Army Soldier GD ASC Centre No 2 (South Bangalore) 28 March 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. The hill station 'Javadi' is located in which state?

(a) Kerala
(b) Uttar Pradesh
(c) Tamil Nadu
(d) Uttarakhand

Q2. Which of the following district is on the international border of India?

(a) Sirsa
(b) Puruba
(c) Karimganj
(d) Anantnag

Q3. The ethnic people Todas are found in _____

(a) Rajasthan
(b) Arunachal Pradesh
(c) Madhya Pradesh
(d) Tamil Nadu

Q4. With which religion are the Dilwara temples associated?

(a) Hinduism
(b) Hinduism and Jainism both
(c) Buddhism
(d) Jainism

Q5. Joint stream of Ganga and Brahmaputra is known as _____

(a) Sangpo
(b) Meghna
(c) Jamuna
(d) Padma

Q6. Central Board of Film Certification comes under which of the following Ministry of the Government of India?

(a) Ministry of Human Resources Development
(b) Ministry of Information and Broadcasting
(c) Ministry of Tourism and Culture
(d) Ministry of Youth Affairs and Sports

Q7. Who had established four monastic seats in the four corners of India?

(a) Ramaujacharya
(b) Madhavacharya
(c) Shankaracharya

(d) Bhaskaracharya

Q8. Who founded the Servants of India Society?

(a) Chittaranjan Das
(b) Gopal Krishna Gokhale
(c) Lala Har Dayal
(d) Bal Gangadhar Tilak

Q9. Soil erosion is caused due to

(a) Rapid urbanization
(b) Cutting of trees
(c) Over grazing by animals
(d) All the above factors

Q10. What is the full form of LOC?

(a) Line of Actual Control
(b) Line of Control
(c) Location of Control
(d) Line of Command

Q11. Pradip Kumar Banerjee is associated with which sports?

(a) Football
(b) Table Tennis
(c) Base Ball
(d) Hockey

Q12. Who is known as the father of the Green Revolution in the world?

(a) Norman Borlaug
(b) V kurien
(c) None of this
(d) Dr M S Swminathan

Q13. The largest producer of black pepper in India?

(a) Tamil Nadu
(b) Andhra Pradesh
(c) Kerala
(d) Karnataka

Q14. The first emperor of France was____.

(a) Napoleon
(b) Matel
(c) Louis XIV
(d) Charlemagne

Q15. _____ was the author of the book title "Wings of Fire".

(a) Dr A.P.J Abdul Kalam
(b) Mulk Raj Anand
(c) Jawahar Lal Nehru
(d) Maithili Sharan Gupt

GENERAL SCIENCE

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Q16. A bullet fired from the rifle has:

(a) None of these
(b) Kinetic energy
(c) Potential energy
(d) Both Kinetic and potential energy

Q17. The botanical name of tea is _____

(a) Rubiaceae
(b) Mangifera indica
(c) Camellia Sinensis
(d) Triticum

Q18. Among the following materials sound travels fastest in

(a) Water
(b) Vaccum
(c) Air
(d) Steel

Q19. The laws of floating bodies was discovered by _____

(a) L. E. Waterman
(b) Henrich Hertz
(c) Archimedes
(d) Newton

Q20. Vulcanised rubber was invented by _____

(a) Robert William Thomson
(b) John Boyed Dunlop
(c) Charles Goodyear
(d) Kikpatrick Macmilan

Q21. Dialysis is used for the treatment of _____

(a) Heart Weakness
(b) Kidney failure
(c) Brain dsease
(d) None of these

Q22. Inverter is a device which converts _____.

(a) DC into AC
(b) AC into AC
(c) DC into DC
(d) AC into DC

Q23. A temperature of 295 Kelvin is equivalent to approximately _____

(a) 96.33 °F
(b) 0 °F
(c) 32.33 °F
(d) 71.33 °F

Q24. The common name for potassium carbonate is _____

(a) Potash
(b) Vinegar
(c) Baking Powder
(d) Soda

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Q25. The instrument used to measure the concentration of salt water is _____

(a) Galvenometer
(b) pHmeter
(c) Fathometer
(d) Salinometer

Q26. The greenhouse Effect is mainly due to the increase in atmospheric

(a) Ozone
(b) Carbon monoxide
(c) Carbon di oxide
(d) Nitrogen

Q27. Lens is made up of _____

(a) Flint glass
(b) Ordinary glass
(c) Pyres Glass
(d) Cobalt glass

Q28. Dactylography is the study of _____

(a) Finger prints
(b) Handwriting
(c) Forensic
(d) Carbon dating

Q29. Green coloured pigment present in leaves is called

(a) Chlorophyll
(b) Carotene
(c) Xanthophyll
(d) Phycobilin

Q30. The hardest form of carbon is _____

(a) Graphite
(b) Charcoal
(c) Coal
(d) Diamond

MATHEMATICS

Q31. How many times can letters of the word ARISE be arranged?

(a) 180
(b) 120
(c) 90
(d) 60

Q32. The product of rational and irrational numbers is _____.

(a) always a rational number
(b) always an irrational number
(c) Sometimes Rational Numbers and Sometimes Irrational Numbers
(d) Always an integer

Q33. A motor boat takes 2 hours to travel 9 km in the lower direction of impact and 6 hours to cover the same distance in the direction of flow. So what will be the speed of the boat (km) and the direction of flow?

(a) 3 km/h and 2.5 km/h
(b) 3 km/h and 2 km/h
(c) 3 km/h and 1 km/h

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(d) 3 km/h and 1.5 km/h

Q34. A person sells 320 mangoes at the cost price of 400 mangoes. What is his profit percentage?

(a) 10%
(b) 25%
(c) 15%
(d) 20%

Q35. The circumference of a triangle is 600 m, if the ratio 12 : 13 : 15 you find the longest side?

(a) 195
(b) 220
(c) 280
(d) 225

Q36. Find 30% of (1500 + 600) = _____?

(a) 600
(b) 530
(c) 650
(d) 630

Q37. 'A' and 'B' can do a work in 30 days and 15 days respectively. If 'A' starts on the work and both work alternately days after day, in how many days will be work be completed?

(a) 9
(b) 10
(c) 20
(d) 8

Q38. 5, 25, 125, _____?

(a) 675
(b) 625
(c) 700
(d) 725

Q39. The average age of 7 boys is 20 years. If the average age of the first 6 boys is 191/2 years, then the 7th will be how many years old?

(a) 23
(b) 18
(c) 20
(d) 21

Q40. Find which is the next number in series ?

40, 31, 7, 25, 13, 19, 19, 13, ____?

(a) 14
(b) 25
(c) 31
(d) 7

Q41. 1589 miligram into gram?

(a) 1589 gram
(b) 1.589 gram
(c) 15.89 gram
(d) 158.9 gram

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Q42. A batsman makes 63 runs in the 12th innings. Due to which his average increased by 2 runs, now after 12 innings, what is the new average?

(a) 87
(b) 39
(c) 13
(d) 41

Q43. The difference of two numbers is 2 and the difference of their squares is 28, then find their sum?

(a) 15
(b) 21
(c) 19
(d) 14

Q44. If an event cannot occur then its probability is _____?

(a) 1
(b) 3/4
(c) 0
(d) 1/2

Q45. If a polygon has 44 diagonals, what is the number of its sides?

(a) 13
(b) 11
(c) 12
(d) 10

LOGICAL REASONING

Q46. Find the odd word

(a) Wheel
(b) Train
(c) Bus
(d) Boat

Q47. Choose out the odd one.

(a) Tailor
(b) Barber
(c) Blacksmith
(d) Carpenter

Q48. Arrange the given words in alphabetical order and tick the one that comes as the second last.

Clear, contrast, Bosh, constantly, Checked

(a) Clear
(b) Checked
(c) Bosh
(d) Constantly

Q49. In a certain code language AWAKE is written as ZVZJD, then in the same manner FRIEND will be written as _____.

(a) EQHDEM
(b) UQHDME
(c) EQHDMF
(d) EQHDMC

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Q50. Select the number that can replace the question mark (?) in the following series.

1, 5, 10, 16, 23, 31, ?

(a) 36
(b) 40
(c) 42
(d) 44

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Tamil Nadu

The correct answer is Tamil Nadu.

• The hill station 'Javadi' is located in Tamil Nadu.

• Javadi hills are spread across parts of Vellore and Tiruvannamalai districts in the northern part of the state of Tamil Nadu.

Additional Information

• Mahendragiri is the highest peak in the Eastern ghats of India.

• This peak is in the Gajapati district of Odisha.

• The elevation of the peak is 1,501 m.

• Source: http://ncert.nic.in/ncerts/l/iess102.pdf

Q2. Answer: (c) Karimganj

The correct answer is Karimganj.

Key Points

• Karimganj s a town in the Karimganj District of the Indian state of Assam.

• Karimganj town is located on the northern fringe of the district adjoining Bangladesh, flanked on two sides by the Kushiyara River and Longai river, Karimganj town is located just on the Bangladesh border with the river Kushiara flowing in between.

• One prominent feature of the place is a long and winding canal called Noti Khal meandering across the town.

• Karimganj became a subdivision of Sylhet District of British India in the late nineteenth century.

• It was severed from Sylhet during the Partition of India and was included in India as a part of the Cachar district in Assam.

• In 1983, Karimganj became a district of Assam.

Map of Karimganj:

Q3. Answer: (d) Tamil Nadu

The correct answer is Tamil Nadu.

• "Todas" is a tribe of Tamil Nadu.

• "Todas" is a tribal group in the higher altitudes of the Nilgiris.

• Gond is a tribe of Madhya Pradesh.

• Gond tribe is one of the largest Adivasi communities.

• The Gond called themselves Koi or Koiture.

• They inhabited the dense forests of the Vindhyas, Satpura and Mandla in the Narmada region of the Amarkantak range for centuries.

Additional Information

Important tribes of:

State	Tribes

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Madhya Pradesh	Kharia, Bhils, Murias, Birhors, Bharia, Khond, Gonds
Uttarakhand	Bhotia, Buksa, Jaunsari, Kol, Raji, Khas, Raji, Tharu
Tamil Nadu.	Kadar, Kanikar, Kotas, Todas
Jharkhand	Savar, Mundas, Santhals, Khaira

Q4. Answer: (d) Jainism

The correct answer is Jainism.

Key Points

• The Dilwara Temples are a group of Svetambara Jain temples.

• It is located about two and a half kilometres from the Mount Abu settlement.

• It is Rajasthan's only hill station and also known as Delvada Temples.

• The complex is in the midst of a range of forested hills.

Additional Information

• Dilwara Temple complex consists of five major sections or temples devoted to five Jain Tirthankaras (Saints):

• Shri Mahaveer Swami Temple.

• Shri AdiNath Temple or Vimal Vasahi Temple.

• Shri ParshavNath Temple or Khartar Vasahi Temple.

• Shri Rishabdaoji Temple or Peethalhar Temple.

• Shri NemiNathJi Temple or Luna Vasahi Temple.

Q5. Answer: (b) Meghna

The correct answer is Meghna.

Key Points

• The Ganges River does enter Bangladesh about 50 km below Farakka, and it is joined by several tributaries on its left side. However, the tributaries you mentioned—Mahananda, Punarbhaba, Atrai (Boral), and Karatoya—are not among them. These rivers originate in India but do not directly join the Ganges.

• The Ganges River, after entering Bangladesh, is known as the Padma River.

• It flows further south and eventually meets the Brahmaputra River near the town of Chandpur in Bangladesh.

• The combined river is then known as the Meghna River.

Additional Information

• Brahmaputra:

• It originates under the name of Siang or Dihang, from the Chemayungdung glacier of the Kailash range near the Mansarovar lake.

• It enters India west of Sadiya town in Arunachal Pradesh.

• Tributaries: Dibang, Lohit, Siang, Burhi Dihing, Tista, and Dhansari.

• It is known as Tsangpo in Tibet and Yarlung Zangbo in China.

• The river crosses Assam below Dhubri and enters Bangladesh where the river is known as Jamuna and it flows for 337 km.

• It is a perennial river and has several peculiar characteristics due to its geography and prevailing climatic conditions.

• It is flooded twice annually.

• One flood is caused by the melting of the Himalayan snow in summer and the other due to the monsoon flows.

Q6. Answer: (b) Ministry of Information and Broadcasting

The correct answer is Ministry of information and Broadcasting.

• Central Board of Film Certification is an independent body that provides film certificates and works under the Ministry of Information and Broadcasting, Government of India.

• The films that are screened on television and in cinemas have to be first certified by this board before the public exhibition.

Key Points

• It was formed on 15th January 1951 under the cinematograph act, 1952 and its headquarters is in Mumbai.

• It provides four certificates namely U, U/A, A, and S.

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Q7. Answer: (c) Shankaracharya

The correct answer is Shankaracharya

• Adi Shankaracharya was considered as one of the most important philosophers and religious leaders in Indian history and the Hindu Sanatan religion and is widely revered as a religious reformer in the early 8th century.

• Adi Shankaracharya was born on 11th May 788 AD, at Kaladi near Kochi, Kerala.

• He is associated with Maya Theory, Advaita Vedanta (Non-Dualism), Tarak Brahma.

• He wrote a book called Bhashya - commentaries on Gita.

• Adi Shankaracharya established four major mathas in the four corners – north (Jyotirmath), south (Sringeri, Kanchi), east (Puri), west (Dwaraka) – to propagate the philosophy of Advaita Vedanta and to promulgate the concept of Sanatana dharma.

• He died (took samadhi) at the age of 33, at Kedar tirth.

Key Points

Four mathas with their states-

Mathas	States
Jyotir Matha	Badrikashram, Uttarakhand
Dwarka Matha	Dwarka, Gujarat
Govardhana Math	Puri, Odisha
Sringeri Sharada Peetham	Chikkamagaluru, Karnataka

Q8. Answer: (b) Gopal Krishna Gokhale

The correct answer is Gopal Krishna Gokhale.

• Gopal Krishna Gokhale founded the 'Servants of India society.

• It was formed in Pune, Maharashtra in 1905.

Key Points

• The Deccan education society was left by Gokhale to form this association.

• This association was formed with a small group of educated Indians.

• To promote social and human development and overthrow British rule in India was the objective of forming this association.

• Many campaigns for education, sanitation, and healthcare were promoted by the organization.

• Untouchability, discrimination, alcoholism, poverty, and oppression of women like issues were raised.

• Hitavada was the magazine, which was published through the association.

Q9. Answer: (d) All the above factors

The correct answer is All the above factors.

• The potential for soil erosion increases if the soil has no or very little vegetative cover of plants and/or crop residues.

• Soil erosion is caused by both natural and anthropogenic factors that affect all landforms.

• Plant and residue cover protects the soil from raindrop impact and splash, tends to slow down the movement of runoff water, and allows excess surface water to infiltrate.

• The erosion-reducing effectiveness of plant and/or crop residues depends on the type, extent, and quantity of cover.

• Vegetation and residue combinations that completely cover the soil and intercept all falling raindrops at and close to the surface are the most efficient in controlling soil erosion (e.g., forests, permanent grasses).

• Partially incorporated residues and residual roots are also important as these provide channels that allow surface water to move into the soil.

Key Points

Types of erosion:-

• Soil erosion: Destruction of soil cover or removal of topsoil.

• Rill erosion: Finger-shaped grooves in the land due to water.

• Gully erosion: Making the land bad and unsuitable for cultivation due to the enlargement of rills.

• Sheet erosion: Uniform removal of soil in thin layers by the forces of raindrops and overland flow.

• The central soil conservation board was set up by the Government of India to prepare plans for soil conservation.

• Afforestation, contour ploughing, terrace farming, control of floods, controlled grazing, crop rotation, restriction on shifting cultivation, etc are measures for soil conservation.

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Q10. Answer: (b) Line of Control

The correct answer is Line of Control.

• The Line of Control (LoC) is a military control line between India and Pakistan.

• For both India and Pakistan, the Line of Control is not legally recognized.

Additional Information

International Boundaries of India:

• After China and Russia, India has the third-largest international border in the whole world.

• India is also called the 'most sensitive border' globally because it varies from infiltration to extreme climatic conditions.

• Its border in the Western part with Pakistan extends up to 3,323 km, dividing the Punjab region.

• After dividing the Punjab region, It running the boundaries up to the Rann of Kutch & Thar Desert in Rajasthan.

• Basically, India claims the entire state of Jammu and Kashmir, which includes China-administered Aksai Chin & Part of Kashmir(Pakistan Administrated).

• According to India, both are illegally occupied areas.

Q11. Answer: (a) Football

The correct answer is Football.

• Pradip Kumar Banerjee was an Indian professional footballer

• He played as a striker for the India national football team.

• He also captained the national team and later on became the coach of the national team.

• He was one of the first recipients of the Arjuna Award

• He was awarded the prestigious Padma Shri in 1990.

• Banerjee died on 20 March 2020.

Q12. Answer: (a) Norman Borlaug

The correct answer is Norman Borlaug.

Key Points

• Norman Borlaug is the father of the Green Revolution in the world.

• He was an American agricultural scientist and humanitarian.

• He is considered by some to be the "father of modern agriculture".

• He received the Nobel Peace Prize in 1970.

Please note: As India is not specified in the question so the most appropriate answer will be Norman Borlaug

• Professor M.S. Swaminathan is known as the father of the Green revolution in India.

Additional Information

• Verghese Kurien is known as the Father of the White Revolution in India.

Q13. Answer: (d) Karnataka

The correct answer is Karnataka.

Key Points

• Karnataka has dethroned Kerala as the leading producer of pepper.

• Black pepper was first cultivated in Kerala (Malabar Coast of India then).

• Black pepper is dried and used as a seasoning or spice.

• It is also known by the name peppercorn.

Q14. Answer: (a) Napoleon

The correct answer is Napoleon.

• In 1804, Napoleon Bonaparte crowned himself Emperor of France.

• He was the first emperor of France (1804–14/15).

• He set out to conquer neighbouring European countries, dispossessing dynasties and creating kingdoms where he placed members of his family.

• Napoleon saw his role as a moderniser of Europe. He introduced many laws such as the protection of private property and a uniform system of weights and measures provided by the decimal system.

• He was finally defeated at Waterloo in 1815.

• Many of his measures that carried the revolutionary ideas of liberty and modern laws to other parts of Europe had an impact on people long after Napoleon had left.

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Q15. Answer: (a) Dr A.P.J Abdul Kalam

The correct answer is A.P.J Abdul Kalam.

• The book 'Wings of Fire' is authored by A.P.J Abdul Kalam.

Key Points

• The book was written by Dr. Abdul Kalam and Arun Tiwari.

• His full name is Avul Pakir Jainulabdeen Abdul Kalam.

• He served as the 11th President of India from 2002 to 2007.

• He also helped to establish the Vikram Sarabhai Space Centre and pioneered the first space launch vehicle program.

• He is known as the Missile Man of India.

Additional Information

Name	Famous Creation
Mulk Raj Anand	Coolie, Untouchable
Jawahar Lal Nehru	The Discovery of India
Maithili Sharan Gupt	Panchvati, Urmila

Q16. Answer: (b) Kinetic energy

The correct answer is Kinetic energy.

Key Points

CONCEPT:

• Kinetic energy: The energy possessed by a body by virtue of its motion is called the kinetic energy of the body.

• A body that possesses kinetic energy can do work on some other body.

The kinetic energy of a body of mass "m" moving with a velocity "v" is given as:

K.E. = 1/2mv²

EXPLANATION:

• A bullet fired from a gun possesses very high kinetic energy because of its high velocity.

• This kinetic energy of the bullet does work on the object that it hits or strikes.

• Therefore, the bullet pierces its target because of the high kinetic energy possessed by virtue of its motion.

Additional Information

• Potential energy: The energy possessed by a body by virtue of its position or configuration is called the potential energy of the body.

• Heat energy: The energy possessed by a body as a result of the movement of its molecules.

• Acceleration: The rate of change of velocity of an object with respect to time is called its acceleration.

Q17. Answer: (c) Camellia Sinensis

The correct answer is Camellia Sinensis.

Key Points

Camellia Sinesis is the botanical name of tea.

Common Name	Botanical Name	Order	Kingdom
Drumstick tree	Moringa oleifera	Brassicales	Plantae
Tea	Camellia sinensis	Theales	Plantae
Bamboo	Bamboosa Aridinarifolia	Poales	Plantae
Banana	Musa paradisicum	Zingiberales	Plantae

Q18. Answer: (d) