Agniveer Army GD 2 July 2025 (Shift 3) Memory-Based Paper (Previous Year Paper)

Army GD Agniveer • 2025 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. In which year Gadar party was formed ?

(a) 1911
(b) 1914
(c) 1913
(d) 1916

Q2. The Indian Air Force was established in _____.

(a) 1945
(b) 1940
(c) 1922
(d) 1932

Q3. How many articles come under 'Right to Equality'?

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

Q4. With which country does India share the longest border?

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

Q5. Who is called the Father of Indian Navy?

(a) Chhatrapati Shivaji Maharaj
(b) Tipu Sultan
(c) Bajirao Peshwa II
(d) Adil Shah

Q6. Which Indian dance style is the oldest one?

(a) Odissi
(b) Kuchipudi
(c) Bharatanatyam
(d) Kathakali

Q7. After which incident the Non-Cooperation movement was withdrawn by Mahatma Gandhi?

(a) Chauri Chaura incident
(b) Rowlatt Act
(c) Jallianwala Bagh massacre

(d) Dandi March

Q8. Which film was awarded with the ‘Golden Peacock’ Award in the 48^(th) Indian International Film Festival ?

(a) Angels Wear White
(b) Take Off
(c) Kshitij
(d) 120 Beats per Minute

Q9. Article 25 of the Constitution of India is related to

(a) Freedom of Conscience of free profession, practice and propagation of religion
(b) No discrimination would be done on the ground of religion, race, caste, language or any of them
(c) Right of education
(d) Minority Institutions

Q10. The climate of India is broadly described as _____.

(a) Equatorial type
(b) Polar type
(c) Arid and semi-arid type
(d) Monsoon type

Q11. Who is responsible for conducting elections in India?

(a) President of India
(b) Prime Minister of India
(c) Election Commission of India
(d) Supreme Court of India

Q12. The ‘Directive Principles’ are

(a) Justiciable
(b) Non-justiciable
(c) Rigid
(d) Flexible

Q13. In the movie Kesari Chapter 2, which historical figure is portrayed by Akshay Kumar?

(a) Lala Lajpat Rai
(b) C. Sankaran Nair
(c) Bal Gangadhar Tilak
(d) Bhagat Singh

Q14. What is the current strength of fighter squadrons in the Indian Air Force (IAF)?

(a) 32 squadrons
(b) 42 squadrons
(c) 29 squadrons
(d) 25 squadrons

Q15. Who was the author of the Natya Shastra?

(a) Sachin Shankar
(b) Aswagosha
(c) Bharatamuni
(d) Kalidasa

GENERAL SCIENCE

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Q16. The process of fermentation takes place in:

(a) Paramecium
(b) Euglena
(c) Amoeba
(d) Yeast

Q17. Which one of the following processes involves chemical reaction?

(a) Evaporation of petrol
(b) Dissolution of salt in water
(c) Storing of oxygen gas under pressure in a gas cylinder
(d) Burning of magnesium ribbon in air

Q18. _____ is essential for the synthesis of thyroxine.

(a) Iron
(b) Iodine
(c) Sodium
(d) Calcium

Q19. Which organ in the human body produces bile juice?

(a) Small intestine
(b) Pancreas
(c) Liver
(d) Stomach

Q20. Which of the following reactions is NOT an example of neutralisation reaction?

(a) $H_3PO_4 + 3KOH \rightarrow K_3PO_4 + 3H_2O$
(b) $CaO + H_2O \rightarrow Ca(OH)_2$
(c) $HNO_3 + KOH \rightarrow KNO_3 + H_2O$
(d) $Ca(OH)_2 + H_2CO_3 \rightarrow CaCO_3 + 2H_2O$

Q21. What happens when a metal reacts with oxygen?

(a) Nonmetal oxide
(b) Metallic hydroxide
(c) Metallic oxide
(d) Nonmetal hydroxide

Q22. Metals react with acids to give:

(a) Salt and chlorine
(b) A salt and base
(c) A salt and hydrogen
(d) Salt and water

Q23. Which of the following is an example of a virus?

(a) AIDS
(b) Anthrax
(c) Elephantiasis
(d) HIV

Q24. During the free fall of an object, which of the following energies increases at any point in its path?

(a) Mechanical energy
(b) Chemical energy
(c) Potential energy
(d) Kinetic energy

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Q25. The SI unit of pressure is-

(a) pascal
(b) Kgms^(–1)
(c) dyne
(d) newton

Q26. Which of the following elements does not contain neutrons?

(a) Oxygen
(b) Nitrogen
(c) Hydrogen
(d) None of these

Q27. Which part of the human brain controls the involuntary action of vomiting?

(a) Forebrain
(b) Midbrain
(c) Hindbrain
(d) Spinal cord

Q28. As the pH value increases from 7 to 14, it represents:

(a) an increase in the OH- ion concentration
(b) no change in the H+ ion concentration
(c) an increase in the H+ ion concentration
(d) a decrease in the OH- ion concentration

Q29. What is the atomic number of helium?

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

Q30. What is typically called a species of plants and animals found in a certain place?

