Agniveer Army GD 1st June 2026 (Shift 1) Memory-Based Paper (Previous Year Paper)

Army GD Agniveer • 2026 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. Respect for the National Flag and National Anthem is a _____ of every Indian citizen.
- **(a)** Fundamental Duty
- **(b)** Legal Right
- **(c)** Directive Principles of State Policy
- **(d)** Fundamental Right

Q2. Who was sworn in as the Chief Minister of Manipur in February 2026, following a period of President's Rule?
- **(a)** N. Biren Singh
- **(b)** Yumnam Khemchand Singh
- **(c)** Conrad Sangma
- **(d)** Neiphiu Rio

Q3. Which of the following is the most fertile soil?
- **(a)** Alluvial Soil
- **(b)** Black soil
- **(c)** Red soil
- **(d)** Sandy soil

Q4. On which day is a major national festival celebrated every year to commemorate the enactment of the Constitution of India, which declared India to be a sovereign, democratic and republic state?
- **(a)** 26th January
- **(b)** 15th August
- **(c)** 3nd October
- **(d)** 23rd March

Q5. Who was the recipient of the Satyajit Ray Lifetime Achievement Award at IFFI 2025?
- **(a)** Michael Douglas
- **(b)** Martin Scorsese
- **(c)** Rakeysh Omprakash Mehra
- **(d)** Phillip Noyce

Q6. On which date The Indian Navy Celebrated as the Navy Day?
- **(a)** 4th December
- **(b)** 16th September
- **(c)** 15th January
- **(d)** 12th January

Q7. In which year did the Vellore Mutiny take place?

(a) 1799 CE
(b) 1857 CE
(c) 1817 CE
(d) 1806 CE

Q8. Who was appointed as the 15th Vice President of India in September 2025?

(a) B. Sudarshan Reddy
(b) C. P. Radhakrishnan
(c) Jagdeep Dhankhar
(d) Venkaiah Naidu

Q9. With whose permission did the British establish their first factory in Surat?

(a) Akbar
(b) Jahangir
(c) Shahjahan
(d) Aurangzeb

Q10. Which Constitutional Amendment granted constitutional status to Co-operative Societies in India?

(a) 74^(th) Constitutional Amendment Act, 1992
(b) 73^(rd) Constitutional Amendment Act, 1992
(c) 97^(th)Constitutional Amendment Act, 2011
(d) 86^(th) Constitutional Amendment Act, 2002

Q11. With which country does India share the longest border?

(a) China
(b) Bhutan
(c) Bangladesh
(d) Myanmar

Q12. Where was the semi-final match of the Women's ODI World Cup 2025, in which India defeated Australia to script the highest successful run chase in Women's ODI history, held?

(a) Wankhede Stadium, Mumbai
(b) DY Patil Stadium, Navi Mumbai
(c) M. Chinnaswamy Stadium, Bengaluru
(d) Eden Gardens, Kolkata

Q13. What was one of the main reasons behind Mahatma Gandhi's decision to take up the Khilafat issue?

(a) To bring more unity among Hindus and Muslims
(b) To bring more unity among Hindus and Christians
(c) Tobring more unity among Christians and Muslims
(d) None of the above

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

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

Q15. India created history by clinching its maiden ICC Women's ODI World Cup title on November 2, 2025, defeating South Africa by 52 runs at the DY Patil Stadium, Navi Mumbai. Who was named the Player of the Match in the final?

(a) Harmanpreet Kaur
(b) Shafali Verma
(c) Deepti Sharma
(d) Laura Wolvaardt

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GENERAL SCIENCE

Q16. Which glass is used to make spectacles?

(a) Soda glass
(b) Potash glass
(c) Crookes glass
(d) Jena glass

Q17. Which of the following has a definite volume but no fixed shape?

(a) Book
(b) Water vapour
(c) Oxygen
(d) Lemon juice

Q18. Which of the following are good conductors of heat and electricity?

(a) Lead and plastic
(b) Copper and aluminium
(c) Tin and plastic
(d) Gold and silver

Q19. _____ is the process of supplying water to crops at regular intervals.

(a) Irrigation
(b) Planting
(c) Fertilizer
(d) Sowing

Q20. As the object covers equal distances in equal intervals of time, it is said to be in _____ motion.

(a) uniform
(b) linear
(c) translational
(d) equilibrium

Q21. A plant remained in the dark for several days and died because it could not _____.

(a) remove waste
(b) breathe
(c) photosynthesize
(d) reproduce

Q22. Festival lights in buildings are an example of _____.

(a) a parallel circuit
(b) magnetic effect
(c) electromagnetic induction
(d) a series circuit

Q23. The inertia of an object tends to cause the object to-

(a) Increase its speed
(b) Resist any change in its state of motion
(c) Decrease its speed
(d) Decelerate due to friction

Q24. Which of the following is a common evidence for being alive?

(a) Visible growth of plants in front of our eyes.
(b) Without visible movement some animal can breathe.
(c) Visible movement of plants.
(d) Some sort of movement, either growth-related or respiration.

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Q25. Which of the following are the parts of Human excretory system?

a. Kidney
b. Urinary Bladder
c. Urethra
d. Liver

(a) a, b and c
(b) b, c and d
(c) a, b and d
(d) All of the above

Q26. What is the ray that comes back from the surface after reflection called?

(a) Incident ray
(b) Refracted ray
(c) Reflected ray
(d) Diffused ray

Q27. Consider the following statements about magnetic field of a Bar Magnet

(a) It has magnitudes and directions both.
(b) Magnetic field lines are closed curves.
Which of the above statements is/are correct?

(a) Both (a) and (b)
(b) Neither (a) nor (b)
(c) Only (a)
(d) Only (b)

Q28. Which of the following statements is true for acids?

(a) Bitter and changes red litmus to blue
(b) Sour and changes red litmus to blue
(c) Sour and changes blue litmus to red
(d) Bitter and changes blue litmus to red

Q29. Which among the following is used for preserving food?

(a) Sugar
(b) Vinegar
(c) Common Salt
(d) All of these

Q30. For instant energy, athletes take—

(a) Sucrose
(b) Vitamin C
(c) Sodium chloride
(d) Milk

MATHEMATICS

Q31. Find the average

38, 33, 46, 52, 67 and 70

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

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Q32. Simplify $(6pq + 14q)^2 - (6pq - 14q)^2$.

(a) 168p2q2
(b) 168pq2
(c) 336pq2
(d) 336p2q

Q33. 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%

Q34. 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

Q35. 10% of 530 is:

(a) 530
(b) 53
(c) 5.3
(d) 0.53

Q36. Five times a number is 65. Find the number.

(a) 10
(b) 11
(c) 15
(d) 13

Q37. If the perimeter of a rectangle is 36 metres and the length is 6 metres, what is the area of the rectangle?

(a) 106 m^2
(b) 72 m^2
(c) 80 m^2
(d) 121 m^2

Q38. Evaluate: $16 + 20 \div 4 - 3 \times 4$

(a) 8
(b) 9
(c) 12
(d) 11

Q39. Find the area of a triangle whose sides are of lengths 5 cm, 12 cm and 13 cm.

