Army Soldier GD Berhampore (Kolkata) 25 Feb 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. Who is considered the main supporter of Marxism?

- **(a)** M. M. Rai
- **(b)** Fourier
- **(c)** Karl Marx
- **(d)** Lui Block

Q2. In which state is the famous 'Kamakhya Devi Temple' located?

- **(a)** Madhya Pradesh
- **(b)** Himachal Pradesh
- **(c)** Karnataka
- **(d)** Assam

Q3. Which is the highest military gallantry award/medal?

- **(a)** Kirti Chakra
- **(b)** Param Vir Chakra
- **(c)** Shaurya Chakra
- **(d)** Ashoka Chakra

Q4. Where is the Indian Institute of Science located?

- **(a)** Chennai
- **(b)** Kolkata
- **(c)** Bangalore
- **(d)** Mumbai

Q5. Where is the headquarters of International Cricket Council located?

- **(a)** New Delhi
- **(b)** London
- **(c)** Dubai
- **(d)** Melbourne

Q6. Who wrote the book Ramayana?

- **(a)** Surdas
- **(b)** Kalidas
- **(c)** Veda Vyasa
- **(d)** Valmiki

Q7. What is the capital of Himachal Pradesh?

- **(a)** Mandi
- **(b)** Solan
- **(c)** Shimla

(d) Kullu

Q8. By whom were the Marathas defeated in the third battle of Panipat?

(a) Aurangzeb
(b) Ahmad Shah Abdali
(c) Jahangir
(d) Sher Shah Suri

Q9. Who said 'Swaraj is my birthright'?

(a) Bhagat Singh
(b) Dadabhai Naroji
(c) Bal Gangadhar Tilak
(d) Netaji Subhash Chandra Bose

Q10. Who wrote the holy book 'Gita'?

(a) Kalidas
(b) Veda Vyasa
(c) Valmiki
(d) Krishna

Q11. Apart from India, Pakistan, and Sri Lanka, which asian country has Rupee as its currency?

(a) Bhutan
(b) Myanmar
(c) Indonesia
(d) Nepal

Q12. Who composed the famous song 'Saare Jahan Se Achcha'?

(a) Rabindra Nath Tagore
(b) Mohammad Iqbal
(c) Jai Dev
(d) Bakim Chandra Chatterjee

Q13. Who founded the Mughal Empire in India?

(a) Babur
(b) Akbar
(c) Humayun
(d) Aurangzeb

Q14. Where is 'Sun Temple' located?

(a) Chennai
(b) Madurai
(c) Konark
(d) Goa

Q15. Who appoints the governors of Indian states?

(a) Vice President
(b) President
(c) Prime Minister
(d) Central Cabinet

GENERAL SCIENCE

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Q16. Which of the following is a major component of biogas?

(a) Methane
(b) Oxygen
(c) Nitrogen
(d) Helium

Q17. Brass contains _____?

(a) Copper and zinc
(b) Copper and nickel
(c) Copper and silver
(d) Copper and tin

Q18. The melting point of ice is _____?

(a) 50 degrees centigrade
(b) 2 degrees centigrade
(c) 0 degrees centigrade
(d) 10 degrees centigrade

Q19. Vitamin _____ is found in abundance in oranges.

(a) A
(b) B
(c) C
(d) D

Q20. What was Mendeleev's periodic table based on?

(a) Atomic Circle
(b) Atomic Numbers
(c) Atomic Volume
(d) Atomic Mass

Q21. What is the material used in making lead pencils?

(a) Mica
(b) Graphite
(c) Carbon
(d) Coal

Q22. In which part of the human body is the blood purified?

(a) Heart
(b) Kidney
(c) Lungs
(d) Intestine

Q23. Which instrument is used to observe celestial objects?

(a) Bioscope
(b) Telescope
(c) Microscope
(d) Periscope

Q24. Which of the following metals is used with iron to form stainless steel?

(a) Aluminium
(b) Chromium
(c) Tin
(d) Copper

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Q25. Which of the following metal ion is present in haemoglobin?

(a) Silver
(b) Iron
(c) Copper
(d) Gold

Q26. Which vitamin strengthens the bones?

(a) C
(b) D
(c) A
(d) B

Q27. The chemical formula of laughing gas is _____.

(a) N2O2
(b) NO2
(c) N2O
(d) NO

Q28. Which of the following gas is not a noble gas?

(a) Helium
(b) Oxygen
(c) Argon
(d) Neon

Q29. BCG vaccine is used for the prevention of _____?

(a) Tuberculosis
(b) Dengue
(c) Typhoid
(d) Plague

Q30. Which of the following is the heaviest ray?

(a) Beta ray
(b) Gamma ray
(c) X ray
(d) Alpha ray

MATHEMATICS

Q31. The ratio of males and females in a village is 5 : 3. If there are 800 males in the village, then find the number of females?

(a) 488
(b) 840
(c) 240
(d) 480

Q32. If the radius of a sphere is 7 cm, then find the surface area?

