Army Soldier GD (Aro. Jodhpur) 2021 Official Paper. (Previous Year Paper)

Army GD Agniveer • 2021 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. Patna is situated on the bank of which river?

(a) Yamuna
(b) Ganges
(c) Narmada
(d) Sutlej

Q2. Who is the author of Vande Mataram?

(a) Ravindra Nath Tagore
(b) Valmiki
(c) Kalidas
(d) Bankim Chandra Chatterjee

Q3. Where is the Gateway of India located?

(a) Patna
(b) Lucknow
(c) Delhi
(d) Mumbai

Q4. Who is the first citizen of India?

(a) Chief Justice
(b) Prime Minister
(c) President
(d) Law legislator

Q5. Which of the following states has the highest population?

(a) Gujarat
(b) Rajasthan
(c) Bihar
(d) Uttar Pradesh

Q6. Where is the Sahara Desert located?

(a) North America
(b) North Africa
(c) Asia
(d) Australia

Q7. Lala Lajpat Rai's death is related to which of the following incident?

(a) Chora theft scandal
(b) Simon Commission
(c) Non - Cooperation Movement

(d) None of these

Q8. Which is the oldest Veda?

(a) Samved
(b) Atharvaveda
(c) Yajurved
(d) Rigveda

Q9. Which of the following is not correct?

(a) Kaziranga National park - Assam
(b) Jim Corbett - Uttarakhand
(c) Tehri Dam - Uttarakhand
(d) Hirakud - Madhya Pradesh

Q10. Who was the ruler of India at the time of the arrival of the East India Company?

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

Q11. What is the capital of Japan?

(a) Tokyo
(b) Kathmandu
(c) Lahore
(d) None of these

Q12. Who was the first black president of South Africa?

(a) Napoleon Bonaparte
(b) Nelson Mandela
(c) Johannesburg
(d) None of these

Q13. What is the capital of Andaman and Nicobar Islands?

(a) Imphal
(b) Port Blair
(c) Aizawl
(d) Shimla

Q14. Which is the highest peak in the world?

(a) Kanchenjunga
(b) Mount everest
(c) Godwin austin
(d) None of these

Q15. Which is the holy book of Sikhs?

(a) Ramayana
(b) Guru Granth Sahib
(c) Mahabharata
(d) the Bible

GENERAL SCIENCE

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Q16. What is the secretion of insulin?

(a) Liver
(b) Spleen
(c) Mouth
(d) Pancreatic

Q17. What is the melting point of ice?

(a) 4° C
(b) -4° C
(c) 0° C
(d) 10° C

Q18. When the pH value of rainwater is less than _____, the process is called acid rain?

(a) 5
(b) 12
(c) 10
(d) 9

Q19. What is created in our body to fight diseases?

(a) RBC
(b) WBC
(c) Plasma
(d) None of these

Q20. Sound does not move in _____.

(a) air
(b) Vacuum
(c) Iron
(d) Steel

Q21. What does the atomic number represent?

(a) Electron number
(b) Number of protons
(c) Number of neutrons
(d) Number of atoms

Q22. Electric motor converts electric energy into _____.

(a) light energy
(b) Mechanical energy
(c) Kinetic energy
(d) None of these

Q23. Which of the following is an acid?

(a) NaOH
(b) NaCl
(c) H2SO4
(d) None of these

Q24. Which is the conductor of electricity?

(a) wood
(b) plastic
(c) paper
(d) copper

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Q25. What is the full name of CNG?

(a) Compressed dung gas
(b) Compressed natural gas
(c) Compressed petrol gas
(d) None of these

Q26. Which gas is used to extinguish a fire?

(a) Nitrogen
(b) Oxygen
(c) Carbon dioxide
(d) Argon

Q27. Which is Newton's law of action reaction?

(a) First
(b) Second
(c) Third
(d) None of these

Q28. Who discovered oxygen?

(a) Macmillan
(b) Marconi
(c) Joseph Priestley
(d) None of these

Q29. Which of the following is not an electronic device?

(a) TV
(b) radio
(c) The bulb
(d) computer

Q30. Sound intensity is measured by?

(a) Decibel
(b) Diopter
(c) Parsec
(d) None of these

MATHEMATICS

Q31. If the car has a speed of 90 Km/h, what will be its speed on the meter in seconds?

(a) 22 m/s
(b) 25 m/s
(c) 20 m/s
(d) 30 m/s

Q32. If an item is discounted by 10%, 20% and 40% then what is the total discount given on the item?

(a) 43.2%
(b) 28%
(c) 40%
(d) 56.8%

Q33. If the area of a circle is 616m^2, find its radius?

(a) 14 m
(b) 21 m
(c) 7 m
(d) 28 m

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Q34. If a number increases by 20% to 300, what is that number?

(a) 250
(b) 270
(c) 275
(d) 280

Q35. If 70% of the sum of any two numbers is equal to 49, what will be the sum of those numbers?

(a) 60
(b) 70
(c) 65
(d) 75

Q36. If 15 men do a work in 20 days, then in how many days will 20 men do the same work?

(a) 10
(b) 13
(c) 12
(d) 15

Q37. N is the formula for the sum of natural numbers?

(a) n(n+1)/2
(b) (n+1)/2
(c) n(n+1)(n+2)/2
(d) None of these

Q38. If an angle of a right angle triangle is 35°, then what will be its third angle?

(a) 50
(b) 55
(c) 60
(d) 65

Q39. If 114 kg rice comes in one bag, how many bags will be required for 1026 kg rice?

(a) 6
(b) 7
(c) 8
(d) 9

Q40. The ratio of any two numbers is 3 : 4. If 5 is added to each, then the ratio becomes 4 : 5. What are the numbers?

(a) 15, 25
(b) 20, 25
(c) 15, 20
(d) 20, 30

Q41. Ram bought a television for Rs. 16000. If the value of the television decreases by 5% annum, then what will be the value of the television after 3 years?

(a) 13710
(b) 13720
(c) 13728
(d) 13718

Q42. If the length of a room is 7 meters and the width is 4 meters, what will it cost you to plaster the surface of room while the cost of plaster is Rs. 21.50 / m^2?

(a) 702
(b) 602
(c) 802
(d) 902

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Q43. If the length of 4 students is 140, 136, 142, 140 cm respectively, what will be the average length?

(a) 138
(b) 139.5
(c) 140
(d) 141.5

Q44. 43% of 583 - 23% of 401 = _____?

(a) 158.30
(b) 150.23
(c) 158.46
(d) 148.46

Q45. 1/4 + 1/4 + 1 + 1/2 + 1/2 + 2 = ?

(a) 7/2
(b) 9/2
(c) 5/2
(d) 3/2

LOGICAL REASONING

Q46. If MAT is written as 68 then how will PAT be written in the same code?

(a) 72
(b) 73
(c) 74
(d) 75

Q47. Find the code: 75986 = GREAT, 786 = ____?

(a) GAT
(b) GAA
(c) TAG
(d) ATG

Q48. 1, 3, 6, 10, ____, 21.

(a) 13
(b) 14
(c) 15
(d) 16

Q49. 3, 7, 15, 31, ___, 127.

(a) 61
(b) 62
(c) 63
(d) 64

Q50. A girl introduced a boy and said, 'This is the son of my maternal uncle's father's only daughter'. So how is the boy related to the girl?

(a) Brother
(b) Nephew
(c) Uncle
(d) Son-in-law

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) Ganges

The correct answer is the Ganges.

Key Points

• Patna

• Patna is the capital of the Indian state of Bihar, and one of the oldest continuously inhabited places in the world.

• Megasthenes (350 BCE-290 BCE), in his book Indica, has mentioned that the city of Palibothra (Pataliputra, modern-day Patna) was situated on the confluence of the rivers Ganges and Arennovoas (Sonabhadra - Hiranyawah) and was 9 miles long and 1.75 miles wide.

• The modern city of Patna lies on the southern bank of the Ganges, as it flows past with the combined waters of the rivers Ghagra, Son, and Gandak. Hence, Option 2 is correct.

• At the point where the city is located, the sacred Ganges looks more sea than a river: mighty, wide, and never-ending.