(a) 32.5 cm^2
(b) 78 cm^2
(c) 30 cm^2
(d) 60 cm^2

Q40. Chetan spends 60% of his income. If he saves Rs. 66,000, then his income (in Rs.) is:

(a) 39,600
(b) 1,64,000
(c) 1,65,000
(d) 1,66,000

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Q41. If the ratio of A : B is 3 : 6 and ratio of B : C is 7 : 28, then find the ratio of A : B : C.

(a) 3 : 7 : 28
(b) 1 : 2 : 8
(c) 2 : 1 : 8
(d) 6 : 7 : 28

Q42. When difference between compound and simple interest for three years is Rs. 217 at 10% interest per annum, the principal is Rs. _____

(a) 7000
(b) 8200
(c) 7420
(d) 6425

Q43. Find the square root of 18225

(a) 120
(b) 135
(c) 140
(d) 150

Q44. If the LCM of two numbers is 192 and their HCF is 32. If the first number is 64, find the second number.3197

(a) 95
(b) 96
(c) 94
(d) 93

Q45. The simplified value of 0.002 × 0.5 is:

(a) 0.1
(b) 0.01
(c) 0.0001
(d) 0.001

LOGICAL REASONING

Q46. Ravi is 7 ranks ahead of Sumit in a class of 39. If Sumit's rank is seventeenth from the last, what is Ravi's rank from the start?

(a) 11
(b) 16
(c) 13
(d) 9

Q47. Directions: Select the related letter from the given alternatives

JODA: KQEC:: GIUS: ?

(a) HKVU
(b) HLXT
(c) IJVT
(d) IKWU

Q48. Direction: In the question below are given two statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Statements:

I. All bottle is plastic

II. Some bags are plastic

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Conclusions:

I. Some bags are not bottle

II. Some plastic are not bags

(a) Only conclusion I follows
(b) Only conclusion II follows
(c) None follows
(d) All Follows

Q49. Select the option that will correctly replace the question mark (?) in the series.

15, 19, 35, 71, ?

(a) 125
(b) 141
(c) 145
(d) 135

Q50. Pointing to a person, Ms. Lasya said, His grand father is the only father of my brother, How is that person related to Lasya?

(a) Nephew
(b) Daughter
(c) Son
(d) Niece

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Fundamental Duty

The correct answer is Fundamental Duty.

Key Points

• Respect for the National Flag and National Anthem is a fundamental duty of every Indian citizen.
• This is enshrined in Article 51A(a) of the Constitution of India. The other fundamental duties are:
• To cherish and follow the noble ideals which inspired our freedom struggle.
• To uphold and protect the sovereignty, unity, and integrity of India.
• To defend the country and render national service when called upon to do so.
• To promote social harmony and the spirit of common brotherhood amongst all Indians, transcending religious, linguistic, and regional or sectional diversities; to renounce practices derogatory to the dignity of women.
• To protect and improve the natural environment including forests, lakes, rivers, and wildlife, and to have compassion for living creatures.
• To develop the scientific temper and humanism and the spirit of inquiry and reform.
• To safeguard public property and to abjure violence.
• To strive to achieve excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavor and achievement.
• It shall be the duty of every citizen of India who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.

Additional Information

• Legal right:-

• It is an interest accepted and protected by law.

• It is a claim that a person has against another person or against the state. Legal rights can be enforced through the courts.

• The Directive Principles of State Policy:-

• DPSPs are a set of guidelines for the government of India to follow in order to achieve social and economic justice for all citizens.

• They are enshrined in Part IV of the Constitution of India, and are not enforceable by the courts.

• However, they are fundamental to the governance of the country and the government is obliged to strive to implement them.

• Fundamental right:-

• Fundamental rights are essential for the protection of individuals from the state and from other individuals.

• The fundamental rights enshrined in the Constitution of India are: Right to equality, Right to freedom, Right against exploitation, Right to freedom of religion, Cultural and educational rights, and Right to constitutional remedies.

Q2. Answer: (b) Yumnam Khemchand Singh

The correct answer is Yumnam Khemchand Singh.

Key Points

• Yumnam Khemchand Singh was sworn in as the Chief Minister of Manipur in February 2026 following a period of President's Rule in the state.

• President's Rule in Manipur was imposed due to political instability, marking a significant shift in governance for the state.

• Yumnam Khemchand Singh is a prominent leader and a former Speaker of the Manipur Legislative Assembly, showcasing his political experience.

• His appointment aimed to restore political stability and ensure effective governance in Manipur.

• The transition from President's Rule to the formation of a new government under Yumnam Khemchand Singh was viewed as a critical step toward normalizing the state's political landscape.

Additional Information

• President's Rule in India:

• President's Rule is imposed under Article 356 of the Indian Constitution when a state is unable to function according to the constitutional provisions.

• During this period, the state legislature is suspended, and governance is directly taken over by the central government.

• President's Rule is often imposed due to political instability, breakdown of law and order, or failure of the state government to function effectively.

• Role of the Chief Minister:

• The Chief Minister is the executive head of a state government in India.

• He/she plays a crucial role in framing policies, implementing laws, and ensuring smooth administration of the state.

• The Chief Minister also acts as the chief advisor to the Governor of the state.

• Yumnam Khemchand Singh:

• Yumnam Khemchand Singh is a seasoned politician from Manipur and has served as the Speaker of the Manipur Legislative Assembly.

• He is known for his leadership skills and efforts to address various socio-political issues in the state.

• His tenure as the Chief Minister is expected to focus on development, stability, and inclusive governance.

• Governance in Manipur:

• Manipur is a northeastern state in India, with significant cultural and ethnic diversity.

• Governance in the state has often faced challenges due to its geographical location, ethnic issues, and political dynamics.

• Efforts to strengthen governance in Manipur include focusing on infrastructure development, education, and healthcare.

Important Points

• Article 356:

• This article allows the President of India to assume control of a state's administration if the state government fails to function according to constitutional norms.

• It requires parliamentary approval and can be extended for a maximum period of three years under certain conditions.

• Manipur Legislative Assembly:

• The legislative assembly is the law-making body of the state, consisting of elected representatives.

• It plays a critical role in governance, policy-making, and addressing state-specific issues.

• Restoration of Governance:

• The appointment of a new Chief Minister after President's Rule is aimed at restoring democratic governance in the state.

• This process involves forming a government with majority support in the legislative assembly.

Q3. Answer: (a) Alluvial Soil

The correct answer is Alluvial Soil.

Key Points

• Alluvial soils

• It is formed mainly due to silt deposited by Indo-Gangetic-Brahmaputra rivers.

• In coastal regions, some alluvial deposits are formed due to wave action.

• Rocks of the Himalayas from the parent material.

• Thus the parent material of these soils is of transported origin.

• They are the largest soil group covering about 15 lakh sq km or about 46 percent of the total area.

• They support more than 40% of India's population by providing the most productive agricultural lands. Hence, Option 1 is correct.

Additional Information

• Red Soil

• This soil developed on Archean granite occupies the second largest area of the country.

• They are mainly found in the Peninsula from Tamil Nadu in the south to Bundelkhand in the north and Raj Mahal in the east to Kathiawad in the west.

• This soil is also known as the omnibus group.

• The presence of ferric oxides makes the color of soil red.

