250, 50, 10, ?
The pattern involves dividing each number by 5 to obtain the next:
1250 / 5 = 250
250 / 5 = 50
50 / 5 = 10
10 / 5 = 2
So, the number that completes the series is 2.

**Q47. Answer: (b) O**

C + 3 = F, F + 4 = J, J + 5 = O, O + 6 = U
The difference between the number of letters is increasing by + 3, + 4, + 5, + 6 respectively.
Hence, the missing term is O.

**Q48. Answer: (b) 29**

Total number of students = 45
Julie’s rank from left side = Total – right position + 1 = 45 – 17 + 1 = 29
Hence, Julie is 29^(th) from left end.

**Q49. Answer: (c) Core**

The correct order of words as they would appear in the English dictionary is:
Code
Coin
Core
Count
Cover
So, Core will come in the middle.
Hence, the correct answer is "Option (3)".

**Q50. Answer: (b) 83**

The logic follows here is:
The number is obtained by adding the positional values of opposite letters of given words.
• 'FATHER' is coded as '104'
similarly,
• 'MOTHER' will be coded as :
Hence, the correct answer is "83".

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