Important Points

• Ganga River:

• The Ganga is an Asian cross-border river that flows through India and Bangladesh.

• It is originated in the western Himalayas in Uttarakhand, India, flows south and east through the Ganges Plain in northern India, reaches Bangladesh, and then flows into the Bay of Bengal.

• On November 4, 2008, Indian Prime Minister Manmohan Singh declared the Ganges River as the national river of India. Since then, it has been part of the national symbol of India.

• The Namami Gange plan is a comprehensive protection task. o It was approved by the coalition government as a flagship plan in June 2014 to achieve the dual goals of effectively reducing pollution and protecting and rejuvenating the Ganga.

Additional Information

• Yamuna

• The Yamuna is the second-largest tributary river of the Ganga and the longest tributary in India.

• Originating from the Yamunotri Glacier at a height of 6,387 meters on the southwestern slopes of Banderpooch peaks of the Lower Himalaya in Uttarakhand, it travels a total length of 1,376 kilometers (855 mi) and has a drainage system of 366,223 square kilometers (141,399 sq mi), 40.2% of the entire Ganga Basin.

• It merges with the Ganga at Triveni Sangam, Allahabad, which is a site of the Kumbh Mela, a Hindu festival held every 12 years.

• Length: 1,376 km

• Basin area: 366,223 km²

• Sources: Yamunotri, Champasar Glacier

• Cities: Yamuna Nagar, Agra, Prayagraj, Mathura, Noida, Etawah, Firozabad, Hamirpur, Baghpat, Kalpi

• Bridges: Old Naini Bridge

• Mouths: Ganges, Triveni Sangam

• Narmada

• The Narmada River also called the Reva and previously also known as Narbada or anglicized as Nerbudda is the 5th longest river in India, the largest west-flowing river, and the largest flowing river of Madhya Pradesh.

• This river is located in Madhya Pradesh and the Gujarat state of India.

• Length: 1,312 km

• Discharge: 1,216 m³/s

• Source: Amarkantak

• Mouths: the Arabian Sea, Gulf of Khambhat

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• Bridges: Narmada bridge

• Cities: Jabalpur, Vadodara

• Sutlej

• The Sutlej River, alternatively spelled as Satluj River, is the longest of the five rivers that flow through the historic crossroads region of Punjab in northern India and Pakistan.

• The Sutlej River is also known as Satadree.

• Length: 1,450 km

• Discharge: 500 m^3/s

• Basin area: 66,317 km^2

• Source: Mount Kailash

• Mouths: Chenab River, Arabian Sea, Panjnad

• Cities: Amritsar

Q2. Answer: (d) Bankim Chandra Chatterjee

The correct answer is Bankim Chandra Chatterjee.

Key Points

• Vande Mataram

• The author of Vande Mataram is Bankim Chandra Chatterjee. Hence, Option 4 is correct.

• He wrote it in the 1870s, which was later included in his 1881 novel Anandamath.

• It played a vital role in the Indian independence movement, first sung in a political context by Rabindranath Tagore at the 1896 session of the Indian National Congress.

Additional Information

• Bankim Chandra Chatterjee or Bankim Chandra Chattopadhyay:

• He was an Indian novelist, poet, and journalist.

• He was the composer of Vande Mataram, originally in Sanskrit, personifying India as a mother goddess and inspiring activists during the Indian Independence Movement.

• Rabindranath Tagore:

• He was a Bengali polymath – poet, writer, playwright, composer, philosopher, social reformer, and painter.

• He reshaped Bengali literature and music as well as Indian art with Contextual Modernism in the late 19th and early 20th centuries.

• Valmiki:

• He is celebrated as the harbinger-poet in Sanskrit literature.

• The epic Ramayana, dated variously from the 5th century BCE to the first century BCE, is attributed to him, based on the attribution in the text itself.

• He is revered as Adi Kavi, the first poet, author of Ramayana, the first epic poem.

• Kalidasa:

• He was a Classical Sanskrit author who is often considered ancient India's greatest playwright and dramatist.

• His plays and poetry are primarily based on the Vedas, the Ramayana, the Mahabharata, and the Puranas.

• His surviving works consist of three plays, two epic poems, and two shorter poems.

Q3. Answer: (d) Mumbai

The correct answer is Mumbai.

Key Points

• The Gateway of India

• It is an arch-monument built in the early 20th century in the city of Mumbai, India. Hence, Option 4 is correct.

• It was erected to commemorate the landing in December 1911 at Wellington Pier, Mumbai of King-Emperor George V and Queen-Empress Mary, the first British monarch to visit India.

• The foundation stone was laid in March 1913 for a monument built in the Indo-Saracenic style, incorporating elements of 16th-century Gujarati architecture.

• The final design of the monument by architect George Wittet was sanctioned only in 1914, and construction was completed in 1924.

• The structure is a triumphal arch made of basalt, which is 26 meters (85 feet) high. It is an effort from the architect George Wittet.

Additional Information

• Mumbai

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• Mumbai is a densely populated city on India’s west coast.

• A financial center, it's India's largest city. On the Mumbai Harbour waterfront stands the iconic Gateway of India stone arch, built by the British Raj in 1924.

• Offshore, nearby Elephanta Island holds ancient cave temples dedicated to the Hindu god Shiva.

• The city's also famous as the heart of the Bollywood film industry.

• Patna

• It is an ancient city that sprawls along the south bank of the Ganges River in Bihar, northeast India.

• The state capital, it’s home to Bihar Museum, a contemporary landmark exhibiting bronze sculptures and old coins from the region.

• Nearby, Indo-Saracenic–style Patna Museum displays a casket believed to contain the Buddha’s ashes.

• Close to the river, the Golghar is a domed colonial granary overlooking the city.

• Lucknow

• It is a large city in northern India, is the capital of the state of Uttar Pradesh.

• Toward its center is Rumi Darwaza, a Mughal gateway.

• Nearby, the 18th-century Bara Imambara shrine has a huge arched hall.

• Upstairs, Bhool Bhulaiya is a maze of narrow tunnels with city views from its upper balconies.

• Close by, the grand Victorian Husainabad Clock Tower was built as a victory column in 1881.

• Delhi

• It is India’s capital territory, is a massive metropolitan area in the country’s north.

• In Old Delhi, a neighborhood dating to the 1600s, stands the imposing Mughal-era Red Fort, a symbol of India, and the sprawling Jama Masjid mosque, whose courtyard accommodates 25,000 people.

• Nearby is Chandni Chowk, a vibrant bazaar filled with food carts, sweets shops, and spice stalls.

Q4. Answer: (c) President

The correct answer is President.

Key Points

• The President Of India

• Article 52 says there shall be a president of India.

• The President is known as the first citizen of India because he/she represents our country.

• He is the constitutional head of the nation. All executive decisions are taken in his name.

• The President who is also the head of the Indian State is the first citizen of India and acts as the symbol of the unity, integrity, and solidarity of the Indian nation. Hence, Option 3 is correct.

Articles	Content
52	The President of India
53	The executive power of the Union
54	Election of President
55	Manner of election of President
56	Term of office of President
57	Eligibility of re-election
58	Qualifications for election as President
59	Conditions of President’s office
60	Oath or affirmation by the President
61	Procedure for impeachment of the President
62	Time of holding election to fill a vacancy in the office of President and the term of office of person elected to fill a casual vacancy
63	The Vice-President of India
64	The Vice-President to be ex-officio chairman of the council of states

65	The Vice-President to act as President
66	Election of Vice-President
67	Term of office of Vice-President
68	Time of holding election to fill a vacancy in the office of Vice-President and the term of office of person elected to fill casual vacancy.
69	Oath or affirmation by the Vice-President
70	Discharge of President's functions in other contingencies

Additional Information

• The Chief Justice of India

• Officially the Chief Justice of the Republic of India is the chief judge of the Supreme Court of India as well as the highest-ranking officer of the Indian federal judiciary.

• The 48th and the present chief justice is N. V. Ramanna.

• The first chief justice of India was H. J. Kania.