• The top layer of the soil is red and the horizon below is yellowish.

• Generally, these soils are deficient in phosphate, lime, magnesia, humus, and nitrogen.

• This soil is good for the cultivation of wheat, cotton, pulses, tobacco, millets, orchards, potato, and oilseeds.

• Black or Regur Soil

• Black soil is also known as cotton soil and internationally it is known as 'Tropical Chernozems'.

• This is the third largest group in India.

• This soil is formed from rocks of cretaceous lava.

• This stretch over the parts of Gujarat, Maharashtra, Western parts of Madhya Pradesh, North- Western Andhra Pradesh, Karnataka, Tamil Nadu, Rajasthan, Chhattisgarh, Jharkhand up to Raj Mahal hills.

• The soil is rich in iron, lime, calcium, potash, magnesium, and aluminum.

• It has high water retaining capacity and is good for cotton cultivation, Tobacco, citrus fruits, castor, and linseed.

• Sandy Soil

• This soil is deposited by wind action and is mainly found in the arid and semi-arid areas like Rajasthan, West of the Aravallis, Northern Gujarat, Saurashtra, Kachchh, Western parts of Haryana, and southern part of Punjab.

• They are sandy with low organic matter.

• It has low soluble salts and moisture with very low retaining capacity.

• If irrigated this soil gives a high agricultural return.

• These are suitable for less water-intensive crops like Bajra, pulses, fodder, and guar.

Q4. Answer: (a) 26th January

The correct answer is 26th January

Key Points

• The major national festival celebrated on 26th January every year is Republic Day.

• This day commemorates the enactment of the Constitution of India, which declared India to be a sovereign, democratic, and republic state.

• The Constitution of India came into effect on 26th January 1950, replacing the Government of India Act (1935) as the governing document of India.

• Republic Day is marked by a grand parade in the capital city, New Delhi, showcasing India's cultural diversity and military strength.

Additional Information

• Republic Day is one of the three national holidays in India, the other two being Independence Day (15th August) and Gandhi Jayanti (2nd October).

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

• The date 26th January was chosen to honor the memory of the declaration of Purna Swaraj (Complete Independence) by the

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Indian National Congress in 1930.

• Each year, a foreign dignitary is invited as the Chief Guest to the Republic Day celebrations.

Q5. Answer: (d) Phillip Noyce

The correct answer is Phillip Noyce.

Key Points

• Phillip Noyce, an Australian filmmaker, received the prestigious Satyajit Ray Lifetime Achievement Award during the International Film Festival of India (IFFI) 2025.

• The Satyajit Ray Lifetime Achievement Award is one of the most distinguished awards presented at IFFI to honor exceptional contributions to cinema.

• Phillip Noyce is renowned globally for his expertise in crafting compelling thrillers and dramas, with notable works such as “The Quiet American” and “Rabbit-Proof Fence.”

• He has earned acclaim for his ability to address social and political issues through cinema, making him a worthy recipient of an award named after Satyajit Ray, a legendary filmmaker known for his humanistic approach to storytelling.

• His recognition at IFFI 2025 highlights his extensive career and contributions to both mainstream and independent cinema worldwide.

Additional Information

• About Phillip Noyce:

• Born in Griffith, New South Wales, Australia, Phillip Noyce has a career spanning over four decades in the film industry.

• Some of his other notable films include “Patriot Games,” “Clear and Present Danger,” and “Salt.”

• He has worked with renowned actors such as Harrison Ford, Angelina Jolie, and Michael Caine.

• His works often explore themes of social justice, identity, and the human condition.

• Satyajit Ray Lifetime Achievement Award:

• This award is presented annually at IFFI to recognize lifetime achievements and contributions to the art of filmmaking.

• It is named after Satyajit Ray, one of India's greatest filmmakers, known for masterpieces like “Pather Panchali” and the Apu Trilogy.

• Previous recipients of the award include global cinematic icons like Martin Scorsese and Jean-Luc Godard.

• International Film Festival of India (IFFI):

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

• The festival is organized annually in Goa and showcases the best of Indian and international cinema.

• It serves as a platform for filmmakers to exchange ideas, discuss innovations, and celebrate cinematic excellence.

• IFFI also promotes the art of filmmaking and creates opportunities for collaboration between filmmakers worldwide.

• Other notable recipients in 2025:

• While Phillip Noyce was the recipient of the Satyajit Ray Lifetime Achievement Award, other filmmakers and artists were honored in various categories for their contributions to cinema.

• The event featured screenings of critically acclaimed films, masterclasses, and discussions on the evolving landscape of cinema.

Q6. Answer: (a) 4th December

About The Indian Navy:

Key Points

• The Indian Navy is the naval branch of the Indian Armed Forces.

• The President of India is the Supreme Commander of the Indian Navy.

• The Chief of Naval Staff, a four-star admiral, commands the navy.

• The Indian Navy was founded on 5th September 1612.

• The primary objective of the Indian navy is to safeguard the nation's maritime border and other Armed Forces of the union.

• The motto of the Indian navy is Sham No Varunah which means " May the Lord of Water be auspicious unto us ".

• Its headquarters located in New Delhi.

• On every year 4th of December, The Indian Navy celebrated The Navy Day because on this day Indian Navy counter-attack in Operation Trident during the Indo-Pakistan war in 1971.

• The Indian Navy has three operational commands.

• Western Naval Commands (Mumbai).

• Southern Naval Commands (Kochi).

• Eastern Naval Commands (Visakhapatnam).

Additional Information

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• Rank Structure of The Indian Navy:
• Admiral of the Fleet
• Admiral
• Vice Admiral
• Rear Admiral
• Commodore
• Captain
• Commander
• Lieutenant Commander
• Lieutenant
• Sub Lieutenant
• Midshipman

Notes:

• The Special Force of the Marine Commandos of The Indian Navy is known as Marcos. it was established in 1985.
• 16th September is celebrated as the United Nation's International Day for the Preservation of The Ozone Layer.
• 15th January is celebrated as the Army Day of The Indian Army.
• 12th January is celebrated as National Youth Day. On the occasion of Swami Vivekananda's Birthday.

Q7. Answer: (d) 1806 CE

The correct answer is 1806 CE.

Key Points

• The Vellore Mutiny took place on 10 July 1806 at the Vellore Fort in Tamil Nadu, India. It was the first instance of a large-scale and violent mutiny by Indian sepoys against the British East India Company. Hence, the option 1806 CE is correct.
• The immediate cause of the mutiny was the introduction of new military dress regulations in November 1805 by Sir John Cradock, the then Commander-in-Chief of the Madras Army.
• These regulations included the introduction of a new turban that resembled a European hat (which included a cockade made of animal leather), the prohibition of wearing caste marks or earrings while on duty, and a requirement to be clean-shaven on the chin.
• The sepoys felt that these changes were an attempt to forcefully convert them to Christianity and were an insult to both Hindu and Muslim religious sentiments.
• During the revolt, the mutineers seized the Vellore Fort and proclaimed Fateh Hyder, the second son of Tipu Sultan, as their king. They even hoisted the Tiger Flag of Mysore over the fort.