(a) Specific Species
(b) Endangered Species
(c) Infectious Species
(d) Endemic Species

MATHEMATICS

Q31. Average of 15 and 29 is:

(a) 21
(b) 25
(c) 22
(d) 23

Q32. 500 is first deacreased by 20% then increased by 50%. Find the new number.

(a) 625
(b) 650
(c) 600
(d) 575

Q33. 72% of 5300 is:

(a) 3816
(b) 3616
(c) 3846
(d) 3646

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Q34. A pipe can fill 5/7 of a tank in 1 minute, find the time to fill the remaining tank.

(a) 80 sec
(b) 84 sec
(c) 36 sec
(d) 24 sec

Q35. Length of a rectangle is 29 cm if its area is 551 cm^2. Find the width of of the rectangle.

(a) 21 cm
(b) 25 cm
(c) 19 cm
(d) 17 cm

Q36. LCM of 160 and 120 is:

(a) 240
(b) 160
(c) 480
(d) 360

Q37. HCF of 51 and 3 is:

(a) 51
(b) 3
(c) 153
(d) 17

Q38. 1/5 of a number if 43 then the number is?

(a) 200
(b) 165
(c) 185
(d) 215

Q39. salary of a man is 7850 after 20% decrement what will be his new salary?

(a) 7200
(b) 6820
(c) 6000
(d) 6280

Q40. A sum of Rs 3300 is invested at a rate of 72% for 9 years then find the simple interest after 9 years.

(a) Rs. 23184
(b) Rs. 25284
(c) Rs. 21184
(d) Rs 21384

Q41. $2 \times 6 \times 10 = ?$

(a) 120
(b) 240
(c) 180
(d) 100

Q42. $(57 + 46 - 13)/(4 \times 5 + 10) = ?$

(a) 5
(b) 4
(c) 3
(d) 9

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Q43. The average marks of 25 students is 8. The average of 1st 5 students is 12, then find the average of the remaining 20 students.

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

Q44. Find the ratio of 3 and 2/10.

(a) 1 : 5
(b) 1 : 15
(c) 15 : 1
(d) 30 : 1

Q45. A : B = 9 : 2 if the smaller number is 18, then the value of the larger number is:

(a) 15
(b) 81
(c) 9
(d) 27

LOGICAL REASONING

Q46. In a row of 42 persons. Richa is 26th from the left side of the row and Rajan is 19th from the right side of the row. How many persons are sitting between them?

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

Q47. Jay is the brother of Sayan's uncle. Sayan's grandfather has only two sons. How is Jay related to Sayan?

(a) Brother
(b) Uncle
(c) Nephew
(d) Father

Q48. This question is based on the five, three-digit numbers given below.

(Left) 785 854 863 954 921 (Right)

(Example- 697 – First digit = 6, second digit = 9 and third digit = 7)

What will be the resultant if the third digit of the second highest number is added to the third digit of the second lowest number?

(a) 6
(b) 7
(c) 9
(d) 5

Q49. Select the option that is related to the third word in the same way as the second pair is related to the first pair.

Portugal : Lisbon :: Kenya : ?

(a) Astana
(b) Nairobi
(c) Dublin
(d) Rome

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Q50. Which letter in the English alphabet is midway between the fourteenth letter from the left end and the tenth letter from the right end?

(a) R
(b) N
(c) P
(d) Q

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 1913

The Correct answer is Option 3.

Key Points

• The Gadar Party was formed in 1913 in the United States, primarily in San Francisco, California. It was established by expatriate Indians, mostly Punjabis, who aimed to overthrow British rule in India through revolutionary means.

Q2. Answer: (d) 1932

The Indian Air Force was established in the year 1932.

Present Air Force Chief: Air Chief Marshal Vivek Ram Chaudhari

Date of Establishment	8 October 1932
The motto of the Indian Air Force	'Touch the sky with glory' (taken from the eleventh chapter of the Gita)
Fighter Aircrafts	• SU-30 MKI - Mirage-2000 - MiG-29 - MiG-21 BISON - Jaguar
Helicopters Aircraft	• MI-25/MI-35 - MI-26 - MI-17 V5 - Chetak - Cheetah

Q3. Answer: (c) 5

The correct answer is 5.

Important Points

The Right to Equality provides:

• For the equal treatment of everyone before the law
• Prevent discrimination on various grounds
• Treats everybody as equals in matters of public employment
• Abolish untouchability and titles

The article mentioned under the right to equality

Articles	Provision
Article - 14	The state shall not deny any person equality before the law or the equal protection of the law within the territory of India, on grounds of religion, race, caste, sex, or place of birth.
Article - 15	The state shall not discriminate against any citizen on the grounds only of religion, race, caste, sex, place of birth, or any of them.
Article - 16	There shall be equality of opportunity for all citizens in matters relating to employment or appointment to any office under the state.

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Article - 17	Abolition of untouchability.
Article - 18	Abolition of all titles except military and academic.

Q4. Answer: (c) Bangladesh

The correct answer is Bangladesh.

Key Points

• Bangladesh

• It shares the longest border with India.

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

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

• Five Indian states that share their border with Bangladesh:

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

Additional Information

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

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

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

-

Q5. Answer: (a) Chhatrapati Shivaji Maharaj

The correct answer is Chattrapati Shivaji Maharaj.

Key Points

Indian Navy:

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

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

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

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

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

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

• Its headquarters is located in New Delhi.

• On every year 4th of December The Indian Navy celebrated Navy Day because of the occasion of Chhatrapati Shivaji Maharaj's Birthday Indian Navy Admired him because of his strategist mind and cleverness that is why he is known as the " Father of the Indian Navy " The Indian Navy has three operational commands.

• Western Naval Commands (Mumbai).

• Southern Naval Commands (Kochi).

Q6. Answer: (c) Bharatanatyam

Bharatanatyam is the oldest classical Indian dance styleof Tamil Nadu.

Dance	**Originate**

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Odissi	Odisha
Kuchipudi	Andhra Pradesh
Bharatanatyam	Tamil Nadu
Kathakali	Kerela

Q7. Answer: (a) Chauri Chaura incident

The correct answer is Chauri Chaura incident.

• Non-Cooperation movement

• The movement originated in the year 1920 in response to the Rowlatt Act and the Jallianwala Bagh Massacre.

• It was the first large-scale movement organized by Gandhiji and the movement acquired more strength as he supported the Khilafat movement of the Muslims.

• Gandhiji asked people to resign from their titles; boycott government educational institutions, the courts, government service, foreign goods, and elections; and, eventually, refuse to pay taxes; and all this to be done in a non-violent manner.

• In addition to this, Gandhiji advocated the need to be self-reliant, for example by spinning khadi and buying Indian-made goods.

Key Points

• Chauri Chaura incident

• Some people took the message of Gandhiji differently and resorted to violence by clashing with policemen at a place called Chauri Chaura, near Gorakhpur.

• In February 1922, people who were protesting were beaten by the police and many of their leaders were arrested and detained at the Chauri Chaura police station.

• This led to a furious situation where people set the police station on fire, killing many of the police officials.

• The British imposed martial law and nd arrested hundreds of people.

• Seeing the situation going out of control, Gandhiji decided to call off the Non-Cooperation Movement on 12 February 1922.

Important Points

• Rowlatt Act and Jallianwala Bagh Massacre

• The incident occurred on April 13, 1919.

• Gandhiji and his followers decided to protest against the Rowlatt Act which gave the British the power to arrest any person without any trial.

• General Dyer opened fire on the peaceful protestors killing hundreds of people.

• Dandi March

• Also known as Salt Satyagrah, the march started from the Sabarmati Ashram on 12 March 1930 and concluded at Dandi on 6 April 1930.

• The march was against the British Salt monopoly.

Q8. Answer: (d) 120 Beats per Minute

The correct answer is 120 Beats per Minute.

Key Points

• 48th International Film Festival of India:

• It was held in Goa.

• The theme of the festival was Celebrating the Future of Cinema.

• Following awards were presented at the festival:

• Best Film Golden Peacock Award was given to 120 BPM (Beats per Minute) by Robin Campillo

• Best Director was given to Vivian Qu for Angels for Wear White

• Best Debut Film of a Director was given to Kiro Russo for Dark Skull

• Best Male Actor was given to Nahuel Pérez Biscayart for BPM (Beats per Minute)

• Best Female Actor was given to Parvathy for Take-Off

• ICFT UNESCO Gandhi Medal was given to Film Kshitij A Horizon by Manoj Kadaamh.

• Special Jury Award was given to Mahesh Narayanan for Take-Off.

Q9. Answer: (a) Freedom of Conscience of free profession, practice and propagation of religion

India believes in the concept of unity in diversity.

• To materialize this concept, Part 3 of the Indian Constitution (Article 14-35) deals with Fundamental Rights, one of which is the

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Right to freedom of religion (Article 25-28).

• It should be noted that:

• Article 25: Freedom of Conscience of the free profession, practice and propagation of religion.

• Article 26: Freedom to manage religious affairs.

• Article 27: Freedom from taxation for promotion of religion.

• Article 28: Freedom from attending religious instruction.

Hence, we conclude that Article 25 is for freedom of conscience of free profession, practice and propagation of religion.

Q10. Answer: (d) Monsoon type

The correct answer is Monsoon type.

Key Points

• The climate of India may be broadly described as a tropical monsoon type.

• The Indian Meteorological Department (IMD) designates four official seasons:

• Winter (From December to early April)

• Summer or Pre-monsoon season (April to July in north-western India)

• Monsoon or Rainy season (June-September)

• Post-monsoon season (October-December)

Additional Information

• Equatorial type of climate is also known as tropical rainforest wet climate or simply Af climate.

• It usually found within 10 to 15 degrees latitude of the equator and has at least 60 millimetres (2.4 in) of rainfall every month of the year.

• A polar climate consists of cool summers and very cold winters, which result in treeless tundra, glaciers, or a permanent or semi-permanent layer of ice.

• A region is arid when it is characterized by a severe lack of available water, to the extent of hindering or preventing the growth and development of plant and animal life.

• A semi-arid climate, semi-desert climate, or steppe climate is the climate of a region that receives precipitation below potential evapotranspiration, but not as low as a desert climate.

Q11. Answer: (c) Election Commission of India

The correct answer is 'Election Commission of India'

Key Points

• Election Commission of India:

• The Election Commission of India (ECI) is an autonomous constitutional authority responsible for administering election processes in India at both the national and state levels.

• The body administers elections to the Lok Sabha, Rajya Sabha, and State Legislative Assemblies, as well as the offices of the President and Vice President in the country.

• Established in 1950, the ECI ensures that elections are conducted in a free, fair, and transparent manner.

• The ECI has the powers to enforce the Model Code of Conduct, monitor election expenditure, and ensure the integrity of the electoral process.

Additional Information

• President of India:

• The President of India is the ceremonial head of state and does not directly administer elections.

• While the President formally appoints the Chief Election Commissioner and other Election Commissioners, the actual conduct of elections is the responsibility of the ECI.

• Prime Minister of India:

• The Prime Minister is the head of the government but does not have any role in the administration of elections.

• The ECI operates independently of the executive branch, ensuring that elections are free from governmental influence.

• Supreme Court of India:

• The Supreme Court is the highest judicial authority in India and may adjudicate election disputes, but it does not conduct elections.

• The judiciary's role is to interpret the law and ensure that elections are conducted according to constitutional and legal standards.

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Q12. Answer: (b) Non-justiciable

The correct answer is Non-justiciable.

Key Points

• Directive Principles of State Policy (DPSP)

• Articles 36-51 under Part-IV of the Indian Constitution deal with Directive Principles of State Policy (DPSP).

• They are borrowed from the Constitution of Ireland, which had copied it from the Spanish Constitution.

• Directive Principles of State Policy are non-Justiciable Rights, which means that they cannot be enforced through a Court of Law but lays down the Objectives and Framework according to which Policies and Laws should be made.

• However, they are not justifiable in the court of law.

• Directive principles are in the nature of instruments of instructions to the government of the day to do something positive.

Additional Information

• Importance of DPSP

• Socio-economic rights

• Fundamental rights provide for political rights. DPSP supplements them by providing for social and economic rights.

• Sustainable development

• DPSP is the principle of a welfare state in India. DPSP is important as it seeks to create a balance between economic progress and competition on one hand and environmental sustainability and social and economic equity on the other.

• Inequalities

• With liberalization and globalization inequalities have increased as reflected in the Oxfam report, which says that India's richest 1% holds over 40% of national wealth.

• The transition from the socialist pattern of society to liberalization and market economy where inequalities were bound to come, it is the duty of the state to reduce these inequalities through tax structure, subsidies, various welfare schemes, etc.

• Accountability

• DPSPs are important as it allows the citizens to hold the government accountable in their policy formulations and implementation e.g. equality at work, minimum wages, etc.

• Fair market

• Globalization is based upon competition and monopolistic tendencies in the market.

• DPSP is important to provide a laissez-faire business environment to industries.

Q13. Answer: (b) C. Sankaran Nair

The correct answer is C. Sankaran Nair.

Key Points

• Akshay Kumar plays the role of C. Sankaran Nair, a noted Indian lawyer, judge, and freedom fighter.

• C. Sankaran Nair was a member of the Viceroy's Executive Council during British rule.

• After the Jallianwala Bagh massacre (1919), he resigned in protest against British atrocities.

• He later fought a legal battle to hold the British government accountable for the massacre.

• The film Kesari Chapter 2 highlights his courage, integrity, and contribution to India's struggle for justice.

• The story is inspired by the book The Case That Shook the Empire written by his descendants, Raghu Palat and Pushpa Palat.

Q14. Answer: (c) 29 squadrons

The correct answer is 29 squadrons.

Key Points

• The Indian Air Force (IAF) currently operates around 29 fighter squadrons.

• The authorized strength of the IAF is 42 fighter squadrons, required to handle a two-front conflict scenario.

• The number dropped from 31 to 29 due to the retirement of old aircraft, mainly the MiG-21s.

• Aging fleets are being phased out faster than new aircraft can be inducted.

• The IAF plans to increase its strength through the induction of HAL Tejas jets and future acquisitions under the MMRCA 2.0 program.

Q15. Answer: (c) Bharatamuni

The correct answer is Bharatamuni.

Key Points

• Bharatamuni

• He was an ancient sage for whom the Natya Shastra is attributed.

• He is considered the father of Indian theatrical art forms.
• Natya Shastra is an ancient encyclopedia of the arts, including dance and music.
• Natya Shastra, written by Bharatamuni, is one of the original sources of Bharatanatyam.
• He is famously known for his 'Rasa theory'.

Additional Information

Sachin Shankar	**• He was a dancer based in Mumbai. - He also received the 'Central Sangeet Natak Akademi award' in 1992.**
Aswagosha	• He was a Mahasanghika Buddhist philosopher. - He was also an Indian dramatist, poet and orator. - He was the spiritual adviser of Kanishka in the first century.
Kalidasa	• He was a classical Sanskrit author. - He was ancient India's greatest poet and playwright. - His poems are based on the Vedas, the Ramayana, the Mahabharata and the Puranas. - He is also the author of two major works known as Kumarasambhava and Sambhava.

Q16. Answer: (d) Yeast

The correct answer is Yeast.

Key Points

• Fermentation

• The act of breaking down carbohydrate molecules without the assistance of oxygen molecules is referred to as fermentation. This process ultimately results in the synthesis of certain alcoholic or acidic substances.