• The Prime Minister of India

• Officially the Prime Minister of the Republic of India is the leader of the executive branch of the Government of India.

• The prime minister is the chief adviser to the President of India and the head of the Union Council of Ministers.

• They can be a member of any of the two houses of the Parliament of India—the Lok Sabha (House of the People) and the Rajya Sabha (Council of the States); but has to be a member of the political party or coalition, having a majority in the Lok Sabha.

• The prime minister is the senior-most member of the cabinet in the executive of government in a parliamentary system.

• The prime minister selects and can dismiss members of the cabinet; allocates posts to members within the government, and is the presiding member and chairperson of the cabinet.

• A legislature

• It is a deliberative assembly with the authority to make laws for a political entity such as a country or city.

• Legislatures form important parts of most governments; in the separation of powers model, they are often contrasted with the executive and judicial branches of parliamentary government.

• Laws enacted by legislatures are usually known as primary legislation.

• In addition, legislatures may observe and steer governing actions, with the authority to amend the budget involved.

• The members of a legislature are called legislators.

• In a democracy, legislators are most commonly popularly elected, although indirect election and appointment by the executive are also used, particularly for bicameral legislatures featuring an upper chamber.

Q5. Answer: (d) Uttar Pradesh

The correct answer is Uttar Pradesh.

Key Points

• Uttar Pradesh

• Uttar Pradesh is the most populous state in India, with 199,581,477 people as of 1 March 2011. Hence, Option 4 is correct.

• The state contributes 16.16 percent of India's population

• The population density is 828 people per square kilometer, making it one of the most densely populated states in the country

• The sex ratio in 2011 was 908 women to 1000 men, lower than the national figure of 933

• Estimates released by the Planning Commission for the year 2009-10 revealed that Uttar Pradesh had 59 million people below the poverty line, the most for any state in India

• Hindi is the official language as well as the mother tongue of many in the state.

• Urdu, additionally an official state language, is primarily spoken by Muslims.

Additional Information

• Largest State in India by Population

S. No.	State Name	Population (As per Census 2011)
1	Uttar Pradesh	199,812,341
2	Maharashtra	112,374,333
3	Bihar	104,099,452

4	West Bengal	91,276,115
5	Andhra Pradesh	84,580,777
6	Madhya Pradesh	72,626,809
7	Tamil Nadu	72,147,030
8	Rajasthan	68,548,437
9	Karnataka	61,095,297
10	Gujarat	60,439,692

Map of India Population Density:

Q6. Answer: (b) North Africa

The correct answer is North Africa.

Key Points

• The Sahara Desert

• It is the world's largest hot desert and the third largest desert behind Antarctica and the Arctic.

• Located in North Africa, it covers large sections of the continent - covering 9,200,000 square kilometers. Hence, Option 2 is correct.

• It covers much of North Africa stretching from the Atlantic Ocean to the Red Sea.

• North of the Sahara is the Mediterranean Sea. South is the Sahel region that sits between the desert and the African Savanna.

• The desert comprises much of North Africa, excluding the fertile region on the Mediterranean Sea coast, the Atlas Mountains of the Maghreb, and the Nile Valley in Egypt and Sudan.

• The population of the Sahara is just two million.

• People who live in the Sahara are predominantly nomads, who move from place to place depending on the seasons. Whilst others live in permanent communities near water sources.

Additional Information

• North America

• It is a continent entirely within the Northern Hemisphere and almost all within the Western Hemisphere.

• It can also be described as the northern subcontinent of the Americas.

• It is bordered to the north by the Arctic Ocean, to the east by the Atlantic Ocean, to the southeast by South America and the Caribbean Sea, and to the west and south by the Pacific Ocean. Because it is on the North American Tectonic Plate, Greenland is included as part of North America geographically.

• North America covers an area of about 24,709,000 square kilometers (9,540,000 square miles), about 16.5% of the Earth's land area, and about 4.8% of its total surface.

• North America is the third-largest continent by area, following Asia and Africa, and the fourth by population after Asia, Africa, and Europe.

• In 2013, its population was estimated at nearly 579 million people in 23 independent states, or about 7.5% of the world's population.

• North Africa or Northern Africa

• It is a region encompassing the northern portion of the African continent.

• There is no singularly accepted scope for the region, and it is sometimes defined as stretching from the Atlantic shores of Mauritania in the west, to Egypt's Suez Canal and the Red Sea in the east.

• Asia

• It is Earth's largest and most populous continent, located primarily in the Eastern and Northern Hemispheres.

• It shares the continental landmass of Eurasia with the continent of Europe and the continental landmass of Afro-Eurasia with both Europe and Africa.

• Australia

• Officially the Commonwealth of Australia is a sovereign country comprising the mainland of the Australian continent, the island of Tasmania, and numerous smaller islands.

• It is the largest country in Oceania and the world's sixth-largest country.

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Q7. Answer: (b) Simon Commission

The correct answer is Simon Commission.

Key Points

• Lala Lajpat Rai

• Lala Lajpat Rai immensely contributed to attaining the independence of the nation.

• He helped in establishing few schools in the country.

• He also initiated the foundation of the Punjab National Bank.

• In 1897, he founded the Hindu Orphan Relief Movement to keep the Christian missions from securing custody of these children.

• He died after the police lathi-charged on the activists, protesting the arrival of Simon Commission. Hence, Option 2 is correct.

• Besides, a great freedom fighter and leader, Lala Lajpat Rai was also a noted writer. The United States of America: A Hindu's impressions and a study, History of the Arya Samaj, Swaraj and social change, England's Debt to India: India, The Problems Of National Education In India were among the books, he had written.

• On October 30, 1928, to boycott the arrival of the members of the Simon Commission in Lahore, a peaceful procession, headed by Lajpat Rai was launched.

• Intercepting the march, Superintendent of Police, Scott ordered his police force to 'lathi-charge at the activists.

• To take avenge the death of Lala Lajpat Rai, Bhagat Singh and his associates plotted the assassination of Scott.

• But, the revolutionaries, mistaking J.P. Saunders, an Assistant Superintendent of Police, as Scott, killed him instead.

Additional Information

• The Non-cooperation Movement

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

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

• The period of the non-cooperation movement is taken as September 1920 to February 1922.

• It signified a new chapter in the history of the Indian freedom struggle.

• The Non-Cooperation Movement was launched in the wake of a series of events including the Jallianwala Bagh Massacre and was called off because of the Chauri Chaura incident of 1922.

Q8. Answer: (d) Rigveda

The correct answer is Rigveda.

Key Points

• Vedas

• The Vedas are the earliest surviving literature of the Indian subcontinent.

• There are four Vedas: the Rig Veda, the Sama Veda, the Yajur Veda and the Atharva Veda.

• Of these, the Rig Veda is the oldest and was composed about 3500 years ago. Hence, Option 4 is correct.

• All the other Vedas are based upon it and consist to a large degree of various hymns from it.

• It consists of a thousand such hymns of different seers, each hymn averaging around ten verses.

• The Rig Veda is also the oldest book in Sanskrit or any Indo-European language.

Additional Information

• Rigveda:

• The oldest Veda is the Rigveda. It has 1028 hymns called 'Suktas' and is a collection of 10 books called 'Mandalas.'

• It is the oldest form of Veda and the oldest known Vedic Sanskrit text(1800 – 1100 BCE)

• The meaning of the word 'Rigveda' is Praise Knowledge

• It has 10600 verses

• The meters used to form hymns are Gayatri, Anushtubh, Trishtubh, and Jagati (Trishtubh and Gayatri are most important)

• Samaveda:

• Known as the Veda of melodies and chants, Samaveda dates back to 1200-800 BCE. This Veda is related to public worship.

• There are 1549 verses (except 75 verses, all have been taken from Rigveda)

• There are two Upanishads embedded in Samaveda – Chandogya Upanishad and Kena Upanishad

• The Samaveda is considered the root of Indian classical music and dance

• It is considered as the storehouse of the melodious chants

• Yajurveda:

• Stands to mean 'Worship Knowledge', Yajurveda dates back to 1100-800 BCE; corresponding with Samaveda. It compiles ritual-offering mantras/chants. These chants were offered by the priest alongside a person who used to perform a ritual (in most cases yajna fire.)