Additional Information

• 1799 CE: This year is significant for the Fourth Anglo-Mysore War, which ended with the fall of Seringapatam and the death of Tipu Sultan on 4 May 1799. Following this, his family was interned in the Vellore Fort. However, the mutiny did not happen in this year. Hence, this option is incorrect.
• 1817 CE: This year is associated with the Paika Rebellion in Odisha, which was an armed rebellion against the British East India Company's rule led by Bakshi Jagabandhu. It is not related to the Vellore event. Hence, this option is incorrect.
• 1857 CE: This year marks the First War of Independence (also known as the Sepoy Mutiny), which began in Meerut on 10 May 1857. While the Vellore Mutiny is often seen as a precursor to 1857, they are distinct events occurring 51 years apart. Hence, this option is incorrect.
• The Vellore Mutiny was suppressed within hours by British troops arriving from Arcot, led by Colonel Rollo Gillespie. The suppression was brutal, resulting in the deaths of approximately 800 Indian soldiers.
• As a consequence of the mutiny, Lord William Bentinck, the Governor of Madras, was recalled to England, and the controversial dress regulations were officially abolished.

Important Points

• The revolt involved the 1st and 23rd Regiments of the Madras Native Infantry.
• The mutiny resulted in the death of about 14 British officers and 115 soldiers of the 69th Regiment.
• The Vellore Mutiny is a crucial chapter in Indian history because it demonstrated that religious and cultural interference could lead to armed resistance long before the massive uprising of 1857.
• Historians like V.D. Savarkar have described the Vellore Mutiny of 1806 as the "prelude" to the Great Revolt of 1857.
• The British reacted by shifting the family of Tipu Sultan from Vellore to Calcutta (now Kolkata) to prevent them from becoming a focal point for future rebellions in the South.

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Q8. Answer: (b) C. P. Radhakrishnan

The correct answer is C. P. Radhakrishnan.

Key Points

• C. P. Radhakrishnan was elected 15th Vice President of India in September 2025.

• He took office on 12 September 2025, succeeding Jagdeep Dhankhar.

• The Vice President is also the Chairperson of the Rajya Sabha (Upper House of Parliament).

Additional Information

• Sudarshan Reddy

• Former Judge of the Supreme Court of India.

• Served in the judiciary before entering public life.

• Known for judgments related to constitutional and criminal law.

• Contested as a candidate in the 2025 Vice Presidential election.

• Jagdeep Dhankhar

• Served as the 14th Vice President of India (2022–2025).

• Earlier Governor of West Bengal (2019–2022).

• Senior advocate and former Union Minister of State.

• Belongs to the state of Rajasthan.

• Venkaiah Naidu

• Served as the 13th Vice President of India (2017–2022).

• Former Union Minister for Urban Development.

• Senior leader of the Bharatiya Janata Party (BJP).

• Known for promoting the use of regional languages in Parliament.

Q9. Answer: (b) Jahangir

The correct answer is Jahangir.

Key Points

• The British East India Company established its first factory in Surat in 1613.

• This establishment was made possible with the permission of the Mughal Emperor Jahangir.

• Jahangir granted the British permission to trade and establish factories in India, which marked the beginning of British commercial interests in the country.

• The factory in Surat served as a significant trading post for the British East India Company, facilitating trade between India and England.

Additional Information

• Historical Context

• During the early 17th century, European powers were vying for control over the lucrative trade routes to India and the East Indies.

• The British East India Company was established in 1600 to exploit these opportunities and compete with the Portuguese and Dutch traders.

• Impact on India

• The establishment of the factory in Surat marked the beginning of British economic influence in India.

• Over the next two centuries, this influence expanded, eventually leading to British political and territorial control over large parts of India.

Q10. Answer: (c) 97^(th)Constitutional Amendment Act, 2011

The correct answer is 97th Constitutional Amendment Act, 2011.

Key Points

• The 97th Constitutional Amendment Act, 2011 granted constitutional status and protection to co-operative societies in India.

• It inserted a new Part IXB in the Constitution, titled "The Co-operative Societies," to promote voluntary formation, autonomous functioning, democratic control, and professional management of cooperative societies.

• Article 43B was added to the Directive Principles of State Policy (DPSP), emphasizing the promotion of cooperative societies.

• This amendment also brought changes to Article 19(1)(c), ensuring citizens have the right to form associations, including cooperative societies.

• It aimed to ensure transparency, accountability, and empowerment in the functioning of cooperative societies, thereby strengthening the cooperative movement in India.

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Additional Information

• 74th Constitutional Amendment Act, 1992

• This amendment gave constitutional status to Urban Local Bodies (ULBs), including municipalities, municipal councils, and municipal corporations.

• It provided for the establishment of the three-tier structure of urban governance and introduced provisions for the devolution of powers and responsibilities to ULBs.

• Inserted Part IXA in the Constitution, titled "The Municipalities," and introduced Articles 243P to 243ZG.

• 73rd Constitutional Amendment Act, 1992

• This amendment granted constitutional status to Panchayati Raj institutions in India.

• It introduced Part IX in the Constitution, titled "The Panchayats," and added Articles 243 to 243O.

• It aimed to strengthen grassroots democracy by establishing a three-tier system of Panchayati Raj institutions.

• This amendment mandated the reservation of seats for Scheduled Castes, Scheduled Tribes, and women in Panchayati Raj institutions.

• 86th Constitutional Amendment Act, 2002

• This amendment made education a fundamental right for children aged 6 to 14 years under Article 21A.

• It mandated the state to provide free and compulsory education to all children in this age group.

• It also modified Article 45 to ensure early childhood care and education for children below six years of age.

• Additionally, it added Fundamental Duty under Article 51A(k), requiring parents or guardians to provide opportunities for education to their children.

Q11. Answer: (c) Bangladesh

The correct answer is Bangladesh.

Key Points

• Bangladesh

• It shares the longest border with India.

• Bangladesh shares a 4,096-kilometre-long (2,545 mi) international border with India.

• Bangladesh–India border is the fifth-longest land border in the world.

• Five Indian states that share their border with Bangladesh:

1. Assam.
2. Tripura.
3. Mizoram.
4. Meghalaya.
5. West Bengal.

Additional Information

• Lengths of boundaries shared with India's neighbouring countries:

• | Name of the country | Length of the border (in Km) |

Bangladesh	**4,096.7**
China	3,488
Pakistan	3,323
Nepal	1,751
Myanmar	1,643
Bhutan	699
Afghanistan	106
Total	15,106.7

-

Q12. Answer: (b) DY Patil Stadium, Navi Mumbai

The correct answer is DY Patil Stadium, Navi Mumbai

In News

• India created history by defeating Australia in the semi-final of the Women’s ODI World Cup 2025 held at DY Patil Stadium, Navi

Mumbai.

Key Points

• The hosts chased down a massive target of 339 runs, setting a record for the highest successful run chase in Women's ODI history.

• Player of the Match: Jemimah Rodrigues (127* off 134 balls).

• India's chase of 339 runs is now the highest in Women's ODI history.

• Rodrigues' innings became one of the top individual scores in World Cup knockouts.

• The win propelled India to the Women's ODI World Cup 2025 Final.

Additional Information

• Opponent: Australia – the most successful team in Women's World Cup history.

• Venue: DY Patil Stadium, Navi Mumbai.

• Historic Record: Highest successful run chase in Women's ODI history (339 runs).

• Significance: India reached the final after defeating seven-time champions Australia.

Q13. Answer: (a) To bring more unity among Hindus and Muslims

The correct answer is 'To bring more unity among Hindus and Muslims.'

Key Points

• Unity between Hindus and Muslims

• One of the main reasons Mahatma Gandhi decided to support the Khilafat issue was to foster unity between Hindus and Muslims in India.

• The Khilafat Movement aimed to protect the Ottoman Caliphate, which was seen as a symbol of Islamic unity and authority.

• Gandhi saw the Khilafat issue as an opportunity to rally Muslims together with Hindus against British colonial rule, thus strengthening the broader Indian independence movement.

Additional Information

• The Khilafat Movement was launched in 1919 by the Ali brothers (Shaukat Ali and Mohammad Ali) in response to the disintegration of the Ottoman Empire after World War I.

• Gandhi saw supporting the Khilafat cause as a strategic move to involve Muslims significantly in the struggle for India's independence.

• By aligning the Indian National Congress with the Khilafat Movement, Gandhi hoped to create a cohesive front against British imperialism.

Important Points

• Gandhi's involvement in the Khilafat Movement also led to the launch of the Non-cooperation Movement in 1920, which united various sections of Indian society in protest against British rule.

• Despite its ultimate failure, the Khilafat Movement marked a significant attempt to bring Hindu-Muslim unity and bolster the freedom struggle.

• Gandhi believed that communal harmony was essential for the success of the independence movement and continuously worked towards this goal throughout his life.

Q14. Answer: (a) Panchayati Raj

The correct answer is Panchayati Raj.

Key Points

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

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

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

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

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

Additional Information

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

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

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Q15. Answer: (b) Shafali Verma

The correct answer is Shafali Verma.

In News

• India's women's cricket team won its first-ever ICC Women's ODI World Cup by defeating South Africa by 52 runs on November 2, 2025, at DY Patil Stadium, Navi Mumbai.

Key Points

• Shafali Verma starred with an explosive 87 runs and took 2 wickets, earning her the Player of the Match award.

• Deepti Sharma scored a vital half-century and claimed a five-wicket haul, steering India's dominance.

• Despite Laura Wolvaardt's century, South Africa fell short by 52 runs.

• India bagged a prize of USD 4.48 million, while runners-up South Africa received USD 2.24 million.

• The BCCI announced a Rs. 51 crore cash reward for the Indian women's team for their historic triumph.

Additional Information

• Event: ICC Women's ODI World Cup 2025 Final

• Venue: DY Patil Stadium, Navi Mumbai

• Date: November 2, 2025

• Result: India beat South Africa by 52 runs

• Captain: Harmanpreet Kaur

Q16. Answer: (c) Crookes glass

The correct answer is Crookes glass

Key Points

• Crookes glass contains cerium oxide which sharply absorbs the ultraviolet rays from the sunlight so utilized in making spectacles.

• The glass is the homogenous mixture of the silicates of various alkaline metals of non-crystalline and transparent or less transparent substances.

• The glass was manufactured first in Egypt.

• Crook's glass consists of Cesium oxide.

• It is also used in the making of Spectacles as it absorbs UV rays.

Additional Information

• Jena glass containing Boron Oxide(B_2O_3) and Alumina(Al_2O_3) is used in the making of laboratory bottles for keeping acids and alkalies.

• Milky glass is used for making Vases, Pitchers, Bowls, and Plates.

• Flint glass is also used in optical instruments like lenses, Prisms, etc.

• Omega glass is a brand selling glasses while others are types of glasses.

• Water glass is water-soluble and is made by heating sodium carbonate and silica.

• Photochromatic glass, also known as light-adaptive glasses or variable tint glasses turns black into sharp light.

• Pyrex glass is borosilicate glass.

Q17. Answer: (d) Lemon juice

The correct answer is Lemon juice.

Explanation:

States of matter

• Matter exists in nature in different forms, the three basic states of matter are Solid, Liquid and Gas.

• Apart from these three, there are two more states of matter that exist which we do not see in our everyday life. They are Plasma & Bose-Einstein condensate.

Properties of Solid -

• In solids, the particles are closely packed and the gaps between the particles are tiny and hence it is tough to compress them.

• Solid has a fixed shape and volume.

Properties of Liquid -

• In a liquid, particles are less tightly packed as compared to solids and less difficult to compress as compare to solid because particles have less space between them to move but more than the solid.

• Liquids take the shape of the container in which they are kept.

• Lemon juice has definite volume but no fixed shape.

Properties of Gas -

• In gases, particles are far apart from each other, the force of attraction between the particles is negligible and they can move freely.

• The gaseous state has the highest compressibility as compared to solids and liquids.

• Gases have neither a fixed volume nor a fixed shape.

Q18. Answer: (b) Copper and aluminium

Explanation:

• Conductors are the substances through which a flow of current i.e. the flow of free electrons can be set up easily.

• In metals, the bonds are formed by excess or free electrons moving around a large array of atoms.

• These electrons are able to conduct electricity and heat.

• Copper and Aluminium is the most popular material used for wires because it is a very good conductor of electrical current and it is cheaper when compared to gold and silver.

• The thermal conductivities of some common materials at room temperature are given as:

Material	Thermal conductivity
Diamond	2300
Silver	410
Copper	385
Gold	317
Aluminium	202
Nickel	93
Iron	73
Lead	35
Mercury	8.54
Glass	0.78
Brick	0.72
Water	0.613
Human skin	0.37
Wood	0.17
Soft rubber	0.13
Glass Fiber	0.043
Air	0.026

Q19. Answer: (a) Irrigation

The correct answer is Irrigation.

Key Points

• Irrigation is the process of supplying water to crops at regular intervals.

• The main purpose of irrigation is to assist in the growth of agricultural crops, maintenance of landscapes, and re-vegetation of disturbed soils in dry areas and during periods of inadequate rainfall.

• Irrigation helps in enhancing the productivity of crops by ensuring that they receive an adequate amount of water.

• There are various methods of irrigation, including surface irrigation, drip irrigation, and sprinkler irrigation.

• Irrigation is crucial in areas where rainfall is insufficient to meet the water needs of crops.

• It also helps in maintaining the moisture level of the soil, which is essential for the proper growth of plants.

Additional Information

• Planting

• Planting refers to the process of placing seeds or young plants into the soil to grow crops or other vegetation.

• It is a crucial step in agriculture but does not specifically involve the supply of water to crops.

• Fertilizer
• Fertilizer is a chemical or natural substance added to soil or land to increase its fertility.
• It helps in providing essential nutrients to the plants but does not involve the supply of water.
• Sowing
• Sowing is the process of planting seeds in the soil.
• This is a preliminary step in crop production and does not pertain to the regular supply of water.

Q20. Answer: (a) uniform

• Uniform motion is defined as the type of motion in which an object covers equal distance in equal intervals of time.
• The graph of distance vs time for uniform motion is linear.

Q21. Answer: (c) photosynthesize

• A plant remained in the dark for several days and died because it could not photosynthesize.
• Photosynthesis is a photo-biochemical process that essentially requires sunlight to start the synthesis of ATP and NADPH that are further used for glucose production.
• So, when sunlight is absent these chemicals could not be made and the plants die without food.

Q22. Answer: (d) a series circuit

The correct answer is a series circuit.

Key Points

• In a series circuit, all components are connected end-to-end, forming a single path for the current to flow.
• Festival lights or decorative lights are typically connected in series, meaning if one light fails, the entire circuit is interrupted, causing all lights to go out.
• This setup is beneficial for ensuring that the same current flows through each bulb, giving a uniform brightness.
• Series circuits are simple to design and implement but can be less reliable due to the "one-fault-all-fail" nature.

Additional Information

• Parallel Circuit
• In a parallel circuit, components are connected across common points or junctions, creating multiple paths for the current to flow.
• If one component in a parallel circuit fails, the current can still flow through the other paths, so other components remain operational.
• Parallel circuits are commonly used in household wiring to ensure that all devices receive the same voltage.
• Magnetic Effect
• Magnetic effect refers to the phenomenon where a current-carrying conductor generates a magnetic field around it.
• This principle is used in devices like electromagnets, electric motors, and transformers.
• Electromagnetic Induction
• Electromagnetic induction is the process of generating an electromotive force (EMF) by changing the magnetic flux through a coil.
• This principle is the working foundation for generators, inductors, and transformers.

Q23. Answer: (b) Resist any change in its state of motion

The correct answer is Resist any change in its state of motion

Key Points

• Inertia is a property of matter that causes it to resist changes in its state of motion.
• This means that an object at rest will stay at rest, and an object in motion will continue in motion unless acted upon by an external force.
• Inertia is directly related to the mass of the object; the greater the mass, the greater the inertia.
• It is a fundamental concept in Newton's First Law of Motion, which states that an object will remain in its current state of motion unless acted upon by an unbalanced force.

Additional Information

• Newton's First Law of Motion is also known as the Law of Inertia.
• Inertia is not a force but rather a property of matter that explains why objects resist changes in their state of motion.
• Understanding inertia is crucial in fields such as mechanics and engineering, where controlling the motion of objects is essential.

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Q24. Answer: (d) Some sort of movement, either growth-related or respiration.

The correct answer is Some sort of movement, either growth-related or respiration.

Key Points

• Metabolism: Living organisms undergo continuous chemical reactions to maintain life, such as breaking down food for energy (respiration) and building new cells (growth).

• Growth and Development: Living things increase in size and complexity over time. This can involve physical changes, like getting taller, and internal changes, like developing specialized organs.

• Reproduction: Living organisms produce offspring, passing on their genetic information to the next generation. This ensures the continuation of the species.

• Response to Stimuli: Living things react to changes in their environment. For example, plants turn towards the sun, and animals move away from danger.

• Homeostasis: Living organisms maintain a stable internal environment despite external changes. This includes regulating temperature, fluid balance, and pH levels.

• Cellular Organization: All living things are composed of one or more cells, the basic units of life. Cells carry out the essential functions that keep an organism alive.

• Adaptation and Evolution: Living organisms can adapt to changes in their environment over time, allowing them to survive and reproduce. This process of adaptation drives the evolution of species.

Q25. Answer: (a) a, b and c

The correct answer is a, b and c.

• The process of removal of nitrogenous wastes from the body is called excretion and the organs of excretion are called excretory system.

• The human excretory system includes – the kidneys (two), ureters (two), urinary bladder (one) and urethra (one).

• The human excretory system includes certain organs that eliminate the wastes such as salts, carbon dioxide, urea, uric acid and water produced by the body.

The path of the urine in the human excretory system is:

Q26. Answer: (c) Reflected ray

The correct answer is A reflected ray.

Key Points

• Reflection-

• When the light rays fall on the plane surface it deviates from its path in the same medium.

• or When a ray of light is incident on the plane surface is reflected back into the same medium it is termed as Reflection.

• Example - Plane Mirror.

• A reflected ray: The ray of light that bounces back from the surface of reflection is called the reflected ray. All the rays of the incident, normal and reflected lie on the same plane.

Q27. Answer: (a) Both (a) and (b)

The correct answer is Both (a) and (b).

Key Points

• Statement (a) is correct as the magnetic field of a bar magnet has both magnitude and direction.

• Statement (b) is also correct as magnetic field lines are closed curves that emerge from the North pole and terminate at the South pole of a magnet.

• The area in which the force of magnetism acts around a magnetic material or a moving electric charge is known as the magnetic field.

• The strength and direction of the magnetic field are shown by imaginary lines known as magnetic field lines.

Additional Information

• A rectangular portion of an object with persistent magnetic qualities that can be made of iron, steel, or any other ferromagnetic material or ferromagnetic composite is called a bar magnet.

• It has two poles: a north and a south pole.

• When the magnet is suspended freely, its two poles align such that the northern pole faces the earth's magnetic north pole.

• At the poles, its magnetic pull is at its strongest.

• The unlike poles of two bar magnets will attract one another while the like poles will repel one another when they are positioned close to one another.

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Q28. Answer: (c) Sour and changes blue litmus to red

The correct answer is Sour and changes blue litmus to red.

Explanation -

Acids:

• The term 'Acid' is used to describe the chemical nature of substances that are sour in taste.

• Curd, lemon juice, orange juice, and vinegar taste sour and the sour taste is due to their acidic nature, hence termed as ACIDS.

• The word acid comes from the Latin word 'ACERE' which means sour.

• DEFINITION OF ACIDS - An acid is classified chemically as a substance that dissolves and donates protons or hydrogen ions to a solution.

Properties of acids:

• Any hydrogen-containing substance (yielding hydrogen ion).

• Capable of donating a proton (hydrogen ion) to another substance.

• Acids have a sour taste for example - lemon juice and vinegar.

• Acids in aqueous solutions are electrolytes, which means they conduct an electrical current.

• Some acids are heavy electrolytes since they fully ionize in water, producing a large number of ions.

• Other acids are weak electrolytes that, when dissolved in water, exist predominantly in a non-ionized state.

• The pH range of acids is less than 7.

• Response with litmus paper (indicator)-

• Turns blue litmus to red

• Red litmus remains red

• Looking at the properties of acids, the correct answer or the true statement out of the given four will be - Acids are sour and change blue litmus to red.

Additional Information

• Litmus paper is paper that has been treated with a particular indicator—a mixture of 10 to 15 natural dyes derived from lichens (primarily Roccella tinctoria) that turn red in the presence of acid (pH 7).

• The dye is purple when the pH is neutral (pH = 7).

• It is used as an indicator to detect whether a particular substance is acidic or basic in nature.

Q29. Answer: (d) All of these

The correct answer is All of these.

Concept:

• Food preservation is the method of preventing food such as fruits and vegetables from spoiling.

• Food spoilage is caused by microbial growth.

• Food preservation allows one to extend the life of food and store it for a lengthy period of time.

• Food preservation plays an important role in businesses.

• The most commonly used preservatives are common salt, sugar, vinegar, vegetable oils, etc.

Explanation:

• Common salt, vinegar, and sugar are the most common food preservatives.

