Army Soldier GD RO (HQ) Lucknow 1 Nov 2020 Official Paper. (Previous Year Paper)

Army GD Agniveer • 2020 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. Who was the founder of 'Maurya Dynasty'?

(a) Ashoka
(b) Bindusara
(c) Chandra Gupta Maurya
(d) Harish Chandra

Q2. In which of the following office is 'Indian Military Academy' located?

(a) Dehradun
(b) Pune
(c) Delhi
(d) Nagpur

Q3. 'Thar Desert' is located in which country?

(a) Nepal
(b) India
(c) Egypt
(d) Mongolia

Q4. 'India Gate' is located in which city?

(a) Jaipur
(b) Mumbai
(c) Delhi
(d) Agra

Q5. Which of the following mountain peak is the second highest mountain peak in the world?

(a) Kanchanjunga
(b) Lhotse
(c) Nanda Devi
(d) K2

Q6. 'Sardar Sarover Project' is located on which river?

(a) Godhavari
(b) Narmada
(c) Kosi
(d) Ganges

Q7. The largest island in the world is _____.

(a) Java
(b) Greenland
(c) Cuba

(d) Madagascar

Q8. Where is the largest Petroleum Refinery of India situated?

(a) Visakhapatnam
(b) Mumbai
(c) Jamnagar
(d) Digboi

Q9. Who is the developer of 'Social Website - Facebook' ?

(a) Sunder Pichai
(b) Graham Bell
(c) Mark Zuckerberg
(d) Ratan Tata

Q10. How are the members of 'Lok Sabha' elected?

(a) Nominated
(b) Indirectly elected
(c) Partly elected and partly nominated
(d) Directly elected by People

Q11. _____ is the state capital of Maharashtra.

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

Q12. Who among the following was the father of "King Ashoka" ?

(a) Virbhadra
(b) Chandra Bhan
(c) Chandra Gupt
(d) Bindusara

Q13. Who among the following is also known as the 'Iron man of India' ?

(a) Lal Bahadur Shastri
(b) Sardar Vallabhai Patel
(c) Mahatma Gandhi
(d) Rabindranath Tagore

Q14. Delhi is located on the banks of which river?

(a) Yamuna
(b) Gandak
(c) Sarayu
(d) Gomati

Q15. Which country is known as the 'Land of Thousand Lakes' ?

(a) Finland
(b) Ireland
(c) Iceland
(d) New Zealand

GENERAL SCIENCE

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Q16. Natural source of energy is _____.

(a) Battery
(b) Electricity
(c) Friction
(d) Sun

Q17. When a moving train stops suddenly, a man tends to fall _____.

(a) Forward
(b) Upward
(c) Backward
(d) Downwards

Q18. Rabies is caused by _____.

(a) Dog bite
(b) Unhygienic food
(c) Contaminated water
(d) Pollution

Q19. Which of the following is 'Universal Recipient' of Blood?

(a) AB+
(b) B+
(c) O+
(d) A+

Q20. Which mirror is used in headlights of car?

(a) Black
(b) Convex
(c) Plane
(d) Concave

Q21. Largest gland in the human body is ___.

(a) Heart
(b) Kidney
(c) Liver
(d) Lung

Q22. The compounds of carbon and hydrogen are called

(a) Hydrocarbons
(b) Organic Compounds
(c) Sugar
(d) Carbohydrates

Q23. The chemical symbol of sodium is _____.

(a) Sd
(b) So
(c) Na
(d) Nu

Q24. Which among the following is the reason for Heart-attack?

(a) Blood Protein
(b) Cholesterol
(c) Blood Urea
(d) Blood Sugar

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Q25. Sulphuric Acid is _____.

(a) H2SO4
(b) H2SO2
(c) HNO3
(d) HCl

Q26. Which substance is used in Thermometer?

(a) Oil
(b) Water
(c) Iron
(d) Mercury

Q27. Bauxite is an ore of which metal?

(a) Copper
(b) Aluminum
(c) Tin
(d) Gold

Q28. In our body Ligaments connect _____.

(a) Muscle to Skin
(b) Muscle to Bone
(c) Muscle to Muscle
(d) Bone to Bone

Q29. Seismograph is used to measure _____.

(a) Earth Quake
(b) Heart Beat
(c) Flow of Current
(d) Blood Pressure

Q30. The SI unit of power is _____.

(a) Ampere
(b) Coulomb
(c) Watt
(d) Joule

MATHEMATICS

Q31. If Simple Interest of two years of an amount is Rs. 40 and in two years the amount becomes Rs. 1040. Find out the rate of interest?

(a) 0.05%
(b) 2%
(c) 20%
(d) 0.1%

Q32. A vendor loses the selling price of 4 oranges on selling 36 oranges. Find out the loss percentage?

(a) 9.9
(b) 10
(c) 12.5
(d) 11.11

Q33. Find the maximum length of rod that can be placed in a room 10 meters by 5 meters by 10 meters.

(a) 16.5 meters
(b) 17 meters
(c) 18 meters

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(d) 15 meters

Q34. Find out the value of [(64)^(2/3)]^(1/2)?

(a) 08
(b) 32
(c) 16
(d) 04

Q35. If an odd number is divisible by 5, then which of the following will be one of its digit?

(a) 4
(b) 5
(c) 2
(d) 3

Q36. Find the perimeter of a rectangle whose sides are 5 meter and 4 meter?

(a) 18 meter
(b) 12 meter
(c) 20 meter
(d) 16 meter

Q37. When a dice is thrown, what will be the total number of possible outcomes?

(a) 9
(b) 6
(c) 36
(d) 2

Q38. Change 0.25 into a fraction.

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

Q39. A man loses Rs. 40 by selling a watch for Rs. 660. Find his loss %?

(a) 5%
(b) 5.71%
(c) 9.45%
(d) 3.45%

Q40. Find the Simple Interest for 4 months on a principal amount of Rs. 600 at 5% rate of interest per annum ?

(a) Rs. 12.5
(b) Rs. 10
(c) Rs. 11
(d) Rs. 15

Q41. The L.C.M. of 12, 24 and 30 is _____.

(a) 30
(b) 2
(c) 60
(d) 120

Q42. Find the largest number among the following that divides 245 and 1029, leaving the remainder 5 in each case?

(a) 17
(b) 18
(c) 16
(d) 15

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Q43. Solve :- $(102)^2$

(a) 10400
(b) 10404
(c) 100404
(d) 10406

Q44. Ram had Rs. 45,000. After giving 2/5 of his money to his eldest son and 1/3 of the balance money to his youngest son, how much money remained with Ram?

(a) Rs. 36,000
(b) Rs. 10,000
(c) Rs. 18,000
(d) Rs. 12,000

Q45. By which smallest number 8788 be divided so that the quotient is a perfect cube?

(a) 3
(b) 2
(c) 5
(d) 4

LOGICAL REASONING

Q46. BUILT is written as 5#32@ and TRIBE is written as @935!, then how will RULE be written?

(a) !#2@
(b) @#2!
(c) 9#2!
(d) 92#5

Q47. From the given options complete the series :-

6, 13, 25, 51, 101, (_____)

(a) 205
(b) 201
(c) 203
(d) 202

Q48. In a row of students, Ganesh is 7^(th) from one extreme end and 11^(th) from the other. Find the total number of students in the row?

(a) 19
(b) 17
(c) 18
(d) 20

Q49. In a certain code language 'CAT' is written as 'DDY'. How will 'BIG' be written in that code?

(a) CML
(b) CLL
(c) CNL
(d) CJL

Q50. Pointing towards a man in the photograph, Raju said, "He is my daughter's father's son." How is Raju related to that man?

(a) Nephew
(b) Son-in-law
(c) Father
(d) Son

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Chandra Gupta Maurya

The correct answer is Chandra Gupta Maurya.

Key Points

• Chandra Gupta Maurya:

• Chandragupta Maurya founded the Maurya Empire in 322 BCE when he conquered the kingdom of Magadha and the northwestern Macedonian satrapies.

• Maurya Empire was founded in 322 BCE by Chandragupta Maurya, who had overthrown the Nanda Dynasty and rapidly expanded his power westward across central and western India in order to take advantage of the disruptions of local powers in the wake of the withdrawal by Alexander the Great's armies.

• According to legend, the teacher Chanakya convinced his disciple, Chandragupta Maurya, to conquer the kingdom of Magadha (the Nanda Empire) when he was insulted by its king Dhana Nanda.

• Chandragupta Maurya expanded the Maurya Empire north and west as he conquered the Macedonian Satrapies and won the Seleucid-Mauryan war.

Additional Information

• According to several legends, Chanakya travelled to Magadha, a kingdom that was large and militarily powerful and feared by its neighbours but was insulted by its king Dhana Nanda, of the Nanda Dynasty.

• Chanakya swore revenge and vowed to destroy the Nanda Empire.

• Maurya devised a strategy to invade Pataliputra, the capital of the Nanda Empire.

• A battle was announced and the Magadhan army was drawn from the city to a distant battlefield in order to engage Maurya's forces.

Q2. Answer: (a) Dehradun

The correct answer is Dehradun.

Key Points

• Indian Military Academy:

• It was started on October 01, 1932 A.D.

• It is the officer training Academy of the Indian Army.

• The academy was inaugurated on 10 December 1932 by Field Marshal Philip Chetwode.

• It is located in Dehradun, Uttarakhand.

Additional Information

• The National Defence Academy is located in Khadakwasla, Pune.

• The Indian Naval academy is located in Ezhimala, Kerala.

• The Air Force Academy is located in Dindigul, Hyderabad.

• The Officers Training Academy is located in Chennai, Tamil Nadu.

Q3. Answer: (b) India

The correct answer is India.

Key Points

• Thar Desert:

• The Indian desert is also known as the Thar Desert or the Great Indian Desert.

• It is located partly in Rajasthan state, northwestern India, and partly in Punjab and Sindh (Sind) provinces, eastern Pakistan.

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• The Thar Desert also called the Great Indian Desert covers more than 77,000 square miles (200,000 sq. km), forming a natural border between India and Pakistan.

• It is a large arid region with a landscape dominated by sand dunes varying in size from 52ft (16m) in the North to 498ft (152m) in the south.

• The Climate in the Thar desert is like any other desert, Hot in the day and cool at night.

• The summer days are really hot and the nights are cool but the winter days are warm and the nights are cold. In the summer there is little to no rain.

Additional Information

• The largest desert on earth is the Antarctic desert, covering the continent of Antarctica with a size of around 5.5 million square miles.

• The term desert includes polar deserts, subtropical deserts, cold winter, and cool coastal deserts, and are based on their geographical situation.

Q4. Answer: (c) Delhi

The correct answer is Delhi.

Key Points

• The India Gate:

• The India Gate was constructed by the Imperial War Graves Commission.

• It is also known as the All India War Memorial.

• India Gate was built as a memorial to the soldiers of World War I. It is the world's largest war memorial which was built in the 20th century.

• Edward Lutyens was the architect.

• Edward Lutyens was also the architect of The Parliament Building along with Hebert Baker.

• It was built for the duration of 1921 to 1931 AD.

• Amar Jawan Jyoti was added to the India Gate in 1972 in the honor of soldiers who sacrificed their lives in the Indo-Pakistan War of 1971.

Q5. Answer: (d) K2

The correct answer is K2

• K2 (Godwin Austen) - It is the second-highest mountain peak in the world.

Key Points

• Godwin Austin:

• Its height is 8611 meters. It is known as K2 and is located in the Karakoram ranges of Kashmir.

• It was named K-2 by TG Montgomery in 1852 AD.

• Climbers climb it between June and August.

• In terms of Climbing, it is considered more dangerous than climbing Mount Everest.

• That is why it is also called Killer Peak. It is located in POK i.e. Pakistan Occupied Kashmir.

Additional Information

• Nanda Devi- It is situated in the Himalayan mountain range in the state of Uttaranchal, India between Gauriganga in the east and Rishi Ganga valleys in the west. Its height is 718 meters.

• Kanchenjunga- It is the third highest mountain peak (8,586 m) in the world. It is located 74 kilometres northwest of Darjeeling.

• Lhotse- It is the fourth highest mountain in the world at 8,516 meters after Mount Everest, K2, and Kanchenjunga.

Q6. Answer: (b) Narmada

The correct answer is Narmada.

• Sardar Sarovar Project:

• It is one of the largest water resources project in India.

• It covers four major states of Maharashtra, Madhya Pradesh, Gujarat and Rajasthan.

• It was built on the Narmada river.

Key Points

• Sardar Sarovar Dam:

• It is the third-highest concrete dam in India.

• It is a concrete gravity dam.

• It is built on the Narmada river.

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• It is one of the most controversial dams in India.

• Narmada Bachao Andolan was the prominent movement that happened against the construction of this dam.

Additional Information

Rivers	Dams
Ganges	Farakka dam
Kosi	Saptakosi High Dam
Pravara River	Ghatghar Dam
Narmada	Sardar Sarovar Da

Q7. Answer: (b) Greenland

The correct answer is Greenland.

• An island or isle is any piece of subcontinental land that is surrounded by water. Very small islands such as emergent land features on atolls can be called islets, skerries, cays, or keys and very large islands are like Greenland, Madagaskar, etc.

• Greenland, the world's largest island, lying in the North Atlantic Ocean.

• It covers an area of 2,130,800 km2 (970 sq mi)

• Greenland is noted for its vast tundra and immense glaciers.

• Although Greenland remains a part of the Kingdom of Denmark, the island's home-rule government is responsible for most domestic affairs.

• The Greenlandic people are primarily Inuit (Eskimo).

• The capital of Greenland is Nuuk (Godthåb).

Additional Information

Island	Area (km2)	Location
Greenland	2,166,086	Atlantic ocean
Madagaskar	587,041	Madagascar
Cuba	109,884	South America

Q8. Answer: (c) Jamnagar

The correct answer is Jamnagar.

Key Points

• Jamnagar:

• The Jamnagar Refinery is a private sector crude oil refinery owned by Reliance Industries Limited in Jamnagar, (Gujarat).

• It was commissioned on 14 July 1999.

• India has 18 public sector refineries and 5 refineries in the private sector.

• (Oil and Natural Gas Corporation) ONGC is the largest crude oil and natural gas company in India, contributing around 70 per cent to Indian domestic production.

• India imports nearly 83% of the oil it consumes, making it one of the biggest importers of oil in the world.

• Barmer refinery is a new facility that is currently being developed for the production of clean fuels in the Barmer district of Rajasthan, India.

Additional Information

• India's oldest oil refinery is situated in Digboi in Assam.

Q9. Answer: (c) Mark Zuckerberg

The correct answer is Mark Zuckerberg.

Key Points

• Mark Zuckerberg

• Mark Zuckerberg, full name Mark Elliot Zuckerberg is the founder of Facebook.

• Facebook is a social networking site that makes it easy for you to connect with family and friends online. Originally designed for college students, Facebook was created in 2004 by Mark Zuckerberg while he was enrolled at Harvard University.

• Facebook is a popular free social networking website that allows registered users to create profiles, upload photos and video, send messages and keep in touch with friends, family, and colleagues.

• He started Facebook from his college dorm room in 2004 with room-mates Dustin Moskovitz and Chris Hughes and from New York.

• He studied Computer Science at Harvard University before moving the company to Palo Alto, California.

• He was the Time Magazine Person Of The Year in 2010.

Emblem of Facebook:

Q10. Answer: (d) Directly elected by People

The correct answer is Directly elected by the People.

Key Points

• The Lok Sabha, or House of the People, is the lower house of India's bicameral Parliament, with the upper house being the Rajya Sabha. The house meets in the Lok Sabha Chambers of the Sansad Bhavan, New Delhi.

• Members of Lok Sabha are directly elected by the people.

Important Points

• Members of the Lok Sabha are elected by an adult universal suffrage and a first-past-the-post system to represent their respective constituencies, and they hold their seats for five years or until the body is dissolved by the President on the advice of the council of ministers.

• The maximum membership of the House allotted by the Constitution of India is 550 (Initially, in 1950, it was 500). Currently, the house has 543 seats which are made up by the election of up to 543 elected members and at a maximum. The Lok Sabha has a seating capacity of 550.

• A total of 131 seats (24.03%) are reserved for representatives of Scheduled Castes (84) and Scheduled Tribes (47). The quorum for the House is 10% of the total membership.

• The Lok Sabha, unless sooner dissolved, continues to operate for five years for time being from the date appointed for its first meeting.

• However, while a proclamation of emergency is in operation, this period may be extended by Parliament by law or decree.

• An exercise to redraw Lok Sabha constituencies' boundaries is carried out by the Boundary Delimitation Commission of India every decade based on the Indian census, the last of which was conducted in 2011. This exercise earlier also included redistribution of seats among states based on demographic changes but that provision of the mandate of the commission was suspended in 1976 following a constitutional amendment to incentivize the family planning program which was being implemented. 17th

• The Lok Sabha was elected in May 2019 and is the latest to date.

Q11. Answer: (a) Mumbai

The correct answer is Mumbai.

Key Points

• Maharashtra

• Maharashtra is the second-most populous state in India.

• Mumbai is the capital of Maharashtra.

• Mumbai is the financial capital of India.

• Maharashtra state has about 720 km long indented coastline.

• The Maharashtra coast is popularly known as the Konkan coast.

• The Arabian Sea lies on the west coast of Maharashtra.

• Thane, Raigad, Greater Bombay, Ratnagiri, and Sindhudurg are the coastal districts of Maharashtra.

• The famous pilgrim centre Amaravati is in Maharashtra.

• Gateway of India is located in Maharashtra.

• There are five UNESCO world heritage sites in Maharashtra including the Western Ghats.

• The UNESCO world heritage sites in Maharashtra are:

1. Chhatrapathi Shivaji Terminus

2. Elephanta Caves

3. Ajanta Caves

Additional Information

• New Delhi: The national capital of India.

• Allahabad: The famous city in Uttarpradesh.

• Lucknow: The state capital of Uttarpradesh

Q12. Answer: (d) Bindusara

The correct answer is Bindusara.

Key Points

• Bindusara: (298BC-272BC)

• The second Mauryan emperor of India.

• He was the son of the Mauryan dynasty's founder, Chandragupta.

• He was the father of the most famous ruler Ashoka.

• To the Greeks, Bindusara was known as Amitrochates.

• He extended the kingdom further to the peninsular region of India as far south as Mysore.

• Bindusara patronised Ajivikas.

Additional Information

• Asoka, the great

• The empire that Ashoka ruled was founded by his grandfather, Chandragupta Maurya, more than 2300 years ago.

• Chandragupta was supported by a wise man named Chanakya or Kautilya. Many of Chanakya’s ideas were written down in a book called the Arthashastra.

• He was the first ruler who tried to take his message to the people through inscriptions.

• Most of Ashoka’s inscriptions were in Prakrit and were written in the Brahmi script.

• Kalinga is the ancient name of coastal Orissa.

• Ashoka fought a war to conquer Kalinga. However, he was so horrified when he saw the violence and bloodshed that he decided not to fight any more wars.

• He is the only king in the history of the world who gave up conquest after winning a war.

• Ashoka’s dhamma did not involve the worship of a god or the performance of a sacrifice.

• He felt that just as a father tries to teach his children, he had a duty to instruct his subjects.

• He was also inspired by the teachings of the Buddha.

• He appointed officials, known as the dhamma mahamatta who went from place to place teaching people about dhamma.

• Ashoka got his messages inscribed on rocks and pillars, instructing his officials to read his message to those who could not read it themselves.

• Ashoka also sent messengers to spread ideas about dhamma to other lands, such as Syria, Egypt, Greece and Sri Lanka.

• He built roads, dug wells, and built rest houses. Besides, he arranged for medical treatment for both human beings and animals.

Q13. Answer: (b) Sardar Vallabhai Patel

The correct answer is Sardar Vallabhai Patel.

Key Points

• Vallabhbhai Patel popularly known as Sardar Patel was an Indian politician.

• He served as the First Deputy Prime Minister of India.

• He was an Indian barrister and a senior leader of the Indian National Congress who played a leading role in the country's struggle for independence and guided its integration into a united, independent nation.

• He was widely regarded as 'Iron Man of India'.

Additional Information

• He is also remembered as the "patron saint of India's civil servants" for having established the modern all-India services system.

• He is also called the "Unifier of India".

• He was the first Home Minister and Deputy Prime Minister of India.

• The Statue of Unity, the world's tallest statue, was dedicated to him on 31 October 2018 which is approximately 182 meters (597 ft) in height.

Important Points

• Lal Bahadur Shastri was the second prime minister of India.

• Mahatma Gandhi is known as the Father of the Nation.

• Rabindranath Tagore is known as Gurudev.

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Q14. Answer: (a) Yamuna

The correct answer is the Yamuna.

Key Points

• Yamuna River System

• The Yamuna River is the largest tributary of the Ganga River.

• It originates from the Yamunotri glacier, at the Bandarpoonch peak in Uttarakhand.

• The main tributaries joining the river include the Sin, Hindon, Betwa Ken, and Chambal.

• The Tons is the largest tributary of the Yamuna

• The catchment of the river extends to the states of Delhi, Himachal Pradesh, Uttar Pradesh, Haryana, Rajasthan, and Madhya Pradesh.

• The national capital, New Delhi is situated on the banks of the river Yamuna.

• Length: 1376 km.

Additional Information

• New Delhi:

• The foundation of New Delhi, the capital of India, was laid by the then Emperor George V.

• During the Delhi Durbar on 12 December 1911, it was announced to shift the capital of India from Kolkata to Delhi.

• On 13 February 1931, Lord Irwin, the Viceroy of India, inaugurated Delhi as the new capital of the country.

• Kolkata was the capital of the country until 1911 before the capital of India became New Delhi.

• New Delhi is the seat of the Indian Parliament, Central Secretariat, Supreme Court, Rashtrapathi Bhavan.

All major rivers of India:

Q15. Answer: (a) Finland

The correct answer is Finland.

Key Points

• Finland:

• Finland is called the "Land of Thousand Lakes".

• There are approximately 168,000 lakes and 179,000 islands in Finland.

• Saimaa, its biggest lake, is Europe's fourth-largest.

• The Finnish Lakeland has the most lakes in the world, and many of the country's major cities, including Tampere, Jyväskylä, and Kuopio, are in close proximity to the large lakes.

Important Points

• Finland is a country in Northern Europe that is situated in the Nordic region.

• It is bordered on the west by Sweden, on the east by Russia, and on the north by Norway.

• It is characterized on the west by the Gulf of Bothnia, and on the south by the Gulf of Finland, which runs through Estonia.

• Finland has a population of 5.5 million people and occupies 338,455 square kilometres.

Additional Information

• Capital and largest city: Helsinki

• President: Sauli Niinistö

• Prime Minister: Sanna Marin

Q16. Answer: (d) Sun

The correct answer is Sun.

Key Points

• The sun is considered the ultimate source of energy.

• Plants convert light energy from the sun into chemical energy (food) by the process of photosynthesis.

• Hence the food we get from plants and animals also has its primary sunlight source.

• Every day, the sun radiates (sends out) an enormous amount of energy.

• It radiates more energy each day than the world uses in one year.

• Solar energy is a renewable energy source.

• The sun’s energy comes from within the sun itself.

• Like most stars, the sun is made up mostly of hydrogen and helium atoms in a plasma state.

• The sun generates energy from a process called nuclear fusion

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Additional Information

• Resources that are drawn from nature and used without much modification are called natural resources.

• Natural resources can be divided into renewable and non-renewable resources.

• Renewable resources are those which get renewed naturally over time.

• Examples of renewable resources are:

• The sun.

• Wind.

• Wildlife

• Fisheries.

• Hydropower(water).

• Geothermal power.

• Renewable resources like solar and wind energy are unlimited and are not affected by human activities.

• Water seems to be an unlimited renewable resource yet careless use of water, soil, and forest can affect their stock.

Q17. Answer: (a) Forward

The correct answer is Forward.

Key Points

• When the bus or train stopped suddenly, a passenger sits inside tends to fall forward.

• Because the lower part of the body comes to rest with the bus while the upper part tends to continue its motion due to inertia

Additional Information

• Newton's laws of motion:

• Newton's first law

• Newton's first law states that, if a body is at rest or moving at a constant speed in a straight line, it will remain at rest or keep moving in a straight line at constant speed unless it is acted upon by a force.

• This postulate is known as the law of inertia.

• Newton's second law

• Newton's second law is a quantitative description of the changes that a force can produce in the motion of a body.

• It states that the time rate of change of the momentum of a body is equal in both magnitude and direction to the force imposed on it.

• The momentum of a body is equal to the product of its mass and its velocity.

• Newton's third law

• 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.

• This law is important in analyzing problems of static equilibrium, where all forces are balanced, but it also applies to bodies in uniform or accelerated motion.

Q18. Answer: (a) Dog bite

• The correct answer is Dog Bite.

Key Points

• Rabies is caused by a dog bite.

• Rabies can affect both domestic and wild animals.

• Rabies is a vaccine-preventable disease.

• Initial symptoms of rabies include a fever with pain and unusual or unexplained tingling, pricking, or burning sensation at the wound site.

• As the virus spreads to the central nervous system, progressive and fatal inflammation of the brain and spinal cord develops.

Additional Information

Viral Diseases in Humans	Virus
Common cold	Rhinovirus
Smallpox	Variola virus
Rabies	Rabies lyssavirus

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Hepatitis	Hepatitis A virus Hepatitis B virus Hepatitis C virus
Measles	Rubeola virus
Poliomyelitis	Poliovirus
Influenza	Influenza virus (RNA virus)
Encephalitis	Herpes Simplex Virus
Mumps	Paramyxovirus

Q19. Answer: (a) AB+

The correct answer is AB+

Key Points

• AB blood group is considered as the universal recipient because an individual with this blood type can receive blood from any other blood types- A, B, AB and O.

• In the AB blood type, the red blood cells comprise both antigen A and B, but the plasma lacks both anti-A or anti-B antibodies.

Additional Information

• There are four major blood groups:

• A, B, O, and AB.

• Blood groups are classification as blood, they are classified on the presence and absence of antibodies and other antigens on the surface of Red blood cells.

• People with O negative blood group are considered universal donors. Because RBC's which they contain do not have A, B, or Rh antigens.

• The concept of Universal Donor and Recipient can be easily understood through this Image-

• Blood is composed of four components: White blood cells, Red blood cells, plasma, and platelets.

• Red blood cells are red in colour due to the presence of Hemoglobin, which is an iron-containing protein.

• When viruses or bacteria enter the blood, then White blood cells help in fighting infections.

• Blood Plasma is a yellowish liquid component of blood that helps in the transportation of nutrients like minerals, protein, vitamins, sugars, and fats to all parts of the body.

Q20. Answer: (d) Concave

The correct answer is Concave

Key Points

• A concave mirror is used in a car headlight.

• Characteristics of Concave Mirrors

• Light converges at a point when it strikes and reflects back from the reflecting surface of the concave mirror.

• Hence, it is also known as a converging mirror.

• When the concave mirror is placed very close to the object, a magnified and virtual image is obtained.

• However, if we increase the distance between the object and the mirror then the size of the image reduces and a real image is formed.

• The image formed by the concave mirror can be small or large or can be real or virtual.

Additional Information

• Characteristics of Convex Mirrors

• A convex mirror is also known as a diverging mirror as this mirror diverges light when they strike its reflecting surface.

• Virtual, erect, and diminished images are always formed with convex mirrors, irrespective of the distance between the object and the mirror.

Q21. Answer: (c) Liver

The correct answer is Liver.

Key Points

• Liver

• It is the largest gland of the body and is an accessory organ of the digestive system.

• It continuously produces bile.

• Bile flows out of the liver into the right and left hepatic ducts, into the common hepatic ducts, and toward the small intestine to

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help with digestion and the absorption of fats.

• In humans, it is located in the right upper quadrant of the abdomen, below the diaphragm.

Important Points

• Important facts about the human body are as follows

• Smallest Gland - Pineal

• Largest artery - Aorta

• The longest bone in the Human body - Femur

• Smallest bone - Stapes

• Strongest muscle - Tooth enamel

Q22. Answer: (a) Hydrocarbons

• The correct answer is Hydrocarbons.

Key Points

• The compounds which are formed by the covalent bond between carbon & hydrogen, are known as hydrocarbons.

• These are also known as 'parent compound'.

• Carbon is placed in the Second period.

• The atomic number of carbon is 6 while the weight is 12.

• Carbon needs 4 electrons to complete the octet state and it is full filled by covalent bonds.

Additional Information

• ATOMIC NUMBER:

• It is defined as the number of protons present in the nucleus. It is denoted by the letter Z.

• MASS NUMBER:

• The total number of protons and neutrons present in a nucleus is called the mass number of the element. It is denoted by the letter A.

Q23. Answer: (c) Na

The correct answer is Na.

Key Points

• Sodium is a chemical element with the atomic number 11 and denoted by symbol Na.

• It is a soft, silvery-white, highly reactive metal.

• Sodium is an alkali metal, being in group 1 of the periodic table.

• Its only stable isotope is ^{23}Na.

• Sodium is the sixth most abundant element in the Earth's crust and exists in numerous minerals such as sodalite, feldspars, and rock salt (NaCl).

Additional Information

Name of the Element	Symbol of the Element	Atomic Number
Hydrogen	H	1
Helium	He	2
Boron	B	5
Carbon	C	6
Nitrogen	N	7
Oxygen	O	8
Magnesium	Mg	12
Aluminium	Al	13
Chlorine	Cl	17
Potassium	K	19
Calcium	Ca	20

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Q24. Answer: (b) Cholesterol

The correct answer is Cholesterol.

Key Points

• A heart attack occurs when an artery supplying your heart with blood and oxygen becomes blocked.

• Fat deposits build up over time, forming plaques in our heart's arteries.

• If a plaque ruptures, a blood clot can form and block your arteries, causing a heart attack.

Additional Information

• Cholesterol is a lipid (Sterol).

• Lipid is a type of blood fat.

• Cholesterol is the most abundant steroid in the body.

• The human body needs cholesterol to build cells and make vitamins and other hormones.

• cholesterol production is so important that our liver and intestines make about 80% of the cholesterol we need to stay healthy.

• Only about 20% comes from the foods we eat.

Hint

Q25. Answer: (a) H2SO4

The correct answer is H2SO4.

Key Points

• Sulphuric acid (H2SO4) -

• Sulfuric acid is an inorganic acid.

• It is also known as "Matting acid" or "Oil of vitriol"

• The "Contact Method" is used to produce it on a large scale.

Additional Information

• Sulphuric acid is Dibasic

• Any substance that can donate two hydrogens or protons is referred to as dibasic acid.

• Dibasic acid is also known as diprotic acid.

• Sulphuric acid gives two hydrogen atoms, hence it is considered dibasic acid.

• Example - H2SO4 → 2H+ + SO4^(2-).

Important Points

• Uses of H2SO_(4)(Sulfuric Acid)

• It is used in making fertilizers

• It is used in the production of steel and iron

• It is used in chemical manufacturing industries.

• It is used in petroleum refining.

• It is used to produce phosphoric acid.

• It is used as a cleaning agent in industries to remove the rust from steel and iron.

• It is used as a catalyst to convert cyclohexanone oxime to caprolactam used to make nylon

• It is used in lead-acid batteries as an electrolyte

• It is used in making ammonium sulfate

• It is used in storage batteries

Q26. Answer: (d) Mercury

The correct answer is Mercury.

Key Points

• Mercury is used in thermometers because it remains in liquid form throughout a wide range of temperatures i.e -37.89 degrees Fahrenheit to 674.06 degrees Fahrenheit.

• The mercury thermometer was invented by physicist Daniel Gabriel Fahrenheit in Amsterdam.

Additional Information

• Mercury has a greater coefficient of thermal expansion than alcohol.

• A thermometer with alcohol is used to measure low temperature because its freezing point is low i.e -1170C.

• It is Impossible to measure high temperatures because it has a low boiling point.

• The thermometer with mercury cannot be used to measure the very low temperature because its freezing point is high i.e -400C.

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• Mercury is the only one in the liquid state at room temperature.
• It's used in thermometers because it has a high coefficient of expansion.
• It also has a high boiling point which makes it very suitable to measure higher temperatures.
• It has a shiny appearance and doesn't stick to the glass surface of the glass.

Q27. Answer: (b) Aluminum

The correct answer is Aluminium.

Key Points

• Bauxite is an aluminium-rich sedimentary rock formed from laterite soil.
• It is found in tropical or subtropical regions.
• Bauxite is used for the production of Aluminium.
• Bauxite is a non-ferrous metallic mineral that is used in the manufacturing of aluminium.
• Bauxite is found mainly in tertiary deposits and is associated with laterite rocks.
• Odisha is the largest bauxite producing state accounting for more than half of the total production of India.

Hint

• Students were very excited (Bauxite) for Alumni (Aluminium) meeting.

Additional Information

Aluminium	**Bauxite** **Kaolinite (a form of clay)**
Iron	Haematite Magnetite Siderite Iron pyrites
Copper	Copper pyrites Malachite Cuprite Copper glance
Zinc	Zinc blend/Sphalerite Calamine Zincite

Q28. Answer: (d) Bone to Bone

The correct answer is Bone to Bone.

Key Points

• Ligaments are the connective tissue that connects two bones to each other.
• Ligaments are a short band of tough flexible connective tissues that connects two bones.
• Ligaments connect bones to other bones.

Additional Information

• Tendons are made up of collagen.
• Tendons connect bones to muscles.
• Cartilages:
• It is a type of connective tissue in the body.
• It is a strong, flexible tissue that is the main type of connective tissue in the body.
• Due to the presence of Cartilages in our ears, the ears can be folded.
• Elastic cartilage is a type of cartilage present in the outer ear.
• It doesn’t have blood vessels or nerves.
• This tissue is present in joints, ears, nose, rib cage, and in many other areas of the body.

Q29. Answer: (a) Earth Quake

The correct answer is Earth Quake.

Key Points

• A seismograph records the waves reaching the surface during an earthquake.
• The sudden tremors or shaking of the earth's crust is called an earthquake.

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• The earth's crust is made up of different parts of various sizes. They are called plates.
• Most of the earthquakes in the world are caused by the movements of the plates.
• 'Seismology' deals with the study of the earthquake.
• 'Richter scale' and 'Mercalli scale' are the instruments to measure and record the magnitude and the intensity of an earthquake respectively.

Additional Information

Ammeter	Electric current
Glucometer	Blood glucose (diabetes)
Lactometer	Specific gravity of milk
Mercury Barometer	Atmospheric pressure
Odometer	Distance travelled
Pyrometer	High temperatures
Thermometer	Temperature
Zymometer	Fermentation.
Voltmeter	Electric potential, Voltage

Q30. Answer: (c) Watt

The correct answer is Watt.

Key Points

• The SI unit of power is Watt.
• The watt is named after James Watt.
• Power is the amount of energy transferred per unit of time.
• 1 watt (W) = 1.00 joules per second (J/sec).
• Power is a scalar quantity.

Additional Information

Force, Weight	Newton
Frequency	Hertz
Electric charge	Coulomb
Inductance	Henry
Capacitance	Farad
Resistance Impedance Reactance	Ohm
Energy Work Heat	Joule

Q31. Answer: (b) 2%

Given :

Simple Interest of two years of an amount is Rs. 40 and in two years the amount becomes Rs. 1040

Concept used :

Amount = Principle + Interest

Simple interest = (Principle × Rate of interest × time)/100

Calculations :

Let the interest rate be R

According to the question

1040 = 40 + Principle (Amount = Principle + Interest)

=> Principle = 1040 - 40 = 1000 rupees

Now,

40 = (1000 × R × 2)/100 (time = 2 years)

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=> R = 4000/2000
=> 2
So,
=> Rate of interest = 2%
Therefore Option 2 is the correct answer.

Q32. Answer: (b) 10

Given :
A vendor loses the selling price of 4 oranges on selling 36 oranges
Concept used :
Loss = Cost price - selling price
Loss% = (cost price - selling price)/(cost price) × 100
Calculations :
Let the cost price be C
Let the selling price be S
The cost price of 36 oranges be 36C
The selling price of 36 oranges be 36S
According to the question
Loss = 36C - 36S
=> 4S = 36C - 36S (loss is the selling price of 4 oranges)
=> 40S = 36C
=> S/C = 36/40
=> 9/10
Now,
Loss per cent = (10 - 9)/(10) × 100
=> 10%
Therefore Option 2 is the correct answer.

Q33. Answer: (d) 15 meters

Given :
The dimension of the room is 10 m, 5 m, and 10 m.
Formula used :
Length of longest rod in a room = $\sqrt{(\text{length}^2 + \text{breadth}^2 + \text{height}^2)}$
Calculation :
Length of longest rod = $\sqrt{(10^2 + 5^2 + 10^2)}$
=> $\sqrt{(100 + 25 + 100)}$
=> $\sqrt{225}$
=> 15 m
Therefore Option 4 is the correct answer.

Q34. Answer: (d) 04

Calculations :
[(64)2/3]1/2
=> [(4)3 × (2/3)]1/2
=> [(4)2]1/2
=> 4
Therefore Option 4 is the correct answer.

Q35. Answer: (b) 5

Concept used :
A odd number can only be divisible by 5 when its unit digit is 5.
Calculations :
As per the options only option 2 is following the above given condition.

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Therefore Option 2 is the correct choice.

Q36. Answer: (a) 18 meter

Given :
Sides of rectangle are 5 meter and 4 meter
Formula used :
Perimeter of rectangle = 2(length + breadth)
Calculations :
Perimeter of rectangle = 2(5 + 4)
=> 2 × 9
=> 18 meter
Therefore Option 1 is the correct choice.

Q37. Answer: (b) 6

Calculations :
Possible outcomes of a dice are 1, 2, 3, 4, 5 and 6
So there are total 6 possible outcomes when a dice is thrown.
Therefore Option 2 is the correct answer.

Q38. Answer: (b) 1/4

Calculations :
0.25 = 25/100
=> 25/100
=> 1/4
Therefore Option 2 is the correct answer.

Q39. Answer: (b) 5.71%

Given :
A man loses Rs. 40 by selling a watch for Rs. 660
Concept used :
Loss = cost price - selling price
Loss% = (cost price - selling price)/(cost price) × 100
Calculations :
According to the question
40 = Cost price - 660
=> Cost price = 660 + 40 = 700
Now,
Loss per cent = (700 - 660)/(700) × 100
=> 40/7
=> 5.71
Therefore Loss per cent is 5.71.

Q40. Answer: (b) Rs. 10

Given :
Principle is Rs. 600 and rate of interest is 5%.
Concept used :
Interest = (principle × interest rate × time)/100
Calculations :
According to the question
Interest = [600 × 5 × (1/3)]/100 .....(time = 4 months = 4/12 = 1/3 years)
=> 10 rupees
Therefore Option 2 is the correct choice.

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Q41. Answer: (d) 120

Shortcut Trick

Identify the largest number: 30.

List multiples of the largest number: 30, 60, 90, 120...

Check for the smallest multiple divisible by 12 and 24: 120 ÷ 12 = 10 and 120 ÷ 24 = 5.

Therefore The correct answer is 120.

Alternate Method

Given: 12, 24, 30

Formula Used: Prime Factorization Method (LCM = product of the highest power of each prime factor involved).

Prime Factors:

$12 = 2 \times 2 \times 3 = 2^2 \times 3^1$

$24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$

$30 = 2 \times 3 \times 5 = 2^1 \times 3^1 \times 5^1$

$LCM = 2^3 \times 3^1 \times 5^1 = 8 \times 3 \times 5 = 120$

=> Prime factorization of $12 = 2 \times 2 \times 3 = 2^2 \times 3^1$

=> Prime factorization of $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$

=> Prime factorization of $30 = 2 \times 3 \times 5 = 2^1 \times 3^1 \times 5^1$

=> LCM = 2^(max(2,3,1)) × 3^(max(1,1,1)) × 5^(max(0,0,1))

=> $LCM = 2^3 \times 3^1 \times 5^1 = 8 \times 3 \times 5 = 120$

Therefore The correct answer is 120.

Additional Information

HCF (Highest Common Factor)

The HCF is the greatest number that divides each of the given numbers without leaving any remainder.

Product of Two Numbers Rule

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

LCM of Fractions

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

Q42. Answer: (c) 16

Concept used :

HCF is the highest common number that is common in a set of different numbers.

Calculations :

Let the number be 'x' that divides 245 and 1029 leaving the remainder 5

245 and 1029 leave remainder 5 when divided 'x',

So, (245 - 5) = 240 and (1029 - 5) = 1024 must be divisible by x

Now,

240 = 2^4 × 3 × 5

1024 = 2^(10)

HCF(x) of 240 and 1024 = 2^4 = 16 (2^4 is common between both numbers)

Therefore Option 3 is the correct answer.

Q43. Answer: (b) 10404

Formula used:

$(a + b)^2 = a^2 + b^2 + 2ab$

Calculation:

(102)2 = (100 + 2)2

=> (102)2 = 1002 + 22 + 2 × 100 × 2

=> (102)2 = 10000 + 4 + 400

=> (102)2 = 10404

Therefore The value of (102)2 is 10404.

Q44. Answer: (c) Rs. 18,000

Given :

Ram had Rs. 45,000, he gave 2/5 to his eldest son and 1/3 of the balance money to his youngest son.

Calculations

Money left after giving 2/5th of 45000 = 45000 - (2/5) of 45000

=> 45000 - 18000

=> 27000

Now money left after giving 1/3 of balance money = 27000 - (1/3) of 27000

=> 27000 - 9000

=> 18000

Therefore Ram left with 18000 rupees.

Alternate MethodUnitary Method

2/5 means 2 out of 5

Let say he have 5 units money

2 given to elder son (Remaining = 3)

Out of 3, 1/3rd also given to youngest son

Money given to youngest son = 3 × 1/3 = 1

Remaining = 2

Now, 5 units = 45000

1 unit = 9000

2 units = 9000 × 2 = 18000

Q45. Answer: (d) 4

Calculations :

Checking for all options

(1) 8788/3 = 2929.33

(2) 8788/2 = 4394

(3) 8788/5 = 1757.6

(4) 8788/4 = 2197 = 13^3

From all options, we can conclude that only division by 4 is giving us a perfect cube.

Therefore Option 4 is the correct answer.

Q46. Answer: (c) 9#2!

Given:

Letter	B	U	I	L	D
Code	5	#	3	2	@

And,

Letter	T	R	I	B	E
Code	@	9	3	5	!

Similarly,

By following the coded logic:

Letter	R	U	L	E
Code	9	#	2	!

Hence, 9#2! is the correct answer.

Q47. Answer: (c) 203

Given: 6, 13, 25, 51, 101, (_____).

Logic:

Hence, 203 is the correct answer.

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Q48. Answer: (b) 17

According to the question,

Let the total number of students be T.

Then,

T = 7 + 11 - 1 (because Ganesh is added two times)

T = 18 - 1

T = 17

Hence, 17 is the correct answer.

Q49. Answer: (b) CLL

Given: 'CAT' is written as 'DDY'.

Logic: +1, +3, and +5 to the position of letters.

Similarly,

Hence, "CLL" is the correct answer.

Q50. Answer: (c) Father

My (Raju) daughter's father's means Raju himself. He (man) is Raju's son. Therefore Raju is the father of the man.

The family tree diagram is shown below:

Hence, father is the correct answer.

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