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• It has two types – Krishna (Black/Dark) & Shukla (White/Bright)
• Krishna Yajurveda has an un-arranged, unclear, motley collection of verses
• Shukla Yajurveda has arranged and clear verses
• Atharvaveda:
• Stands to mean a tatpurusha compound of Atharvan, an ancient sage, and knowledge (atharvan+knowledge), it dates back to 1000-800 BCE.
• The daily procedures of life are very well enumerated in this Veda
• It has 730 hymns/suktas, 6000 mantras, and 20 books
• Paippalada and the Saunakiya are two surviving recensions of Atharvaveda
• Called a Veda of magical formulas, it includes three primary Upanishads – Mundaka Upanishad, the Mandukya Upanishad, and the Prashna Upanishad

Q9. Answer: (d) Hirakud - Madhya Pradesh

The correct answer is Hirakud - Madhya Pradesh.

Key Points

• Hirakud Dam
• It is built across the Mahanadi River, about 15 kilometers from Sambalpur in the state of Odisha in India. Hence, Option 4 is correct.
• Behind the dam extends a lake, Hirakud Reservoir, 55 km long.
• It is one of the first major multipurpose river valley projects started after India's independence.
• It is the longest dam in India with a total length of 25.79 km.
• It is also on the list of the longest dams in the world.
• It is a composite structure of the earth, concrete, and masonry. It is the longest major earthen dam in India.
• It is one of the first major multipurpose river valley projects that started after India's independence and began operations in 1957.
• With successful irrigation provided by the dam, Sambalpur is called the rice bowl of Odisha.

Additional Information

• The Tehri Dam
• It is located in the state of Uttarakhand.
• It is the highest Dam in India with a height of 260.5 meters.
• It is also listed in the top ten highest dams in the world.
• This Dam is situated on the river Bhagirathi.
• Kaziranga National Park
• It is a protected area in the northeast Indian state of Assam.
• Spread across the floodplains of the Brahmaputra River, its forests, wetlands, and grasslands are home to tigers, elephants, and the world’s largest population of Indian one-horned rhinoceroses.
• Ganges River dolphins swim in the park’s waters.
• It’s visited by many rare migratory birds, and gray pelicans roost near Kaziranga village
• Jim Corbett National Park
• It is a forested wildlife sanctuary in northern India’s Uttarakhand State.
• Rich in flora and fauna, it’s known for its Bengal tigers. Animals, including tigers, leopards, and wild elephants, roam the Dhikala zone.
• On the banks of the Ramganga Reservoir, the Sonanadi zone is home to elephants and leopards, along with hundreds of species of birds.

Q10. Answer: (c) Jahangir

The correct answer is Jahangir.

Key Points

• The arrival of the East India Company
• The British East India Company was formed in 1599 under a charter granted by Queen Elizabeth in 1600.
• The British Joint Stock Company, as it was known earlier, was founded by John Watts and George White for trade with Asian nations in the south and south-east.
• British merchants and aristocrats held shares in this joint-stock company.

• The British government had no controlling authority over the company and they shared no direct link.

• The British East India Company came to India as traders in spices, a very important commodity in Europe back then as it was used to preserve meat.

• Apart from that, they primarily traded in silk, cotton, indigo dye, tea, and opium.

• Mughal emperor Jahangir granted a Farman to Captain William Hawkins permitting the English to erect a factory at Surat in 1613. Hence, Option 3 is correct.

• In 1615, Thomas Roe, the Ambassador to James I, got an imperial Farman from Jahangir to trade and establish factories all across the Mughal empire.

Additional Information

• Muhi-ud-Din Muhammad, commonly known by the sobriquet Aurangzeb or by his regnal title Alamgir, was the sixth Mughal emperor, who ruled over almost the entire Indian subcontinent for a period of 49 years.

• Nasir-ud-Din Muhammad, better known by his regnal name, Humayun, was the second emperor of the Mughal Empire, who ruled over territory in what is now Afghanistan, Pakistan, Northern India, and Bangladesh from 1530 to 1540 and again from 1555 to 1556.

• Nur-ud-din Muhammad Salim, known by his imperial name, Jahangir, was the fourth Mughal Emperor, who ruled from 1605 until he died in 1627. His imperial name means 'conqueror of the world', 'world conqueror or 'world-seizer'.

• Shahab-ud-din Muhammad Khurram, better known by his regnal name, Shah Jahan, was the fifth Mughal emperor and reigned from 1628 to 1658. Under his reign, the Mughal Empire reached the peak of its cultural glory. Although an able military commander, Shah Jahan is best remembered for his architectural achievements.

All the Important Mughal Emperor:

Q11. Answer: (a) Tokyo

The correct answer is Tokyo.

Key Points

• Tokyo

• Tokyo is the capital city of Japan, a title the city has held since 1868 after it was renamed from Edo. Hence, Option 1 is correct.

• Historically, the city became the country’s capital after the then Emperor established his seat of authority in the city.

• The first capital city in Japan’s history was Kashiwabara established during the reign of Japan’s first emperor, Emperor Jimmu.

• Over the course of its long history, Japan has had numerous cities serving as its capital.

Additional Information

• Kathmandu

• Nepal's capital is set in a valley surrounded by the Himalayan mountains.

• At the heart of the old city’s mazelike alleys is Durbar Square, which becomes frenetic during Indra Jatra, a religious festival featuring masked dances.

• Many of the city's historic sites were damaged or destroyed by a 2015 earthquake.

• Durbar Square's palace, Hanuman Dhoka, and Kasthamandap, a wooden Hindu temple, are being rebuilt.

• Lahore

• Lahore is the capital of the Pakistani province of Punjab and is the country's 2nd largest city after Karachi, as well as the 26th largest city in the world.

• Lahore is one of Pakistan's wealthiest cities with an estimated GDP of $84 billion as of 2019.

Q12. Answer: (b) Nelson Mandela

The correct answer is Nelson Mandela.

Key Points

• Nelson Mandela

• In South Africa, Nelson Rolihlahla Mandela is sworn in as the first Black president of South Africa.

• In his inaugural address, Mandela, who spent 27 years of his life as a political prisoner of the South African government, declared that the time for the healing of the wounds has come.

• Two weeks earlier, more than 22 million South Africans had turned out to cast ballots in the country’s first-ever multiracial parliamentary elections.

• An overwhelming majority chose Mandela and his African National Congress (ANC) party to lead the country.

• Mandela, born in 1918, was the son of the chief of the Xhosa-speaking Tembu people.

• Instead of succeeding his father as chief, Mandela went to university and became a lawyer.

• In 1944, he joined the African National Congress (ANC), a Black political organization dedicated to winning rights for the Black majority in white-ruled South Africa.

Additional Information

• Napoléon Bonaparte, usually referred to as simply Napoleon in English was a French military and political leader who rose to prominence during the French Revolution and led several successful campaigns during the Revolutionary Wars. He was the de facto leader of the French Republic as First Consul from 1799 to 1804.

• Johannesburg, South Africa's biggest city and capital of Gauteng province, began as a 19th-century gold-mining settlement. Its sprawling Soweto township was once home to Nelson Mandela and Desmond Tutu. Mandela's former residence is now the Mandela House museum. Other Soweto museums that recount the struggle to end segregation include the somber Apartheid Museum and Constitution Hill, a former prison complex.

Q13. Answer: (b) Port Blair

The correct answer is Port Blair.

Key Points

• Port Blair

• It is the capital of the Andaman Nicobar Islands. Hence, Option 2 is correct.

• The Andaman and the Nicobar Islands with capital Port Blair lie to the southeast of the Indian mainland in the Bay of Bengal.

• India's final point namely Indira point is located on this Island.

• Famous for the popular cellular jail

• Port Blair has a tropical monsoon climate

• The most common religion is Hinduism followed by Christianity and Islam

• Bengali is the most common language. Hindi, Tamil, and Telugu are other languages spoken by the people

• Tourism is the main leading economy.

• The southernmost part of India is the Indira Point is located on the island of Andaman and Nicobar.

• It is a village on the Nicobar island and the exact location of the point is in the great Nicobar Tehsil.

• The place was named Indira point after the Indian prime minister Indira Gandhi. The point was earlier known as Pygmalion Point and Parsons Point.

Additional Information

• Imphal

• It is the capital of Manipur, a state in northeastern India.

• On the Imphal River, Kangla Fort was once the seat of local rulers, and now houses relics.

• On the south side of the centuries-old Polo Ground, Manipur State Museum has displays including tribal artifacts and a large royal boat.

• Next to the former Royal Palace, Shri Shri Govindaji Temple has twin domes, a large hall, and shrines to Hindu gods.

• Aizawl

• It is the capital of the state of Mizoram in India.

• Aizawl was officially established on 25 February 1890.

• With a population of 293,416, it is the largest city in the state.

• It is also the center of administration containing all the important government offices, state assembly house, and civil secretariat.

• Shimla

• It is the capital of the northern Indian state of Himachal Pradesh, in the Himalayan foothills.

• Once the summer capital of British India, it remains the terminus of the narrow-gauge Kalka-Shimla Railway, completed in 1903.

• It's also known for the handicraft shops that line The Mall, a pedestrian avenue, as well as the Lakkar Bazaar, a market specializing in wooden toys and crafts.

All the states capital of India:

Q14. Answer: (b) Mount everest

The correct answer is Mount Everest.

Key Points

• Mount Everest

• The highest mountain in the world is Mount Everest. Hence, Option 2 is correct.

• It's pretty famous.

• The big pointy thing in the Himalayas in Nepal. Sits up at 8,848m.

• It's a really high mountain.

• Everyone knows about Mount Everest.

• Most people also know the second-highest mountain in the world is K2.

• But very few people know the third highest mountain in the world is called Kangchenjunga.

• Or how to spell that. It's not quite as simple as 'K2', that's for sure.

• First climbed by Sir Edmund Hillary and Tenzing Norgay in 1953, Mount Everest is, of course, the highest mountain in the world.

• Kangchenjunga

• Kangchenjunga is the third highest mountain in the world.

• It can be found between Nepal and Sikkim in India, with three of the peaks on the border and the other two in the Taplejung District of Nepal.

• Kangchenjunga was actually thought to be the highest mountain in the world until 1852.

• The Godwin-Austen Glacier

• It is a glacier in the Karakoram range and is close to K2, the second tallest peak on Earth, in Gilgit–Baltistan, Pakistan.

• Its confluence with the Baltoro Glacier is called Concordia and is a popular trekking destination as it provides views of four of the five eight-thousanders in the region.

Q15. Answer: (b) Guru Granth Sahib

The correct answer is Guru Granth Sahib.

Key Points

• Guru Granth Sahib

• The holy book of the Sikhs is known as the Guru Granth Sahib and it is considered as the eternal guru for all times after the tenth guru of the Sikhs, Guru Gobind Singh, declared that the lineage of living gurus will end with him. Hence, Statement 2 is correct.

• The original name of the Guru Granth Sahib was Adi Granth and it was Guru Gobind Singh who elevated it to the status of the eternal and immortal guru by naming the book, Guru Granth Sahib.

• This holy book which comprises the sermons of the Gurus called the Gurbani is written in the Gurmukhi script, which incidentally is the official script for writing any Punjabi text in the state of Punjab.

Additional Information

• Ramayana is one of the two major Sanskrit epics of ancient India and important text of Hinduism, the other being the Mahabharata. The epic, traditionally ascribed to the Maharishi Valmiki, narrates the life of Rama, a legendary prince of Ayodhya city in the kingdom of Kosala.

• The Bible is a collection of religious texts, writings, or scriptures sacred to Jews, Samaritans, Christians, Muslims, Rastafari's, and others. It appears in the form of an anthology, a compilation of texts of a variety of forms that are all linked by the belief that they are collectively revelations of God.

All the Sikh Guru's:

Q16. Answer: (d) Pancreatic

The correct answer is Pancreatic.

Key Points

• Secretion of insulin

• Insulin is released by the beta cells in the islets of Langerhans in response to food.

• Insulin is normally secreted by the beta cells (a type of islet cell) of the pancreas. Hence, Option 4 is correct.

• Its role is to lower glucose levels in the bloodstream and promote the storage of glucose in fat, muscle, liver, and other body tissues.

• Alpha cells in the islets of Langerhans produce another important hormone, glucagon.

• The pancreas produces secretions necessary for you to digest food.

• The enzymes in these secretions allow your body to digest protein, fat, and starch from your food.

• Insulin and glucagon are hormones that work to regulate the level of sugar (glucose) in the body to keep it within a healthy range.

• Unlike the acinar cells, the islets of Langerhans do not have ducts and secrete insulin and glucagon directly into the bloodstream.

Additional Information

• The liver is a large, meaty organ that sits on the right side of the belly. Weighing about 3 pounds, the liver is reddish-brown in color and feels rubbery to the touch. Normally you can't feel the liver, because it's protected by the rib cage. The liver has two large sections, called the right and the left lobes.

• The spleen is an organ found in all vertebrates. Similar in structure to a large lymph node, it acts primarily as a blood filter.

• The mouth is an oval-shaped cavity inside the skull. The two main functions of the mouth are eating and speaking. Parts of the mouth include the lips, vestibule, mouth cavity, gums, teeth, hard and soft palate, tongue, and salivary glands. The mouth is also known as the oral cavity or the buccal cavity.

Q17. Answer: (c) 0° C

The correct answer is 0° C

Key Points

• Melting Point of Ice

• The temperature of the reverse change from liquid to solid is called the freezing point or crystallization point.

• For most substances the melting point and freezing points are equal.

• For ice, the melting point is 0°C or 273K. The melting point is the temperature at which a solid turns into a liquid. Hence, Option 3 is correct.

• The melting point at which ice a solid turns to water a liquid is 32*°F (0°*C).

• The melting point of a solid is defined as the temperature at which solid changes into a liquid. The melting point of a solid indicates the strength of the force of attraction between the particles of the solid. On heating a solid, its molecules absorb energy in the form of heat, and their kinetic energy increases.

• As the kinetic energy increases, the temperature of the solid increases. As a result, the force of attraction between the molecules decreases, and the molecules become more and more separated. This increases the potential energy of the molecule and the particles leave their fixed positions and start moving more freely.

• At a particular temperature, the separation of the molecules increases by a large amount, and the solid melts and converts into liquid. This particular temperature is the melting point of that solid. The melting point of a pure substance is always higher than the melting point of that substance when a small amount of an impurity is present. Pressure also affects the melting point of a substance. As the pressure on the substance increases, the melting point decreases.

Additional Information

• Melting points of some common substances

Substance	Melting point (°C)
Ice	0
Mercury	-39
Hydrogen	-259
Oxygen	-219
Helium	-272
Glucose	146
Iron	1535
Silver	961
Gold	1063

Q18. Answer: (a) 5

The correct answer is 5.

Key Points

• Acid Rain

• Rainwater with a pH less than 5.6 is called Acid rain. Hence, Option 1 is correct.

• Normal, clean rain has a pH value of between 5.0 and 5.5, which is slightly acidic.

• When sulfur dioxide and nitrogen oxides are released into the air, they react with water and oxygen and produce sulphuric and nitric acids. Thus it forms acid rain.

• Acid Rain as the name suggests can be said to be the precipitation of acid in the form of rain in the simplest manner. When atmospheric pollutants like oxides of nitrogen and sulfur react with rainwater and come down with the rain, then this results in Acid Rain.

Additional Information

• - Effects of Acid rain

• Wherever acid rain falls it can have a serious effect on soil, trees, buildings, and water.

• It is very dangerous as it causes serious damages to living organisms as well as non-living things.

• Acid rain runs off the land and ends up in streams, lakes, and marshes.

• The worst affected are things made from limestone or sandstone as these types of rock are particularly susceptible and can be affected by air pollution in gaseous form as well as by acid rain.

Q19. Answer: (b) WBC

The correct answer is WBC.

Key Points

• White Blood Corpuscles (WBC) or Leucocytes

• Its formation takes place in Bone Marrow, lymph node, and sometimes in the liver and spleen.

• Lifespan: 5-20 days.

• The nucleus is present in the WBC.

• Function- to protect the body from the disease. Hence, Option 2 is correct.

• The ratio of RBC and WBC is 600:1.

• It consists of Granulocytes and Agranulocytes.

• Granulocytes consist of Neutrophils, Eosinophils, and Basophils.

• Agranulocytes consist of lymphocytes and monocytes.

Additional Information

• Plasma

• It is the liquid part of blood.

• It constitutes 60% part of the blood.

• The plasma has 90% parts is water, 7% protein, 0.9% salt, and 0.1% is glucose.

• Its main function is to Transport digested food, hormones, the excretory product from one part of the body to another part of the body.

• When Fibrinogen & Protein is extracted out of plasma, the remaining plasma is called serum.

• Red Blood Corpuscles (RBC)

• The nucleus is absent from it. Exception - Camel and Lama.

• It is formed in Bone Marrow (At the embryonic stage its formation takes place in the liver.)

• Lifespan- 20 days to 120 days.

• RBC destruction takes place in the spleen so it is called the grave of RBC.

• It contains hemoglobin, which is an iron-containing compound.

• Due to the presence of hemoglobin color of blood is red.

• Globin is a proteinous compound that is extremely capable of combining oxygen and carbon dioxide.

• The iron compound found in hemoglobin is haematin.

• Function- to carry oxygen to all cells of the body and bring back the carbon dioxide.

• Anaemia disease is caused due to the deficiency of hemoglobin.

• At the time of sleeping RBC is reduced by 5% and for people who are at the height of 4200 meters, RBC increases by 30%.

Image of Blood Circulation:

Q20. Answer: (b) Vacuum

The correct answer is Vacuum.

Key Points

• Sound

• Sound waves are longitudinal waves.

• Unlike electromagnetic waves, they require a medium to propagate.

• Sound cannot travel through a vacuum. Hence, Option 2 is correct.

• A vacuum is an area without any air, like space. So sound cannot travel through space because there is no matter for the vibrations to work on it.

• Sound needs a medium in which to travel. Sound waves cannot form unless there are molecules to bump into each other to pass the waveform along.

• Sounds will therefore not travel in space where only a vacuum exists.

• Sound in physics is defined as a vibration that propagates as an audible wave of pressure, through a medium such as a gas, liquid, or solid.

• Sound travels fastest in solids, is relatively slower in liquids, and is slowest in gases.

• Until recently, we considered space to be devoid of particles.

• But, in space, there are patches of areas filled with gas and dust that have the potential to carry sound waves.

• However, because the particles are scattered out far away from each other, the sound waves they produce are at such a low frequency that humans can’t hear.

Q21. Answer: (b) Number of protons

The correct answer is the number of protons.

Key Points

• Atomic number

• It is the number of a chemical element in the periodic system, whereby the elements are arranged in order of increasing the number of protons in the nucleus.

• Accordingly, the number of protons, which is always equal to the number of electrons in the neutral atom, is also the atomic number.

• The atomic number (Z) of an element is the number of protons in the nucleus of each atom of that element. Hence, Option 2 is correct.

• This means that the number of protons is the characteristic that makes each element unique compared to all other elements.

• Elements are different because of their atomic number.

• The periodic table displays all of the known elements and is arranged in order of increasing atomic number.

• In this table, an element's atomic number is indicated above the elemental symbol.

Q22. Answer: (b) Mechanical energy

The correct answer is Mechanical Energy.

Key Points

• Electric Motor

• In an electric motor, the electrical energy is converted into mechanical energy. Hence, Option 2 is correct.

• The electric motor works on the principle of electromagnetic induction, which is when a voltage is induced by a changing magnetic field.

• Almost every mechanical movement that we see around us is accomplished by an electric motor.

• Electric machines are a means of converting energy.

• Motors take electrical energy and produce mechanical energy.

• Electric motors are used to power hundreds of devices we use in everyday life.

• The input is electrical energy (from the supply source), and the output is mechanical energy

• The working principle of an electric motor depends on the magnetic and electric field interaction.

• There are two types of electric motor and they are:

• AC motor: Converts alternating current into mechanical power. Linear motor, synchronous motor, and induction motor are the three types of AC motor.

• DC motor: Converts direct current into mechanical power. Self-excited motor and separately excited are the two classifications of DC motor.

Additional Information

• Light energy

• It is a kind of kinetic energy capable of allowing various forms of lights visible to the human eyes.

• Light is known as a type of electromagnetic radiation produced by hot objects such as lasers, bulbs, and sunlight.

• Mechanical energy

• In physical sciences, mechanical energy is the sum of potential energy and kinetic energy.

• It is the macroscopic energy associated with a system.

• The principle of conservation of mechanical energy states that if an isolated system is subject only to conservative forces, then the mechanical energy is constant.

• Kinetic energy

• In physics, the kinetic energy of an object is the energy that it possesses due to its motion.

• It is defined as the work needed to accelerate a body of a given mass from rest to its stated velocity.

• Having gained this energy during its acceleration, the body maintains this kinetic energy unless its speed changes.

Q23. Answer: (c) H2SO4

The correct answer is H2SO4.

Key Points

Sulphuric Acid

• Sulphuric acid is important in mineral processing, oil refining, wastewater processing, and chemical synthesis.

• It has a wide range of applications including domestic acidic drain cleaners.

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• It is also known as oil of vitriol.

• Dilution of concentration Sulphuric acid is highly exothermic process and hence dilution should always be performed by adding the acid to the water and not by adding water to the acid.

Additional Information

• Sodium Hydroxide(NaOH)

• It is a solid ionic compound. It is also known as caustic soda, lye, sodium hydrate, or soda lye.

• It is a co-product of chlorine production. In its pure form, it is crystalline solid, colourless in nature.

• This compound is highly water-soluble and consists of sodium cations and hydroxide anions.

• NaOH absorbs moisture from the air.

• It is highly corrosive and can cause severe skin burn and irritation to the eyes and other body parts.

• It generates a high level of heat and so is always created by mixing the compound into the water, not vice versa. In cosmetics, this inorganic compound is used as a buffering agent. It can also control the PH levels. The PH of sodium chloride is 13.

• Sodium Chloride – NaCl

• Sodium Chloride is an ionic compound with the chemical formula NaCl.

• Sodium Chloride is also known as salt. It occurs in oceans and sea waters.

• It is also found as rock salt. About 1% to 5 % of seawater is made of NaCl.

• It is a crystalline solid, white. In its aqueous form, it is called a saline solution.

• The molecular weight of NaCl is 58.44g/mol

• This compound is water-soluble and consists of sodium cation and chloride anion.

• The sodium and chloride ions are present in the ratio 1:1.

• It is widely known as table salt and is mostly used in the food industry for preservation and flavouring. The pH of sodium chloride is 7.

Q24. Answer: (d) copper

The correct answer is Copper.

Key Points

• Conductor of electricity

• In physics and electrical engineering, a conductor is an object or type of material that allows the flow of charge in one or more directions.

• Materials made of metal are common electrical conductors.

• Copper is considered to be a conductor because it conducts the electron current or flow of electrons fairly easily. Most metals are considered to be good conductors of electrical current. Copper is just one of the more popular materials that are used for conductors. Hence, Option 4 is correct.

• If you have to define the meaning of electrical conductors in the simplest way, they are materials that allow electricity to flow through them easily.

• If we compare two types of material and the first one allows better flow of electricity through it, then that material is said to be a good conductor of electricity.

• An electrical conductor allows the electric charges to easily flow through them. The property of conductors to conduct electricity is called conductivity.

• Such materials offer less opposition or resistance to the flow of charges.

• Conducting materials allow easy charge transfer because of the free movement of electrons through them.

Additional Information

• - Some examples of conductors of electricity are

• Copper

• Aluminum

• Silver

• Gold

• Graphite

• Platinum

• Water

• People

Q25. Answer: (b) Compressed natural gas

The correct answer is Compressed natural gas.

Key Points

• Compressed natural gas

• It is a fuel gas made of natural gas, which is mainly composed of methane, compressed to less than 1% of the volume it occupies at standard atmospheric pressure.

• It is stored and distributed in hard containers at a pressure of 20–25 MPa, usually in cylindrical or spherical shapes.

• CNG is an abbreviation of Compressed Natural Gas. Hence, Option 2 is correct.

• Its primary use is as an alternative for fuel in automobiles.

• The primary component in CNG is methane.

• It produces relatively lower quantities of greenhouse gases (in comparison with LPG).

• It is relatively safe as it disperses rapidly into the air.

• The primary source of obtaining CNG is from oil wells, bed methane wells, coal wells, and even natural gas wells.

Additional Information

• - CNG is a fossil fuel substitute for other auto fuels such as petrol, diesel, Auto LPG, etc.

• CNG is made by compressing natural gas, (which is mainly composed of methane, CH4).

• CNG is quite economical and eco-friendly than conventional liquid auto fuels.

• When CNG reaches the combustion chamber, it mixes with air, is ignited by a spark and the energy from the explosion moves the vehicle.

• - Note – Although vehicles can use natural gas as either liquid or gas, most vehicles use the gaseous form compressed to 3,000 psi.

• Compressed natural gas is sometimes mixed with hydrogen (HCNG), which increases the H/C ratio (hydrogen/carbon ratio) of the fuel and gives it a flame speed up to eight times higher than CNG.

Image of CNG gas mixture:

Q26. Answer: (c) Carbon dioxide

The correct answer is Carbon dioxide.

Key Points

• Carbon dioxide

• Carbon dioxide extinguishers work by displacing oxygen or taking away the oxygen element of the fire triangle.

• The carbon dioxide is also very cold as it comes out of the extinguisher, so it cools the fuel as well.

• It is because carbon dioxide does not support combustion.

• When sprayed on the burning object it stops the supply of oxygen and extinguishes fire.

• Carbon dioxide is the most commonly used gas for extinguishing fires. Hence, Option 3 is correct.

• Sodium bicarbonate is used to release a cloud of Co2, especially in class A and class B fires, thus releasing the oxygen and smothering the fire

• Carbon dioxide is an acidic colorless gas with a density about 53% higher than that of dry air. Carbon dioxide molecules consist of a carbon atom covalently double bonded to two oxygen atoms. It occurs naturally in Earth's atmosphere as a trace gas.

• Molar mass: 44.01 g/mol

• Formula: CO2

• Boiling point: -78.46 °C

• Soluble in: Wate

Additional Information

• Nitrogen

• It is the chemical element with the symbol N and atomic number 7. It was first discovered and isolated by Scottish physician Daniel Rutherford in 1772.

• Symbol: N

• Atomic mass: 14.0067 u

• Atomic number: 7

• Electron configuration: [He] $2s^2 2p^3$

• Electronegativity: 3.04

• Boiling point: -195.8 °C

• Oxygen

• It is the chemical element with the symbol O and atomic number 8.

• It is a member of the chalcogen group in the periodic table, a highly reactive nonmetal, and an oxidizing agent that readily forms oxides with most elements as well as with other compounds.

• Symbol: O

• Atomic mass: 15.999 u

• Atomic number: 8

• Electron configuration: [He] 2s²2p^4

• Electronegativity: 3.44

• Discoverers: Joseph Priestley, Antoine Lavoisier, Carl Wilhelm Scheele

• Argon

• It is a chemical element with the symbol Ar and atomic number 18.

• It is in group 18 of the periodic table and is a noble gas. Argon is the third-most abundant gas in the Earth's atmosphere, at 0.934%.

• Symbol: Ar

• Atomic mass: 39.948 u

• Atomic number: 18

• Electron configuration: [Ne] 3s²3p^6

• Boiling point: -185.8 °C

• Discoverers: William Ramsay, John William Strutt, 3rd Baron Rayleigh

Q27. Answer: (c) Third

The correct answer is Third.

Key Points

• Newton's third law states that when two bodies interact, they apply forces to one another that are equal in magnitude and opposite in direction.

• The third law is also known as the law of action and reaction. Hence, Option 3 is correct.

Additional Information

• Newton first law

• If no external force acts on a body then it remains in the same state of rest or motion that is in its present state.

• The inertia of Rest:

• Inertia is the property of a body under which it opposes any change in its state of rest or of uniform motion.

• When a bus or train at rest starts to move suddenly the passengers sitting in it feel a jerk in the backward direction due to the inertia of rest.

• Dust particle comes out of a carpet if we beat it with the stick.

• A passenger jumping out of a train is advised to jump in the direction of the bus and ran for a short distance.

• The inertia of Motion:

• When a running bus or train stops suddenly, the passengers sitting in it jerk in the forward direction due to the inertia of motion.

• Newton's second law of motion:

• The rate of change in momentum of a body is directly proportional to the applied force on the body and takes place in the direction of the force.

If F = force applied, a = acceleration produced and m = mass of body

then F = ma.

• Newton's Third Law of Motion:

• To every action, there is an equal and opposite reaction.

• Examples of third law –

• The recoil of a gun

• Motion of rocket

• While drawing water from the well, if the string breaks up the man drawing water falls back.

Q28. Answer: (c) Joseph Priestley

The correct answer is Joseph Priestley.

Key Points

• Oxygen

• It is the chemical element with the symbol O and atomic number 8.

• It is a member of the chalcogen group in the periodic table, a highly reactive nonmetal, and an oxidizing agent that readily forms oxides with most elements as well as with other compounds.

• When Joseph Priestley discovered oxygen in 1774, he answered age-old questions of why and how things burn. Hence, Option 3 is correct.

• An Englishman by birth, Priestley was deeply involved in politics and religion, as well as science.

• When his vocal support for the American and French revolutions made remaining in his homeland dangerous, Priestley left England in 1794 and continued his work in America until his death.

• Symbol: O

• Atomic mass: 15.999 u

• Atomic number: 8

• Electron configuration: [He] 2s²2p^4

• Electronegativity: 3.44

• Discoverers: Joseph Priestley, Antoine Lavoisier, Carl Wilhelm Scheele

Additional Information

• Edwin Mattison McMillan was an American physicist and Nobel laureate credited with being the first-ever to produce a transuranium element, neptunium. For this, he shared the Nobel Prize in Chemistry with Glenn Seaborg in 1951.

• Guglielmo Giovanni Maria Marconi, 1st Marquis of Marconi FRSA was an Italian inventor and electrical engineer, known for his pioneering work on long-distance radio transmission, development of Marconi's law, and a radio telegraph system.

Q29. Answer: (c) The bulb

The correct answer is The bulb.

Key Points

• Electronic Device

• The device which controls the flow of electrons is called an electronic device.

• These devices are the principal building squares of electronic circuits.

• Hardware has different branches incorporate, computerized gadgets, simple hardware, miniature hardware, nanoelectronics, optoelectronics, coordinated circuit, and semiconductor gadget.

• Gadgets are characterized as gadgets run by electric force or the field of concentrating such things.

• An illustration of gadgets is radios, PCs, and TVs. Electronic hardware, frameworks, and so on.

• The bulb is not an electronic device because it does not have any current controlling semiconductor device. Hence, Option 3 is correct.

• An electric bulb is an electric device that consists of a glass casing, a filament through which the current passes, contact wires, and a base.

• The filament is made up of tungsten and the bulb is filled with argon gas. All other options have some semiconductor devices like transistors, diodes, etc.

Additional Information

• Radio is the technology of signaling and communicating using radio waves. Radio waves are electromagnetic waves of frequency between 30 hertz and 300 gigahertz.

• A computer is a machine that can be programmed to carry out sequences of arithmetic or logical operations automatically. Modern computers can perform generic sets of operations known as programs. These programs enable computers to perform a wide range of tasks.

• Television (TV), sometimes shortened to tele or telly, is a telecommunication medium used for transmitting moving images in monochrome (black and white), or color, and in two or three dimensions and sound. The term can refer to a television set, a television show, or the medium of television transmission.

• An incandescent light bulb, incandescent lamp, or incandescent light globe is an electric light with a wire filament heated until it glows. The filament is enclosed in a glass bulb with a vacuum or inert gas to protect the filament from oxidation

Q30. Answer: (a) Decibel

The correct answer is Decibel.

Key Points

• Decibel

• The sound is all around us and can be measured to protect and inform us, as some sounds are not safe.

• In fact, loud noise can actually damage our hearing. So, the intensity of a sound is measured using decibel.

• Decibel is the unit of sound. Its symbol is dB. Hence, Option 1 is correct.

• The decibel (dB) is a unit used to express the ratio of two values of a physical quantity, often power or intensity.

• One decibel is one-tenth of one bel, a unit name named in honour of Alexander Graham Bell. This unit 'bel' is seldom used.

• The human ear has the ability to handle an immense range of different sound levels. Therefore, to express sound levels meaningfully in more flexible numbers, a logarithmic scale is used, rather than a linear one. This scale is called the decibel scale or dB scale.

• On the decibel scale, 0 dB is the smallest audible sound.

• A sound 10 times more powerful is 10 dB.

• A sound 100 times more powerful than near total silence is 20 dB.

• A sound 1,000 times more powerful than near total silence is 30 dB.

Additional Information

• A dioptre or diopter is a unit of measurement of the optical power of a lens or curved mirror, which is equal to the reciprocal of the focal length measured in meters.

• It is thus a unit of reciprocal length. For example, a 3-dioptre lens brings parallel rays of light to focus at 1⁄3 meter.

• Parsec, unit for expressing distances to stars and galaxies, used by professional astronomers.

• It represents the distance at which the radius of Earth's orbit subtends an angle of one second of arc.

• Thus, a star at a distance of one parsec would have a parallax of one second, and the distance of an object in parsecs is the reciprocal of its parallax in seconds of arc.

Q31. Answer: (b) 25 m/s

Concept used :

Kilometre per hour = (5/18) × meter per second

Calculations :

90 Km/h = (5/18) × 90 m/s

=> 25 m/s

Therefore Option 2 is the correct answer.

Q32. Answer: (d) 56.8%

Concept used :

If their are 2 discounts x and y are given on an item then,

Total discount = x + y - (xy)/100

Calculations :

Discount for 10% and 20% = 10 + 20 - (10 × 20)/100

=> 28%

Total discount = 28 + 40 - (28 × 40)/100

=> 68 - 11.2

=> 56.8%

Therefore Option 4 is the correct answer.

Q33. Answer: (a) 14 m

Given :

Area of circle is 616 m^2

Formula used :

Area of circle = πr^2

Calculations :

According to the question

$\pi r^2 = 616$

$\Rightarrow r^2 = 196$

$\Rightarrow r = 14$

Therefore Option 1 is the correct answer.

Q34. Answer: (a) 250

Given :

A number is increased by 20% to become 300

Calculations :

Let the number be 100x
Number after 20% increment = 100x + 20% of 100x
=> 120x
According to the question
120x = 300
=> x = 2.5
Original number = 100x
=> 250
Therefore Option 1 is the correct answer.

Q35. Answer: (b) 70

Given:
70% of the sum of any two numbers is 49
Calculations:
let the sum of numbers be x
According to the question
70% of x = 49
=> x = 70
So, the sum will be 70
Therefore Option 2 is the correct answer.

Q36. Answer: (d) 15

Concept :
Number of persons × time duration = Total work
Calculations :
Total work = 15 × 20 units
Let the number of days taken by 20 men be d
According to the question
20 × d = 15 × 20
=> d = 15 days
Therefore Option 4 is the correct answer.

Q37. Answer: (a) n(n+1)/2

Calculations :
Sum of n natural numbers = n(n + 1)/2
Therefore Option 1 is the correct answer.

Q38. Answer: (b) 55

Given :
One angle in right triangle is 35°
Concept used :
Sum of angles in a triangle is 180°
Right angle is a triangle in which one angle is 90°.
Calculations :
Let the third angle be x
So,
90° + 35° + x = 180°
=> x = 90° - 35°
=> 55°
Therefore Option 2 is the correct answer.

Q39. Answer: (d) 9

Given :
114 kg of rice comes in one bag.

Calculation :
Weight of one bag = 114 kg
Now,
Number of bags × weight of one bag = Total weight og rice
Number of bags × 114 = 1026
=> Number of bags = 1026/114
=> 9
Therefore Option 4 is the correct answer.

Q40. Answer: (c) 15, 20

Given :
Ratio of two numbers is 3 : 4 and it becomes 4 : 5, when 5 is added to both numbers.
Calculations :
Let the numbers be 3x and 4x
Now according to the question,
(3x + 5)/(4x + 5) = 4/5
=> 15x + 25 = 16x + 20
=> x = 5
So,
=> 3x = 15 and 4x = 20
Therefore Option 3 is the correct answer.

Q41. Answer: (d) 13718

Given :
Ram bought a television for Rs. 16000.
Rate of television decreases by 5% every year
Calculations :
Rate of television after 1 year = 16000 - 5% of 16000
=> 16000 - 800
=> 15200
Rate after 2 years = 15200 - 5% of 15200
=> 15200 - 760
=> 14440
Rate after 3 years = 14440 - 5% of 14440
=> 14440 - 722
=> 13718
Therefore Option 4 is the correct choice.
Alternate Method
Rate of television after 3 years = 16000 × (100 - 5)/100) × (100 - 5)/100) × (100 - 5)/100)
=> 16000 × (19/20) × (19/20) × (19/20)
=> 13718
Therefore Option 4 is the correct choice.

Q42. Answer: (b) 602

Given :
The length and breadth of the room are 7 m and 4 m respectively
The cost of plaster is Rs. 21.5 per meter square.
Calculations :
Area of room = 7 × 4 (area of surface = length × breadth)
=> 28 m^2
Total cost of plaster = area × cost per unit area
=> 28 × 21.5
=> 602 rupees

Therefore Option 2 is the correct answer.

Q43. Answer: (b) 139.5

Given :

The length of 4 students is 140 cm, 136 cm, 142 cm and 140 cm

Concept used :

Average = sum of all observations/number of observations

Calculation :

Sum of all lengths = 140 + 136 + 142 + 140 = 558

Average = 558/4

=> 139.5

Therefore Option 2 is the correct answer.

Q44. Answer: (c) 158.46

Calculations :

43% of 583 - 23% of 401

=> 250.69 - 92.23

=> 158.46

Therefore Option 3 is the correct answer.

Q45. Answer: (b) 9/2

Calculations :

1/4 + 1/4 + 1 + 1/2 + 1/2 + 2

=> (1 + 1 + 4 + 2 + 2 + 8)/4

=> 18/4

=> 9/2

Therefore Option 2 is the correct answer.

Q46. Answer: (c) 74

To get the code of a word, the place value of the letters as per the English alphabetical series are added and then multiplied by 2.

M(13) + A(1) + T(20) = 34

34 × 2 = 68

SImilarly,

P(16) + A(1) + T(20) = 37

37 × 2 = 74

Hence, "74" is the code for the word PAT.

Q47. Answer: (a) GAT

GREAT = 75986

This implies that:

G = 7

R = 5

E = 9

A = 8

T = 6

According to the above codes of letters, 786 = GAT

Hence, "GAT" is the code for the number 786.

Q48. Answer: (c) 15

The given number series: 1, 3, 6, 10, ____, 21

The difference between two consecutive numbers increases by 1 each time as we move towards right.

3 - 1 = 2

6 - 3 = 3

10 - 6 = 4

15 - 10 = 5

21 - 15 = 6

Hence, "15" is the missing term in the series.

Q49. Answer: (c) 63

The given number series: 3, 7, 15, 31, ___, 127

The pattern followed here is:

Hence, "63" is the missing term in the series.

Q50. Answer: (a) Brother

The girl's maternal uncle's father is the girl's maternal grandfather.

The girl's maternal grandfather's only daughter is the girl's mother.

The girl's mother's son is the girl's brother.

Family Chart:

Family Tree:

Hence, the boy is the girl's "brother".

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