(a) 161 cm^2
(b) 636 cm2
(c) 116 cm2
(d) 616 cm2

Q33. The sum of any two numbers is 25, and their difference is 13, find the two numbers?

(a) 12, 13
(b) 21, 4
(c) 14, 11

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(d) 19, 6

Q34. Find the LCM of 8, 10, 15, 16, and 20?

(a) 260
(b) 250
(c) 220
(d) 240

Q35. Ram can do a piece of work in 10 days and Mohan can do it in 15 days. In how many days will they together complete the same work?

(a) 4 days
(b) 6 days
(c) 10 days
(d) 8 days

Q36. The successive discounts of 10%, 20%, and 30% are equal to which of the following single discounts?

(a) 49.6%
(b) 36%
(c) 40.5%
(d) 60%

Q37. The average age of 12 boys is 10 years, out of which the average age of 11 boys is 9 years. Find the average age of the 12th boy?

(a) 33 years
(b) 21 years
(c) 25 years
(d) 24 years

Q38. If the length of a rectangular field is 30 m and breadth is 20 m, find its perimeter?

(a) 90 m
(b) 50 m
(c) 100 m
(d) 80 m

Q39. Find the cube root of 2197?

(a) 19
(b) 7
(c) 13
(d) 11

Q40. What will be the simple interest on Rs.18440 at 15% per annum for 4 years?

(a) Rs. 11500
(b) Rs. 11000
(c) Rs. 12250
(d) Rs. 11064

Q41. Find the HCF of the given numbers:

12, 15, 18, 21, ?

(a) 6
(b) 12
(c) 3
(d) 8

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Q42. 28 dozen bananas are required in a canteen for 1 week then how many bananas will be required for 47 days?

(a) 196
(b) 2256
(c) 2352
(d) 322

Q43. Fill in the blanks from the given options:

39, 41, 43, 45, ___

(a) 47
(b) 53
(c) 49
(d) 51

Q44. Find the largest five digit number which is divisible by 17?

(a) 0004
(b) 99994
(c) 99999
(d) 10013

Q45. If one side of an equilateral triangle is 12 cm then find its area?

(a) 72 cm2
(b) 36 cm2
(c) 36√3 cm2
(d) 36√2 cm²

LOGICAL REASONING

Q46. Ram walked 5 km north from place A, then took a left turn and walked 3 km, then took a right turn and walked 2 km and then took a right turn and walked 3 km to reach another place B. Find the distance between A and B?

(a) 8 km
(b) 7 km
(c) 13 km
(d) 10 km

Q47. Fill in the blanks in the given order from the given options:

64, 32, 16, 8, __?

(a) 2
(b) 4
(c) 6
(d) 8

Q48. Introducing a boy, a girl said 'This is the son of the daughter of my uncle's father'. Then how is the boy related to the girl?

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

Q49. Complete the sequence from the given options:

DKY, FJW, HIU, JHS, ___

(a) LGQ
(b) LFQ
(c) KFR
(d) KGR

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Q50. If in a code language the word BOXER is coded as AQWGQ then what will be the code for the word VISIT?

(a) UKAKS
(b) WKRKS
(c) UKRKS
(d) WKSKU

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Karl Marx

The correct answer is Karl Marx.

Key Points

• On May 5, 1818, Karl Marx was born in the Trier City of Modern-day Germany that time is known as the Kingdom of Prussia.
• He was a famous Philosopher, Economist, and Political theorist.
• He was very vocal for the working class and he argued that the industrial society was capitalist and the profit of capitalists was produced by workers.
• He believed that to overthrow capitalism, workers had to construct a Socialist society where all property was commonly controlled.
• He was the founder of the theory of 'Marxism'.

Image of Karl Marx:

Q2. Answer: (d) Assam

The correct answer is Assam.

Key Points

• The Kamakhya Devi Temple is located at Guwahati, Assam.
• The Kamakhya Temple is a Sakta temple dedicated to the mother goddess Kamakhya. It is one of the oldest and main temples of the 51 Shakti Pithas.
• The famous Ambubachi Mela is held here every year.
• The Temple is Situated in Nilachal Hills in Guwahati, Assam.
• Kamakhya Devi is also known as the Goddess of Fertility.
• Ambubachi Mela is a four-day festival to mark the annual menstruation of the goddess at Kamakhya temple in Guwahati.
• Ambubachi Mela is one of the biggest congregations in eastern India.
• It is the most important festival of the Kamakhya temple and is celebrated in the month of June every year.

Q3. Answer: (b) Param Vir Chakra

The correct answer is Param Vir Chakra.

Key Points

• India's highest peacetime military decoration awarded for bravery, brave action or self-sacrifice away from the battlefield is the Param Vir Chakra.
• Instituted on 26 Jan 1950, to recognize the most conspicuous bravery or some daring or pre-eminent act of valour or self-sacrifice in the presence of the enemy.
• Medal:
• Circular in shape, made of bronze, one and three eighth inches in diameter and on the obverse, four replicas of "Indra's Vajra" with the State Emblem (including the motto), embossed in the centre.
• On its reverse, it shall have embossed Param Vir Chakra both in Hindi and English with two lotus flowers between Hindi and

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English. The fitting will be swivel mounting.

• Ribbon: Plain purple coloured ribbon.

• Bar:

• If any recipient of the Chakra again performs such an act of bravery, as makes him or her eligible to receive the Chakra, such further act of bravery shall be recorded by a Bar to be attached to the riband by which the Chakra is suspended.

• For every Bar awarded, a replica of the "Indra's Vajra" in miniature shall be added to the riband when worn alone.

Q4. Answer: (c) Bangalore

The correct answer is Bangalore.

• The Indian Institute of Science (IISc) is a public, deemed, research university for higher education and research in science, engineering, design, and management.

• IISc is located in Bangalore, in the Indian state of Karnataka.

• The institute was established in 1909 with active support from Jamsedji Tata and thus is also locally known as the "Tata Institute".

• It was granted the deemed to be university status in 1958 and the Institute of Eminence status in 2018.

Q5. Answer: (c) Dubai

The Correct Answer is "Dubai".

Important Points

• ICC headquarters is located in Dubai, United Arab Emirates.

• The ICC is the global governing body for cricket.

• Representing 104 members, the ICC governs and administrates the game and works with our members to grow the sport.

• The ICC is also responsible for the staging of all ICC Events.

• The ICC presides over the ICC Code of Conduct, playing conditions, the Decision Review System, and other ICC regulations.

• Through the Anti-Corruption Unit, it coordinates action against corruption and match-fixing.

• It was established in 1909 by the representatives of England, Australia, and South Africa as Imperial Cricket Conference.

• The current ICC chairman is Greg Barclay.

Q6. Answer: (d) Valmiki

The correct answer is Valmiki.

Key Points

• The Ramayana is about Rama, a prince of Kosala, who was sent into exile.

• His wife Sita was abducted by the king of Lanka, named Ravana, and Rama had to fight a battle to get her back.

• He won and returned to Ayodhya, the capital of Kosala, after his victory.

• Like the Mahabharata, this was an old story that was now written down.

• Valmiki is recognized as the author of the Sanskrit Ramayana.

• Ramayana consists of 24,000 shlokas and seven cantos (kandas).

• The epic Ramayana, dated variously from the 5th century BCE to the first century BCE.

• Valmiki was a Sanskrit poet and celebrated as Adi Kavi.

• There are several versions (many of which are performed) of the Mahabharata and the Ramayana, popular amongst people in different parts of the subcontinent.

Q7. Answer: (c) Shimla

The correct answer is Shimla.

• Shimla is the capital of Himachal Pradesh.

Key Points

• Himachal Pradesh was formed on 25th January 1971.

• Himachal Pradesh became the 18th state of the Indian Union.

• The first chief minister of Himachal Pradesh was Dr. Yashwant Singh Parmar.

• Shimla is the Summer capital of Himachal Pradesh.

• It is the largest city of Himachal Pradesh.

• Shimla city gets its name from Shyamala Mata, a fearless incarnation of the goddess Kali.

• The Kalka–Shimla Railway line built by the British, a UNESCO World Heritage Site, is also a major tourist attraction.

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Q8. Answer: (b) Ahmad Shah Abdali

The Correct Answer is Ahmad Shah Abdali

Key Points

About The Battle of Panipat:

• The Third Battle of Panipat was fought between The Maratha Empire and The Afghan Army took place on 14 January 1761 at Panipat.

• The Battle was fought between Sadashiv Rao Bhau(The Maratha Empire) and Ahmad Shah Durrani (The Afghan Army).

• In this Battle, Three Indian allies were supported by The Afgan Army, The Rohilla of (Najib-Ud-Daulah), Afghans of (Doab Region), and Shuja-Ud-Daula (The Nawab of Awadh).

• The main Maratha Army was deployed on the Deccan side with the Peshwa(The Maratha Prime Minister).

• It is considered one of the largest and most fiercely fought battles in the 18th century.

• This Battle has reported the largest number of fatalities in a single-day formation battle between Two Armies.

• The extent of the losses in this battle on both sides is heavily puzzled by many historians, but it is believed that the number of losses is between (60,000–70,000) were killed in the battle.

• It was considered as not less than 100,000 Marathas (soldiers and non-combatants) vanished during and after the battle.

• At last, the battle was won by the Afghan Army which was led by Ahmad Shah Durrani. This war was the result of declining of The Maratha Empire.

Notes:

• The last ruler of The Maratha Empire was Peshwa Bajirao 2.

Q9. Answer: (c) Bal Gangadhar Tilak

The correct answer is Bal Gangadhar Tilak.

Key Points

• Bal Gangadhar Tilak raised the slogan, “Swaraj is my birthright and I shall have it!”.

• The word Swarajya was first coined by Bal Gangadhar Tilak.

Additional Information

• Bal Gangadhar Tilak was also known as Lokmanya Tilak.

• He established a prominent organization Deccan Education Society to promote modern learning.

• He also established Fergusson College at Pune.

• He along with Annie Besant played an important role during Home Rule Movement (1916-18).

• Kesari and Maratha were the two newspapers started by Bal Gangadhar Tilak.

Q10. Answer: (b) Veda Vyasa

The correct answer is Ved Vyas.

Bhagavad Gita:

• The Bhagavad Gita is one of Hinduism's holy books.

• It was written as part of the Mahabharata around five thousand years ago.

• Known as "The Song of God", the Bhagavad Gita, is a collection of 700 verses from the great epic Mahabharata.

• It has teachings that are said to have been given by the Supreme God, Lord Sri Krishna.

• Krishna is talking to Arjuna, an Archer, in the book (Bhagvat Gita), before the Kurukshetra war begins.

• it is regarded as the manual on which a human being should follow his life as per the Sanatana Dharma.

Important Points

• The Bhagavad Gita was composed by an ancient sage named Vyasa.

• In most Hindu traditions, Krishna Dvaipayana Vyasa, also referred to as Vyasa or Veda-Vyasa (the one who classified the Vedas into four parts), is a central and revered figure.

• Traditionally, he is considered the author of the Mahabharata, although it is also commonly believed that only the centre of the epic, the Bharata, was written.

• He is also known as the scribe of Puranas, ancient Hindu texts eulogising various deities through divine tales, mainly the divine Trimurti God in Hinduism.

Photo of Ved Vyas:

Q11. Answer: (d) Nepal

The correct answer is Nepal.

Key Points

• The following countries using the rupee as a currency other than India:-
• Pakistan
• Sri Lanka
• Mauritius
• Nepal
• Seychelles

Additional Information

Country	Currency
Indonesia	Indonesian rupiah
Myanmar	Myanmar kyat
Bhutan	Bhutanese ngultrum

Q12. Answer: (b) Mohammad Iqbal

The correct answer is Mohammad Iqbal.

• The ‘Sare Jahan Se Achha Hindustan Hamara’ song was written by Mohammad Iqbal.
• This song is one of the most enduring patriotic poems of the Urdu language.
• The song is also referred to as ‘Tarana -e -Hind’.
• The poem was published in the weekly journal Ittihad on August 16, 1904.
• Then the poet Iqbal recited it the upcoming year at Government College in Lahore.
• Then the song became an anthem for the opposition of the British rule in India.
• The first Indian astronaut, Rakesh Sharma, said the first line of this song in 1984 to describe the view of how India appeared from outer space to the prime minister Indira Gandhi at that time.

Additional Information

• Rabindranath Tagore was a Bengali poet, writer, and painter.
• He was honoured with the Nobel Prize in Literature in 1913.
• "Vande Mataram" was a poem written by Bengali writer Bakim Chandra Chatterjee between 1872 and 1875.

Q13. Answer: (a) Babur

The correct answer is Babar.

The Mughal Empire was founded by Babur in the year 1526 AD.

• He reigned over India from 1526 AD to 1530 AD.
• He was a Central Asian ruler who was of Turkic-Mongol origin.
• He was a descendent of Timur on his father's side, and Genghis Khan on his mother's side.
• The Mughals, Dynasty of Turkic-Mongol origin ruled most of northern India from the early 16th to the mid-18th century.

Additional Information

• Akbar (1556-1605):
• Emperor Akbar founded the city in by the name of “ILLAHABAS” which later became ALLAHABAD.
• He introduced the new religion as Din Ilahi.
• He introduced the Mansabdari system.
• Akbar defeated Hemu in the second battle of Panipat.
• He built Ibadat Khana in Fatehpur Sikri.
• He followed the policy of Sulh-i-kul.
• Humayun
• Babur’s son, Humayun, built Dinpanah in Delhi as his second capital.
• Humayun fought two battles with Sher Shah Suri and was ultimately defeated:
• Battle of Chausa.
• Battle of Kannauj.
• Humayun died in AD 1556 falling from the stairs of his library building.
• Aurangzeb
• Assumed the title Alamgir (or World Conqueror).
• To contain Marathas, he attacked Golconda and Bijapur.

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• Though Aurangzeb defeated them it removed the only boundary between Marathas and Mughals.
• According to JN Sarkar, Deccan ulcer ruined Aurangzeb.
• Created separate departments to enforce moral codes called 'Muhtasib'.
• Prohibited drinking, cultivation and use of Bhang and drugs.
• Forbid music in Mughal court, dismissed royal astrologers and astronomers.

Q14. Answer: (c) Konark

The correct answer is Konark.

• The famous Sun Temple is situated at Konark, near Puri in Odisha.

Key Points

• Konark Sun Temple was built in 1250 AD.
• This temple is also called "Black Pagoda".
• Temple was declared World Heritage Site by UNESCO in 1984.
• Famous Chandrabhaga Mela took place here every year in the month of February.
• This temple is attributed to King Narsimhadeva - I of the Eastern Ganga Dynasty.
• Temple is a classic illustration of Great Kalinga Architecture.

Additional Information

Famous Sun temples	Locations
Konark Sun temple	Odisha
Modhera Sun temple	Gujarat
Surya Pahar Sun Temple	Assam
Suryanar Temple	Tamil Nadu
Martand Sun temple	Kashmir
Suryanarayana Swamy temple	Arasavalli (Andhra Pradesh)

Q15. Answer: (b) President

The correct answer is The President.

Appointment of Governor

• The Governor in India is neither directly elected by the people nor indirectly elected by an electoral college as in case of the President of India.
• He is appointed by the President by warrant under President's hand and seal.
• Thus Governor is considered a nominee of the Central government.
• But, in 1979 Supreme Court held that the office of Governor of a state is not an employment under the Central government but an independent constitutional office, hence is not under the control of or subordinate to the Central government.

Additional Information

• Governor is the Executive head of the state.
• The governor acts as the nominal head whereas the real power lies with the Chief Minister of the states and his/her councils of ministers.
• The governor is appointed by the president for a term of five years.
• Article 157 and Article 158 of the Constitution of India specify eligibility requirements for the post of governor, which are -
• A governor must:
• be a citizen of India.
• be at least 35 years of age.
• not be a member of either house of the parliament or the house of the state legislature.
• not hold any office of profit.

Q16. Answer: (a) Methane

The correct answer is Methane.

Key Points

• Biogas:
• The byproducts of anaerobic digestion of organic materials are commonly referred to as ‘biogas’ because of the biological nature

of gas production.

• Biogas is produced by microbial activities and can be used only at the place where it is produced.

• The main constituents of biogas are:

• About 55-65% Methane (CH_4)

• 30-45% Carbon dioxide (CO_2)

• Traces of hydrogen sulfide (H_2S)

Additional Information

• The major resources which can be used for biogas production are:

• Animal Manure

• Poultry Waste

• Pig Waste

• Night soil

• Municipal Organic Waste

• Agricultural Residues

• Forests Residues (Leafs etc)

• Aquatic Plants (like water hyacinth)

• Organic wastewater from Industries (Food processing, milk processing, etc.)

• Hotels and Restaurants

• Sanitary Landfills

Q17. Answer: (a) Copper and zinc

The correct answer is Copper and zinc.

Key Points

• Brass is an alloy of copper and zinc.

• In proportions, it can be varied to achieve varying mechanical and electrical properties.

• An alloy is an intimately mixed solid mixture of two or more different elements one of which is essentially a metal.

• An alloy, in which one of the components is mercury, is known as Amalgam.

Additional Information

Other important Alloys:

German Silver	Copper + Zinc + Nickel
Gun Metal	Copper + Tin + Zinc + Lead
Munz metal	Copper + Zinc
Solder	Lead + Tin

Q18. Answer: (c) 0 degrees centigrade

The correct answer is 0 degrees centigrade.

Key Points

Scale	Freezing point	Boiling point
Centigrade	0° C	100° C
Reaumur	0° R	80° R
Fahrenheit	32° F	212° F
Kelvin	273° K	373° K

Temperature

• It is the degree of hotness or coldness of a body. The temperature is measured by thermometers.

Temperature Scales

• Temperatures are calibrated between two fixed reference points namely the freezing point of water, and the boiling point of water.

• These two fixed points on different temperature scales are

Boiling point

• Any substance that starts turning into a gas shows the temperature at which it boils. This is known as the boiling point. The boiling point of water is 100°C.

Melting point

• The temperature at which any solid melts into liquid or liquid freezing into solid is called the melting point of substance. The melting point of ice is 0°C.

Q19. Answer: (c) C

The correct answer is C.

Key Points

• The vitamin that is found in oranges and other citrus food such as lemon is Vitamin C.

• Orange contains 53.2 mg of vitamin C per 100 grams.

• Lemons contain 77 mg of vitamin C per 100 grams.

• Vitamin C is acidic in nature.

• The deficiency of Vitamin C leads to Scurvy disease.

• The chemical name of Vitamin C is Ascorbic acid.

Additional Information

Some of the vitamins and their source are listed below:

Vitamin	Chemical Name	Disease	Source
Vitamin A	Retinol	Night Blindness	Fish and dairy products.
Vitamin B1	Thiamine	Beriberi	Brown rice, Vegetables.
Vitamin B2	Riboflavin	Ariboflavinosis	Bananas, dairy products.
Vitamin C	Ascorbic acid	Scurvy	Orange, grapes, lemon.
Vitamin D	Cholecalciferol	Rickets and osteomalacia	Sunlight, egg.
Vitamin K	Phylloquinone	Bleeding diathesis	Leafy green vegetables.

Q20. Answer: (d) Atomic Mass

The correct answer is the Atomic Mass.

Key Points

• The Periodic table of Mendeleev is based on atomic mass.

• In 1869, Dimitri Mendeleev included 63 known elements arranged according to increasing atomic mass.

Additional Information

• The Modern Periodic table is based on Atomic numbers.

• The atomic number is the number of protons found in the nucleus of every atom of that element.

• The periodic table is managed by the International Union of Pure and Applied Chemistry, or IUPAC.

• There are 118 elements in a periodic table. There are seven periods and eighteen groups in the modern periodic table.

• On moving from left to right in a period, the size of atoms(atomic size) decreases.

• On moving from left to right in a period, the metallic character of elements decreases, whereas the non-metallic character increases.

• While going down in a group of the periodic table, the size of atoms increases (or atomic size increases).

• While going down in a group of the periodic table, the metallic character of elements increases.

• Electronegativity and reactivity of non-metals increase along the period and decrease down the group.

Image of Periodic Table:

• There are 7 rows and 18 columns in the modern periodic table.

• Rows are known as periods and columns are known as groups.

Q21. Answer: (b) Graphite

The correct answer is Graphite.

Key Points

• Natural graphite is used in many ways, from making pencils lead, to forming batteries.

• The layered structure formed due to rings of carbon atoms present in Graphite makes it slippery and for that reason, it is used in Pencil leads.

• Graphite was named by Abraham Gottlob Werner in 1789.

• It is an allotrope of carbon.

• Graphite is a good conductor of electricity.

Additional Information

• Mica- Mica is used in the electrical industry to make electrical insulators, thermal insulators, dielectrics in capacitors, heaters, decorative panels in lamps and windows, insulation in electric motors and generator armatures, etc.

• Carbon- Carbon is used in some way in almost every industry in the world. It is used for fuel in the form of coal, methane gas, and crude oil (which is used to make gasoline). It is used to make all sorts of materials including plastics and alloys such as steel (a combination of carbon and iron).

• Coal- It is a form of carbon that is used to provide thermal energy in thermal power plants, household cooking in village areas, etc.

Q22. Answer: (b) Kidney

The correct answer is Kidney.

• The kidney is responsible for the filtration of blood.

• The kidneys are two bean-shaped organs, each about the size of a fist.

• Kidneys are located just below the rib cage, one on each side of your spine.

• Healthy kidneys filter about a half cup of blood every minute.

• The kidney also removes waste material and extra fluid from the body in the form of Urine.

• kidneys also remove acid produced by the body's cells and maintain a healthy balance of water, salts, and minerals—such as sodium, calcium, phosphorus, and potassium—in the blood.

• The kidney also helps in developing hormones that control blood pressure, make red blood cells, and keep bones stronger.

Additional Information

• The heart is responsible to provide oxygenated blood to every part of the body.

• The gallbladder stores bile produced by the liver.

• Bile juice is slightly alkaline in nature which is used to digest food.

Q23. Answer: (b) Telescope

The correct answer is Telescope.

Key Points

• A telescope is an optical instrument designed to make distant objects like stars, planets, appear nearer, containing an arrangement of lenses, or of curved mirrors and lenses, by which rays of light are collected and focused and the resulting image magnified.

Additional Information

• Bioscope: Bioscope is a portable (often as part of a wheeled cart) viewing device. By looking through the viewing holes, several people can view sequences of images at once. Many came with a gramophone attached, and later record or cassette players, providing the pictures with musical accompaniment.

• Periscope: A periscope is an optical instrument that uses a system of prisms, lenses or mirrors to reflect images through a tube.

• Microscope: A microscope is an instrument that can be used to observe small objects, even cells. The image of an object is magnified through at least one lens in the microscope.

Q24. Answer: (b) Chromium

The correct answer is Chromium.

Key Points

• Chromium is the most important alloying element and it gives stainless steel its basic corrosion resistance.

• All stainless steels have a Cr content of at least 10.5% and the higher chromium content increases the corrosion resistance.

• Chromium also increases the resistance to oxidation at high temperatures and promotes a ferritic microstructure.

• The metal also improves hardenability, strength, response to heat treatment, and wear resistance.

• Other alloying elements are added to enhance their structure and properties such as formability, strength, and cryogenic toughness. These include metals such as:

1. Nickel
2. Molybdenum
3. Titanium
4. Copper

• Non-metal additions are also made, the main ones being:

1. Carbon
2. Nitrogen

Q25. Answer: (b) Iron

The correct answer is Iron.

Key Points

• The red colour of blood is due to the presence of haemoglobin in the blood.

• Haemoglobin is a protein that is made up of subunit ‘hemes’ which is red in colour and haemoglobin constitutes the maximum part of human blood.

• Haemoglobin is a fused protein in which a protein called globin and an iron ion are found.

• Haemoglobin present in RBC carries or transports oxygen from the lungs to the tissues.

• It also carries forward carbon dioxide from the tissues to the lungs.

• The transportation of CO2 from the tissues to the lungs takes place in a very small amount nearly (10-20%) by the protein globin of haemoglobin.

• The transportation of CO2 in the form of bicarbonate takes place which is formed by the reaction of the carbonic anhydrase enzyme and RBC.

Additional Information

Notes:

• RBC - Red Blood corpuscle

• WBC - White Blood corpuscle

• RBC is born in the Bone Marrow and destroyed in the spleen.

• RBC and WBC are present in our body in the ratio of 600:1.

Image of Circulation of Blood in the Human Body:

Q26. Answer: (b) D

The correct answer is D.

• Vitamin D:

• It promotes the absorption of calcium in the body.

• Calcium provides strength to bones.

• Vitamin D deficiency causes Rickets(Bone abnormalities).

• Vitamin C:

• Contributes to collagen production, wound healing, and bone formation.

• It also strengthens blood vessels, supports the immune system.

• It helps the body to absorb iron and act as an antioxidant.

• Vitamin A:

• Vitamin A is also known as retinol.

• Vitamins A deficiency causes night blindness.

• Vitamin B:

• B vitamins are water-soluble vitamins.

• Major eight B vitamins are collectively called B complex vitamins.

• They are thiamine (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), biotin (B7), folate (B9) and cobalamin (B12).

Q27. Answer: (c) N2O

The correct answer is N2O.

• Nitrous oxide is a colourless and odourless substance that's also known as “laughing gas.”

• It is an oxide of nitrogen with the formula N2O.

• When inhaled, the gas slows down the body's reaction time. This results in a calm, euphoric feeling. Nitrous oxide can be used to treat pain.

• It also functions as a mild sedative. Because of this, it’s sometimes used before dental procedures to promote relaxation and reduce anxiety.

Key Points

• Side Effects:

• Some people also experience hallucinations or sound distortion after inhaling nitrous oxide.

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• Toxic exposure may lead to a Vitamin B-12 deficiency or anaemia.

Q28. Answer: (b) Oxygen

The correct answer is Oxygen.

• Oxygen is not a noble gas

Key Points

• Noble gases are those gases that do not react with any other element and are stable to exist on their own.

• Chlorine is a yellow-green gas at room temperature.

• It is an extremely reactive element and a strongly oxidising agent

• There are a total of 6 noble gases found on the extreme right column of the periodic table.

These noble gases are:

1. Radon,
2. Argon,
3. Xenon,
4. Krypton,
5. Helium,
6. Neon.

Q29. Answer: (a) Tuberculosis

The correct answer is Tuberculosis.

Key Points

• BCG stands for Bacille Calmette-Guerin.

• It is a vaccine for tuberculosis (TB) disease.

• Tuberculosis (TB) disease is caused by Mycobacterium tuberculosis.

• Tuberculosis (TB) usually attacks the lungs.

• BCG vaccine was first considered by the WHO Expert Committee on Biological Standardization in its thirteenth report.

• BCG vaccine is one of the most widely used of all current vaccines.

• BCG vaccine has a documented protective effect against meningitis and disseminated TB in children.

Additional Information

Disease	Vaccine
Chickenpox	Varicella vaccine.
Measles, Mumps, and Rubella	MMR Vaccine.
Polio	Inactivated polio vaccine and the Oral polio vaccine.
Hepatitis B	Hepatitis B vaccine.
Tuberculosis	BCG vaccine.

Q30. Answer: (d) Alpha ray

The correct answer is Alpha ray.

Key Points

• The alpha particle is the heaviest.

• It is produced when the heaviest elements decay.

• Alpha and beta rays are not waves.

• They are high-energy particles that are expelled from unstable nuclei.

Important Points

• Alpha particles carry a positive charge, beta particles carry a negative charge, and gamma rays are neutral.

• An alpha particle is made up of two protons and two neutrons bound together.

• Beta particles are high energy electrons.

• Gamma rays are waves of electromagnetic energy or photons.

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Q31. Answer: (d) 480

Given :

The ratio of males and females in a village is 5 : 3, and there are 800 males in the village.

Calculations :

Let the number of females be F

According to the question

800/F = 5/3

=> F = 480

Therefore Option 4 is the correct choice.

Q32. Answer: (d) 616 cm2

Given :

The radius of the sphere is 7 cm.

Formula used :

The surface area of sphere = $4\pi r^2$

Calculations :

Surface area = $4\pi r^2$

=> $4 \times (22/7) \times 7^2$

=> 616

Therefore Option 4 is the correct answer.

Q33. Answer: (d) 19, 6

Given :

The sum of any two numbers is 25, and their difference is 13.

Calculations :

Let the number be x and y.

According to the question

x + y = 25 .....(1)

x - y = 13 .....(2)

Solving equations (1) and (2)

we get x = 19 and y = 6

Therefore Option 4 is the correct answer.

Q34. Answer: (d) 240

Concept used :

LCM is the lowest common number that is common between different numbers.

Calculations :

$8 = 2^3$

$10 = 2 \times 5$

$15 = 3 \times 5$

16 = 2^4

$20 = 2^2 \times 5$

Common number = 2^4 × 3 × 5

=> 240

Therefore Option 4 is the correct answer.

Q35. Answer: (b) 6 days

Given :

Ram can do a piece of work in 10 days and Mohan can do it in 15v days.

Concept used :

Per working capacity × time duration = Total work

Calculations :

Total work = 30 units (LCM of 10 and 15)

Ram's per day work = 30/10 = 3 units
Mohan's per day work = 30/15 = 2 units
Both total work per day = 2 + 3 = 5 units
Time to complete total work = 30/5
=> 6 days
Therefore Option 2 is the correct answer.

Q36. Answer: (a) 49.6%

Concept used :
If a% and b% are successive discounts then,
Total discount = a + b - (ab/100)
Calculations :
Total discounts at 10% and 20% = 10 + 20 - (10 × 20)/100
=> 28%
Now, this 28% will be taken as a single discount
Total discount at 28% and 30% = 28 + 30 - (28 × 30)/100
=> 58 - 8.4
=> 49.6%
Therefore Option 1 is the correct answer.

Q37. Answer: (b) 21 years

Given :
The average age of 12 boys is 10 years, out of which the average age of 11 boys is 9 years.
Concept used :
Average = sum of all observations/Number of observations
Calculations :
10 = sum of ages of all boys/12
Sum of ages = 120 years
Average age of 11 boys is 9 so,
Total sum of ages of 11 boys = 11 × 9 = 99 years
Now,
Age of 12th person = 120 - 99
=> 21 years
Therefore Option 2 is the correct answer.

Q38. Answer: (c) 100 m

Given :
Length and breadth of a rectangular field are 30 and 20 m respectively.
Formula used :
Perimeter of rectangle = 2(Length + breadth)
Calculations :
Perimeter = 2(30 + 20)
=> 2 × 50
=> 100 m
Therefore Option 3 is the correct answer.

Q39. Answer: (c) 13

Calculations :
2197 = 13 × 13 × 13 = 13^3
So
2197^(1/3) = (13^3)^(1/3)
=> 13
Therefore Option 3 is the correct answer.

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We can solve it by options also
For a number having unit digit 7 then its cube root's unit digit must be 3
So, Option 3 is fulfilling the condition.
Therefore 13 will be the cubic root of 2197
Therefore Option 3 is the correct answer

Q40. Answer: (d) Rs. 11064

Formula used :
Simple interest = (Principle × Rate of interest × time)/100
Calculations :
Interest = (18440 × 15 × 4)/100 (Principle = 18440, rate of interest = 15% and time = 4 years)
Interest = 11064
Therefore Option 4 is the correct answer.
Total interest of 4 years = 4 × 15% = 60%
Interest = 60% of 18440
=> 11064 rupees
Therefore Option 4 is the correct answer.

Q41. Answer: (c) 3

Concept used :
HCF is the highest common divisor that can divide all numbers given.
Calculations :
$12 = 2^2 \times 3$
$15 = 3 \times 5$
$18 = 2 \times 3^2$
$21 = 3 \times 7$
HCF = 3 (3 is the highest common divisor as 3 is only common among all numbers)
Therefore Option 3 is the correct answer.

Q42. Answer: (b) 2256

Given :
28 dozen bananas are required in a canteen for 1 week
Calculations :
Bananas required in 1 week = 28 dozens
Bananas required in 1 day = 28/7 = 4 dozens
Bananas required in 47 days = 47 × 4 = 188 dozens
=> 188 × 12 (1 dozen = 12 items)
=> 2256
Therefore Option 2 is the correct answer.

Q43. Answer: (a) 47

Calculations :
=> 41 - 39 = 2
=> 43 - 41 = 2
=> 45 - 43 = 2
We can see there is a increment of 2 every time
So,
Next number = 45 + 2 = 47
Therefore Option 1 is the correct answer.

Q44. Answer: (b) 99994

Calculations :
Largest 5 digit number = 99999
Now,

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99999 = 17 × 5882 + 5

99994 = 17 × 5882

It shows that 99994 is divisible by 17 and the next number divisible by 17 will be 6 digit number

So, 99994 is the highest 5 digit number divisible by 17.

Therefore Option 2 is the correct answer.

Q45. Answer: (c) 36√3 cm2

Given :

Side of equilateral triangle is 12 cm.

Formula used :

Area of an equilateral triangle = (√3/4) side²

Calculations :

Area of triangle = (√3/4) (12)²

=> 36√3

Therefore Option 3 is the correct answer.

Q46. Answer: (b) 7 km

According to the given information :

Distance between Starting and end point = AB

AB = AO + OB

AO = 5 km ; OB = CD = 2 km

AB = 5 + 2 = 7 km.

Hence, the correct answer is "7 km".

Q47. Answer: (b) 4

The pattern follows here is :

Hence, the next term is "4".

Q48. Answer: (a) Brother

Family Chart :

Family Tree :

Hence, the boy is related to the girl as "Brother".

Q49. Answer: (a) LGQ

The pattern follows here is :

Hence, the next term will be "LGQ".

Q50. Answer: (c) UKRKS

The logic follows here is :

Similarly,

Hence, the correct answer is "UKRKS".

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