• Why Yeast is used in fermentation?

• In the process of fermentation, yeast is utilized because it possesses oxygen-independent enzymes, such as zymase, that are able to digest the carbohydrate molecules. It brings for the creation of molecules of ethanol and carbon dioxide as a byproduct.

• A microbe known as Saccharomyces cerevisiae, also known simply as yeast, is required for the fermentation process in order to make alcohol.

• Because yeast is necessary for the production of alcohol, breweries that produce beverages such as beer and whisky use yeast in their processes.

Additional Information

• Paramecium

• Paramecium also called Paramoecium, is a genus of ciliated unicellular protozoa.

• The presence of thousands of cilia all over their body is a distinguishing feature of these organisms.

• They can be found in all types of water, including brackish, salty, and fresh.

• Euglena

• One kind of euglenoid is called a euglena. The organisms known as euglenoids are single-celled organisms with flexible bodies.

• They have traits that are typical of both plants and animals.

• Euglena has plastids and does photosynthesis during the day. At night, it uses its flagellum to move around and look for food.

• They live in both freshwater and saltwater, as well as in marshes and wet soil.

• Amoeba

• Amoeba is a unicellular organisms capable of changing its shape.

• They are typically found in ponds, lakes, and rivers with slow currents.

• Sometimes, these unicellular organisms might enter the human body and cause a variety of diseases.

Q17. Answer: (d) Burning of magnesium ribbon in air

The correct answer is Burning of magnesium ribbon in air.

Key Points

• Burning of magnesium ribbon in air:

• This process involves a chemical reaction.

• When magnesium ribbon burns in the presence of oxygen (from the air), it undergoes a chemical reaction to form magnesium oxide.

• The reaction can be represented as:

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• 2Mg + O2 → 2MgO

• During this process, the chemical composition of the magnesium changes, indicating a chemical reaction.

Additional Information

• Evaporation of petrol:

• Evaporation is a physical process, not a chemical reaction.

• It involves the conversion of a liquid into a vapor without any change in the chemical composition of the substance.

• In the case of petrol, it is the evaporation of the liquid hydrocarbons.

• Dissolution of salt in water:

• Dissolving salt in water is also a physical process.

• It is a dissolution or solvation process where the salt crystals break down into ions in the water, but there is no chemical reaction involved.

• Storing of oxygen gas under pressure in a gas cylinder:

• Storing oxygen gas under pressure is a physical process related to the compression and storage of gases.

• It does not involve any chemical reaction; it's merely a change in the physical state of the gas.

Q18. Answer: (b) Iodine

The correct answer is Iodine.

• Iodine is essential for the synthesis of thyroxine.

Key Points

• Iodine is a necessary and limiting substrate for the thyroid gland.

• It helps in the synthesis of thyroxine.

• The deficiency of Iodine can cause hypothyroidism, developmental brain disorders and goiter.

Q19. Answer: (c) Liver

The correct answer is Liver.

Key Points

• The liver secretes bile juice, which is a digesting juice.

• Bile is stored in the gallbladder.

• Bilirubin and biliverdin, as well as bile salts and cholesterol, make up bile juice.

• Bile juice helps in the emulsification of fat.

• Large fat globules are broken down into smaller globules by bile juice, making it easier for pancreatic enzymes to act on them.

• The human liver is the largest gland in the body.

• The liver is situated on the right side of the stomach.

• The main function of the liver is to produce bile pigment.

• Ammonia and urea are produced in the liver.

Additional Information

• Insulin and Glucagon are the hormones secreted by the pancreas.

• The nutrients in digested food are absorbed from the small intestine.

• The stomach is a hollow organ that holds food while it is being mixed with stomach enzymes.

Q20. Answer: (b) CaO + H2O → Ca(OH)2

The correct answer is CaO + H2O → Ca(OH)2.

Key Points

• Neutralization Reaction:

• It is a chemical reaction in which an acid and base react together to form salt and water as products.

• Example of the neutralization reaction.

• Ca(OH)2 + H2CO3 → CaCO3 + 2H2O

• H3PO4 + 3KOH → K3PO4 + 3H2O

• HNO3 + KOH → KNO3 + H2O

• The reaction between calcium oxide (CaO) and water (H2O) to form calcium hydroxide (Ca(OH)2) is an example of a combination reaction and not a neutralisation reaction.

Additional Information

• Other types of Chemical Reactions:

• Decomposition reaction: The opposite of a combination reaction, a complex molecule breaks down to make simpler ones. Such reactions are represented by equations of the following form: AB → A + B.

• Precipitation reaction: Two solutions of soluble salts are mixed resulting in an insoluble solid (precipitate) forming. Such reactions are represented by equations of the following form: A + Soluble salt B → Precipitate + soluble salt C.

• Combination reaction: It is a reaction where two or more elements or compounds combine to form a single compound. Such reactions are represented by equations of the following form: X + Y → XY.

• Combustion reaction: Oxygen combines with a compound to form carbon dioxide and water. These reactions are exothermic, meaning they give off heat. Such reactions are represented by equations of the following form: A + O2 → H2O + CO2.

• Displacement reaction: One element takes place with another element in the compound. Such reactions are represented by equations of the following form: A + BC → AC + B.

Q21. Answer: (c) Metallic oxide

The correct answer is Metallic Oxide.

Key Points

• When a metal reacts with oxygen metallic oxide is formed.

• Many metals react with oxygen to form metal oxides. Potassium and sodium are soft metals that are easily cut exposing a shiny surface that changes to dull rapidly.

• The change from shiny to dull is called tarnishing.

• For example:

• Potassium burns with a lilac flame when heated in the air.

• potassium + oxygen ? potassium oxide

• 4K(s) + O2(g) ? 2K2O(s)

• Magnesium reacts readily in the air burning with white light.

• magnesium + oxygen ? magnesium oxide

• 2Mg(s) + O2(g) → 2MgO(s)

Additional Information

• The metal oxide of aluminium is an amphoteric oxide.

• Metal oxides that react with both acids as well as bases to produce salts and water are known as amphoteric oxides.

• Many metals (such as zinc, tin, lead, aluminium, and beryllium) form amphoteric oxides or hydroxides.

• Amphoterism depends on the oxidation states of the oxide.

• Al2O3 is an example of an amphoteric oxide.

• Amphoteric oxides also include lead (II) oxide, and zinc (II) oxide, among many others.

Q22. Answer: (c) A salt and hydrogen

• When a metal reacts with acids, displacement reaction take place to form a salt and hydrogen gas.

• For example, when Sodium (Na) reacts with hydrochloric acid (HCl) then sodium chloride (NaCl) and hydrogen gas (H2) form.

• 2 Na (s) + 2 HCl (aq) → 2 NaCl (s) + H2 (g)

• Non-metals do not react with acids because non-metals are themselves acceptors of electrons so there is no way they can donate electrons to the hydrogen ion of the acid.

Q23. Answer: (d) HIV

The correct answer is HIV

Key Points

• HIV (Human Immunodeficiency Virus) is an example of a virus.

• HIV attacks the body's immune system, specifically the CD4 cells (T cells), which can lead to AIDS (Acquired Immunodeficiency Syndrome) if not treated.

• Unlike other options such as AIDS, Anthrax, and Elephantiasis, which are diseases or conditions, HIV is the actual virus that causes AIDS.

• Effective antiretroviral therapy (ART) can control the virus, allowing individuals to live longer, healthier lives.

Additional Information

• AIDS is a condition caused by the HIV virus, which leads to a severe weakening of the immune system.

• Anthrax is a serious infectious disease caused by gram-positive, rod-shaped bacteria known as Bacillus anthracis.

• Elephantiasis is caused by parasitic worms and results in extreme swelling of body parts, typically the legs.

• HIV is primarily transmitted through unprotected sex, sharing needles, and from mother to child during birth or breastfeeding.

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• Early detection and consistent treatment of HIV can prevent the progression to AIDS.

Q24. Answer: (d) Kinetic energy

• During the free fall of an object, Kinetic energy increases at any point in its path.

• Please note that energy can neither be created nor be destroyed. It only changes from one form to another.

• The kinetic energy is the energy possessed by an object by virtue of being in motion.

• Gravitational potential energy is the energy which an object possesses because of its position in a gravitational field. The higher the object, the more is the gravitational potential energy and the lower the object, the less is the gravitational potential energy.

• When an object falls from a height, the kinetic energy increases and gravitational Potential energy decreases. Hence, the conservation of energy is there.

• If an object is thrown upwards, the kinetic energy would decrease and gravitational Potential energy would increase. Hence, the conservation of energy is again there.

Q25. Answer: (a) pascal

The correct answer is pascal.

Key Points

• The unit of pressure in the SI system is the pascal (Pa), defined as a force of one Newton per square meter.

• The conversion between atm, Pa, and the torr is as follows:

• 1 atm = 101325 Pa = 760 torr.

• A standardized prefix system indicates fractions and multiples of metric units.

Additional Information

• Pressure is the force applied perpendicular to the surface of an object per unit area over which that force is distributed.

• Gauge pressure is the pressure relative to the ambient pressure. Various units are used to express pressure.

• The SI unit of force is the newton, symbol N.

• The base units relevant to force are:

• The meter, unit of length — symbol m.

• The SI unit of power is the watt (W), in honour of Scottish inventor James Watt (1736 - 1819).

• Watt's improvements to the steam engine helped to launch the Industrial Revolution.

Q26. Answer: (c) Hydrogen

The correct answer is Hydrogen.

Key Points

• The hydrogen (H) atom does not have any neutrons in its tiny nucleus.

• It has only one electron (-ve charged) and one proton (+ve charged).

• The first isotope of Hydrogen called Protium has no neutron in its atom.

• Neutrons are the particles in an atom that has a neutral charge.

Q27. Answer: (c) Hindbrain

The correct answer is Hindbrain.

Key Points

• Functions of hindbrain

• It is responsible for controlling the lungs as well as the heart. It also controls heart rate, breathing, blood pressure, sneezing, and swallowing.

• The cerebellum helps in coordinating the various muscles that enable the voluntary movements we make.

• The cranial nerves in the medulla oblongata also have many functions.

Additional Information

• Human brain:

• On average, an adult brain weighs between 1.0 kg - 1.5 kg. It is mainly composed of neurons – the fundamental unit of the brain and nervous system.

• Parts of Human Brain:

• Forebrain – Largest part of the brain

• It is the anterior part of the brain. The forebrain parts include:

• Cerebrum

• Hypothalamus

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• Thalamus
• Forebrain Function: Controls the reproductive functions, body temperature, emotions, hunger, and sleep.
• Midbrain: Smallest and central part of the brain
• The midbrain consists of:
• Tectum
• Tegmentum
• Hindbrain: The lower part of the brain
• Cerebellum
• Medulla
• Pons

Q28. Answer: (a) an increase in the OH- ion concentration

• As the pH value increases from 7 to 14, it represents an increase in the OH- ion concentration.
• pH scale determines the acidity or basicity of the solution.
• The pH value below 7 represents that solution is acidic and above 7 represents that solution is basic.
• The pH of pure water at room temperature is 7. It means it is neither acidic nor basic, it is neutral.
• The pH value of Battery Acid is zero which means it is highly acidic. The pH value of Liquid drain cleaner is 14 which means it is highly basic.

Q29. Answer: (d) 2

The correct answer is Option 4, i.e 2.
• Helium is the 2^(nd) most abundant element available in the universe.
• Helium symbol (He) considered as noble gas having Atomic Number 2.
• It is colorless, odourless, tasteless and non toxic.
• Helium gas is used to inflate party balloons, scientific balloons and blimps etc.
• Atomic mass of Helium is 4.002602 u.
• Boiling point of Helium is -268.9 °C.

Q30. Answer: (d) Endemic Species

The Correct Answer is Endemic Species.

Key Points

• Endemic Species
• A species of plants and animals found exclusively in a certain place is referred to as Endemic Species.
• These species are not naturally found anywhere else in the world. Their presence in a specific region is often due to isolation or unique environmental conditions.
• Endemic species can become indicators of the health of an ecosystem, as they may be more sensitive to changes that could affect their habitat.
• The conservation of endemic species is crucial for maintaining biodiversity and ecosystem balance.

Additional Information

Option	Details
1) Specific Species	This term does not relate to geographical exclusivity but rather refers to a particular species without implying location-based uniqueness.
2) Endangered Species	These are species that are at risk of extinction. The term does not imply geographic exclusivity but rather focuses on the risk status of the species.
3) Infectious Species	This term is not typically used in the context of describing the exclusivity of species to a region. It is more related to species that can cause diseases.

Q31. Answer: (c) 22

Given:

The two numbers are 15 and 29.

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Formula used:
Average = (Sum of numbers) / (Number of numbers)
Calculation:
Sum of 15 and 29 = 15 + 29 = 44
Number of numbers = 2
Average = 44 / 2 = 22
Therefore The average of 15 and 29 is 22.

Q32. Answer: (c) 600

Given:
Initial number = 500
First, decreased by 20%, then increased by 50%.
Calculation:
Decreased value = 500 - (20% of 500)
20% of 500 = (20/100) × 500 = 100
Decreased value = 500 - 100 = 400
Increased value = 400 + (50% of 400)
50% of 400 = (50/100) × 400 = 200
Increased value = 400 + 200 = 600
Therefore The new number is 600.

Q33. Answer: (a) 3816

Given:
Number = 5300
Percentage = 72%
Formula used:
Percentage of a number = (Percentage / 100) × Number
Calculation:
72% of 5300 = (72 / 100) × 5300 = 0.72 × 5300 = 3816
Therefore 72% of 5300 is 3816.

Q34. Answer: (d) 24 sec

Given:
Time to fill 5/7 of the tank = 1 minute
We need to find the time to fill the remaining 2/7 of the tank in seconds.
Calculations:
Since 1 minute = 60 seconds, the pipe fills 5/7 of the tank in 60 seconds.
Time to fill 1 part = 60 / (5/7) = 60 × (7/5) = 84 seconds
Time to fill the remaining 2/7 of the tank = 84 × (2/7) = 24 seconds
Therefore The time to fill the remaining tank is 24 seconds.

Q35. Answer: (c) 19 cm

Given:
Length of the rectangle = 29 cm
Area of the rectangle = 551 cm^2
Formula used:
Area of a rectangle = Length × Width
Calculation:
551 = 29 × Width
Width = 551 / 29
Width = 19 cm
Therefore The width of the rectangle is 19 cm.

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Q36. Answer: (c) 480

Given:

Numbers: 160 and 120

Formula used:

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

Calculation:

Prime factorization of 160: 160 = 2^5 × 5

Prime factorization of 120: 120 = 2^3 × 3 × 5

The common factors are 2^3 and 5. So, GCD = 2^3 × 5 = 8 × 5 = 40.

Now, use the LCM formula:

LCM = (160 × 120) / 40 = 19200 / 40 = 480.

Therefore The LCM of 160 and 120 is 480.

Q37. Answer: (b) 3

Given:

Numbers: 51 and 3

Formula used:

HCF (Highest Common Factor) is the greatest number that divides both numbers exactly.

Calculation:

Prime factorization of 51: 51 = 3 × 17

Prime factorization of 3: 3 = 3

The common factor is 3, so the HCF of 51 and 3 is 3.

Therefore The HCF of 51 and 3 is 3.

Q38. Answer: (d) 215

Given:

1/5 of a number = 43

Calculation:

Let the number be x. We have the equation:

(1/5) × x = 43

Now, multiply both sides of the equation by 5 to solve for x:

x = 43 × 5

x = 215

Therefore The number is 215.

Q39. Answer: (d) 6280

Given:

Original salary = 7850

Percentage decrease = 20%

Formula used:

New salary = Original salary - (Percentage decrease × Original salary)

Calculation:

20% of 7850 = (20 / 100) × 7850 = 1570

New salary = 7850 - 1570 = 6280

Therefore The new salary after a 20% decrease is 6280.

Q40. Answer: (d) Rs 21384

Given:

Principal (P) = 3300

Rate (R) = 72%

Time (T) = 9 years

Formula used:

Simple Interest (SI) = (P × R × T) / 100

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Calculation:
SI = (3300 × 72 × 9) / 100
First, calculate the product of 3300, 72, and 9:
3300 × 72 = 237600
237600 × 9 = 2138400
Now, divide by 100 to find the interest:
2138400 / 100 = 21384
Therefore The correct simple interest after 9 years is 21384.

Q41. Answer: (a) 120

Given:
2 × 6 × 10
Calculation:
2 × 6 = 12
12 × 10 = 120
Therefore 2 × 6 × 10 = 120

Q42. Answer: (c) 3

Given:
(57 + 46 - 13)/(4 × 5 + 10)
Calculation:
Numerator: 57 + 46 - 13 = 90
Denominator: 4 × 5 + 10 = 20 + 10 = 30
Now, divide the numerator by the denominator:
90 / 30 = 3
Therefore The correct answer is 3.

Q43. Answer: (a) 7

Given:
Total number of students = 25
Average marks of all 25 students = 8
Average marks of the first 5 students = 12
Calculation:
Total marks of all 25 students = 25 × 8 = 200
Total marks of the first 5 students = 5 × 12 = 60
Total marks of the remaining 20 students = Total marks of all students − Total marks of first 5 students
Total marks of the remaining 20 students = 200 − 60 = 140
Average marks of the remaining 20 students = (Total marks of the remaining 20 students) / 20
Average = 140 / 20 = 7
Therefore The average marks of the remaining 20 students is 7.

Q44. Answer: (c) 15 : 1

Given:
The two numbers are 3 and 2/10.
Calculation:
First, convert 3 to a fraction: 3 = 3/1.
The ratio of 3 to 2/10 is: (3/1)/(2/10)
To divide by a fraction, multiply by the reciprocal:
Ratio = 3/1 × 10/2 = (3 × 10)/(1 × 2) = 30/2 = 15
Therefore The ratio of 3 to 2/10 is 15:1.

Q45. Answer: (b) 81

Given:
The ratio A : B = 9 : 2

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The smaller number B = 18

Calculation:

The value of the larger number A = ?

From the ratio A : B = 9 : 2, we can write:

A/B = 9/2

Substitute B = 18:

Now, solve for A:

Cross-multiply: A = 18 × 9/2

A = 18 × 4.5 = 81

Therefore The value of the larger number A is 81.

Q46. Answer: (d) 1

Given:

Total people → 42

Richa's rank from the left side of the row → 26th

Rajan's rank from the right side of the row → 19th

Number of people sitting between Richa and Rajan → Total people - (Richa's rank from the left side of the row + Rajan's rank from the right side of the row) - 2

→ 42 - (26 + 19) - 2 = 1

Hence, the correct answer is "Option 4".

Q47. Answer: (d) Father

Given:

1) Jay is the brother of Sayan’s uncle.

2) Sayan’s grandfather has only two sons.

Thus, Jay is Sayan's father.

Hence, the correct answer is "Option 4".

Q48. Answer: (d) 5

The question asks for the resultant when the third digit of the second-highest number is added to the third digit of the second-lowest number from the series: 785, 854, 863, 954, 921.

Arrange the numbers in ascending order: 785 (Lowest), 854 (Second Lowest), 863, 921 (Second Highest), 954 (Highest).

Identify the required numbers and digits:

Second Highest Number: 921. Its third digit is 1.

Second Lowest Number: 854. Its third digit is math 4.

Calculate the resultant (Addition):

Resultant = 1 + 4 = 5.

The resultant is 5.

The correct answer is 5

Q49. Answer: (b) Nairobi

The logic followed here is:

Portugal : Lisbon → Lisbon is the capital of Portugal.

Similarly,

Kenya : ? → Nairobi is the capital of Kenya.

Hence, "Option 2" is the correct answer.

Q50. Answer: (c) P

According to the question,

Fourteenth letter from the left end → ABCDEFGHIJKLMNOPQRSTUVWXYZ

Tenth letter from the right end → ABCDEFGHIJKLMNOPQRSTUVWXYZ

Letter midway between the fourteenth letter from the left end and the tenth letter from the right end → ABCDEFGHIJKLMNOPQRSTUVWXYZ → O and P

As, out of all option only 'P' is given, therefore midway between the fourteenth letter from the left end and the tenth letter from the

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right end is 'P'.

Hence, 'Option 3' is the correct answer.

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