• Vinegar is a sour liquid formed by fermenting a number of dilute alcoholic liquids into an acetic acid-containing liquid.

• The acetic acid in vinegar destroys microorganisms and prevents food from spoiling.

• Vinegar is utilized as a preservative in both the home and the food business due to its acetic acid content and low pH.

• Acidic conditions also inhibit or prevent germs from growing or surviving; for example, submerging foods in vinegar or a vinegar-sugar mixture helps to preserve food against microbial growth.

• Salt and sugar work together to enhance osmotic pressure by destroying germs and slowing decay, stimulating the growth of beneficial bacteria, and promoting flavor.

• It is used to preserve or pickle a wide range of foods, including vegetables, fish products, meat, and spicy fruits.

Q30. Answer: (a) Sucrose

The correct answer is Sucrose.

• The key energy substrates for muscle contraction during exercise are muscle glycogen, the predominant source of stored glucose in the body, and blood glucose.

• Sucrose is a perfect substance to add for athletes, as it contains both glucose and fructose.

• It is therefore important for athletes to track their diet to retain and increase glycogen deposits in the muscle, as they are a major

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limiting factor in sustained exercise efficiency.

• Carbohydrate-rich diets are also recommended for endurance and ultra-endurance exercise, as they are associated with increased glycogen muscle reserves, as well as delayed fatigue onset.

• In addition, high carbohydrate diets and the consumption of carbohydrates before and during exercise have been shown to be beneficial due to improved hepatic glycogen concentrations and blood glucose control.

Q31. Answer: (b) 51

Shortcut Trick

Assume a base average of 50 and calculate deviations.

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

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

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

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

Therefore The correct answer is 51.

Alternate Method

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

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

33

38

46

52

67

70

51

Mean (Balance Point)

Values distribution and their central tendency

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

=> Sum = 306

=> Number of observations = 6

=> Average = 306 ÷ 6

=> Average = 51

Therefore The correct answer is 51.

Additional Information

Weighted Average

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

Average of Arithmetic Progression (AP)

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

Properties of Average

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

Q32. Answer: (c) 336pq2

Shortcut Trick

Apply algebraic identity: $(a + b)^2 − (a − b)^2 = 4ab$

Let a = 6pq and b = 14q

Required result = 4 × (6pq) × (14q)

=> $24 × 14 × p × q × q = 336pq^2$

Therefore The correct answer is $336pq^2$.

Alternate Method

Given: $(6pq + 14q)^2 − (6pq − 14q)^2$

Formula used: $x^2 − y^2 = (x + y)(x − y)$

=> [(6pq + 14q) + (6pq − 14q)] × [(6pq + 14q) − (6pq − 14q)]

=> [6pq + 14q + 6pq − 14q] × [6pq + 14q − 6pq + 14q]

=> [12pq] × [28q]

=> 12 × 28 × p × q × q

=> 336pq²

Therefore The correct answer is 336pq².

Additional Information

Algebraic Identities of Squares

$(a + b)^2 = a^2 + b^2 + 2ab$ and $(a - b)^2 = a^2 + b^2 - 2ab$.

Sum and Difference of Squares

$(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$ while $(a + b)^2 - (a - b)^2 = 4ab$.

Factorization Identity

$a^2 - b^2 = (a + b)(a - b)$. This is useful for simplifying expressions involving difference of squares.

Q33. 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%.

Q34. 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

Q35. Answer: (b) 53

Given:

Number = 530

Required = 10% of 530

Formula used:

10% of a number = a ÷ 10

Calculation:

=> 10% of 530 = 530 ÷ 10

=> = 53

Therefore 10% of 530 is 53.

Q36. Answer: (d) 13

Shortcut Trick

Directly divide the given total by the multiplier.

Value = 65 ÷ 5

Value = 13

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Therefore The correct answer is 13.
Alternate Method
Given:
Five times a number is 65.
Calculations:
Let the required number be x.
=> 5 × x = 65
=> x = 65 ÷ 5
=> x = 13
Therefore The correct answer is 13.
Additional Information
Linear Equations
An equation involving only one variable with a power of 1 is called a linear equation in one variable.
Inverse Operations
Division is the inverse operation of multiplication. To isolate the variable in 5x = 65, we divide by the coefficient 5.
Transposition Method
Moving a term from one side of the equation to another involves changing its sign or operation (multiplication becomes division).

Q37. Answer: (b) 72 m²

Given:
Perimeter = 36 metres
Formula used:
Perimeter = 2(Length + Breadth)
Area of rectangle = l × b
Calculation:
According to the question,
36 = 2(l + b)
=> l + b = 18
=> 6 + b = 18
=> b = 12
Area = 6 × 12 = 72 m²
Therefore The area of the rectangle is 72 m².

Q38. Answer: (b) 9

Shortcut Trick
Apply BODMAS
20 ÷ 4 = 5
3 × 4 = 12
=> 16 + 5 − 12 = 9
Therefore Answer = 9
Alternate Method
Given:
16 + 20 ÷ 4 − 3 × 4
Formula used:
BODMAS rule
Calculation:
=> 20 ÷ 4 = 5
=> 3 × 4 = 12
=> Substitute:
=> 16 + 5 − 12
=> = 21 − 12
=> = 9

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Therefore The correct answer is 9.
Additional Information
BODMAS Rule
Division and multiplication first, then addition/subtraction
Order Tip
Solve ÷ and × left to right
Simplification
Reduce step by step for accuracy
Common Error
Ignoring order leads to wrong result

Q39. Answer: (c) 30 cm²

Shortcut Trick
Identify the Pythagorean triplet: 5, 12, 13 satisfy $5^2 + 12^2 = 13^2$ (25 + 144 = 169).
Since it is a right-angled triangle, Area = 1/2 × base × height.
Area = 1/2 × 5 × 12 = 30 cm².
Therefore The correct answer is 30 cm².
Alternate Method
Given: Sides a = 5 cm, b = 12 cm, c = 13 cm.
Formula Used: Heron's Formula → Area = √[s(s−a)(s−b)(s−c)], where s = (a+b+c)/2.
=> Semi-perimeter (s) = (5 + 12 + 13) ÷ 2
=> s = 30 ÷ 2 = 15 cm
=> Area = √[15 × (15 − 5) × (15 − 12) × (15 − 13)]
=> Area = √[15 × 10 × 3 × 2]
=> Area = √900
=> Area = 30 cm²
Therefore The correct answer is 30 cm².
Additional Information
Pythagorean Triplets
Common sets of three positive integers that satisfy $a^2 + b^2 = c^2$ include (3, 4, 5), (5, 12, 13), (8, 15, 17), and (7, 24, 25).
Area of Equilateral Triangle
For a triangle with all sides equal to 'a', Area = (√3 ÷ 4) × a².
Right-Angled Triangle Property
The area is always half the product of the two sides forming the 90-degree angle (base and altitude).

Q40. Answer: (c) 1,65,000

Given:
Percentage of income spent = 60%
Savings = Rs. 66,000
Formula Used:
Total income = Savings / (1 - Percentage spent)
Calculation:
=> Percentage spent = 60% = 60 / 100 = 0.6
=> Percentage remaining = 1 - 0.6 = 0.4
=> Total income = Rs. 66,000 / 0.4
=> Total income = Rs. 1,65,000
Therefore The correct answer is Rs. 1,65,000.

Q41. Answer: (b) 1 : 2 : 8

Shortcut Trick
Simplify ratios first: A : B = 3 : 6 = 1 : 2 and B : C = 7 : 28 = 1 : 4.
Make B common: Multiply (1 : 2) by 1 and (1 : 4) by 2.
A : B = 1 : 2 and B : C = 2 : 8.

Combined ratio A : B : C = 1 : 2 : 8.
Therefore The correct answer is 1 : 2 : 8.
Alternate Method
Given:
Ratio A : B = 3 : 6
Ratio B : C = 7 : 28
Calculations:
=> A/B = 3/6 = 1/2
=> B/C = 7/28 = 1/4
=> To combine, we need the value of B to be the same in both ratios.
=> LCM of B values (2 and 1) is 2.
=> A : B = 1 : 2
=> B : C = (1 × 2) : (4 × 2) = 2 : 8
=> Therefore, A : B : C = 1 : 2 : 8
Therefore The correct answer is 1 : 2 : 8.
Additional Information
Compounding of Ratios
To combine two ratios (a : b) and (b : c), multiply the terms to make the common variable 'b' equal in both sets.
Simplification Rule
A ratio remains unchanged if both its terms are multiplied or divided by the same non-zero number.
Compound Ratio
The compound ratio of (a : b) and (c : d) is (ac : bd).

Q42. Answer: (a) 7000

Shortcut Trick
Effective Simple Interest (SI) rate for 3 years at 10% = 3 × 10% = 30%
Effective Compound Interest (CI) rate for 3 years at 10% = 33.1%
Difference in effective rates = 33.1% − 30% = 3.1%
Given difference = Rs. 217 => 3.1% of P = 217
=> P = (217 ÷ 3.1) × 100 = Rs. 7000
Therefore The correct answer is Rs. 7000.
Alternate Method
Let P = 1000
Yr 1: 100
Yr 2: 100
• 10 (CI)
Yr 3: 100
• 20 (CI)
• 1 (CI)
CI − SI Difference = 10 + 20 + 1 = 31 units
Given:
Time (T) = 3 years, Rate (R) = 10% per annum
Difference between CI and SI (D) = Rs. 217
Formula Used:
$D = P \times (R / 100)^2 \times [(300 + R) / 100]$
Calculation:
$=> 217 = P \times (10 / 100)^2 \times [(300 + 10) / 100]$
$=> 217 = P \times (1 / 10)^2 \times (310 / 100)$
$=> 217 = P \times (1 / 100) \times (31 / 10)$
$=> 217 = P \times (31 / 1000)$
$=> P = (217 \times 1000) \div 31$
$=> P = 7 \times 1000 = 7000$

Therefore The correct answer is Rs. 7000.

Additional Information

Difference for 2 Years

The difference between compound interest and simple interest for exactly 2 years is given by the formula $D = P \times (R / 100)^2$.

Difference for 3 Years

The difference for 3 years is given by $D = P \times (R / 100)^2 \times (R + 300) / 100$, which accurately accounts for the interest charged on the accumulated interest from the second year.

Effective Rate Method

Converting annual interest rates into an effective overall percentage speeds up calculations. For 3 years at 10%, SI is 30% and CI is 33.1%. The gap directly yields 3.1%, making it easier to skip complex fractional formulas.

Q43. Answer: (b) 135

Given:

The square root of 18225

Concept used:

Square root: A number that produces another particular number when it is multiplied by itself.

Calculation:

$\Rightarrow \sqrt{(5 \times 5 \times 9 \times 9 \times 3 \times 3)}$

$\Rightarrow 5 \times 9 \times 3 = 135$

Therefore The required answer is 135.

Q44. Answer: (b) 96

Shortcut Trick

Second Number = (HCF × LCM) ÷ First Number

Second Number = (32 × 192) ÷ 64

Second Number = 192 ÷ 2 = 96

Therefore The correct answer is 96.

Alternate Method

Given:

LCM of two numbers = 192

HCF of two numbers = 32

First number (n1) = 64

Formula Used:

The product of two numbers is equal to the product of their HCF and LCM.

$n1 \times n2 = HCF \times LCM$

Calculations:

$\Rightarrow 64 \times n2 = 32 \times 192$

$\Rightarrow n2 = (32 \times 192) \div 64$

$\Rightarrow n2 = 1 \times 192 \div 2$

$\Rightarrow n2 = 96$

Therefore The correct answer is 96.

Additional Information

HCF and LCM Relation

For any two positive integers a and b, HCF(a, b) × LCM(a, b) = a × b.

HCF of Fractions

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

LCM of Fractions

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

Q45. Answer: (d) 0.001

Given:

The value to be simplified is 0.002 × 0.5.

Formula Used:

Simple multiplication formula: a×ba×ba×b

Calculation:

=> 0.002 × 0.5

=> 2 × 10^(-3) × 5 × 10^(-1)

=> (2 × 5) × 10^(-3-1)

=> 10 × 10^(-4)

=> 10^(1-4)

=> 10^(-3)

=> 0.001

The simplified value of 0.002 × 0.5 is 0.001.

Q46. Answer: (b) 16

Given data :

Sumit is 17th from the last and Ravi is 7 ranks ahead of Sumit.

So, Ravi is = 17 + 7 = 24th (from the last)

The total number of students is = 39

Ravi rank from the start = Total number of students - Ravi's rank from the last + 1

= 39 - 24 + 1 = 15 +1 = 16

Ravi's rank from the start is 16th.

Hence, '16' is the correct answer.

Q47. Answer: (a) HKVU

The logic followed here is:

Logic: Each letter is shifted forward alternately by +1 and +2 in the English alphabet.

Given,

J O D A : K Q E C

Now, applying the same logic:

G I U S

So, G I U S : H K V U

Hence, the correct answer is "Option 1".

Q48. Answer: (c) None follows

Concept:

1) We have to check the conclusions are 100% match with the statement. If the conclusion is 100% match with the given statement then the conclusion is true. If there is a 1% chance of not following the statement then the conclusion is considered to be false.

2) The possibility case can be considered to be "false" in "definite case".

3) In Possibility case, either "can" or "possible" word must be present.

The least possible Venn diagram for the given statements is as follows:

Conclusions:

I. Some bags are not bottle → False (There is no direct relation given between bottle and bags so it can be possible but not definite, hence, false)

II. Some plastic are not bags → False (As "Some bags are plastic" given so some plastic can be bags it can be possible but some plastic are not bags it is not definite, hence, false)

Hence, the correct answer is "None follows".

Additional Information

Note: The answer here will not be “Neither conclusion I nor II follows”.

Don’t get confused as in the “neither-nor case” the subject and predicate in both the conclusions must be the same.

Q49. Answer: (d) 135

15 + $(2)^2$ = 19

19 + $(4)^2$ = 35

35 + $(6)^2$ = 71

71 + $(8)^2$ = 135

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So, the correct option will be option 4.

Q50. Answer: (a) Nephew

The logic follows here is :-

Family Chart :

Family Tree :

Thus, the correct answer is 'Nephew'.

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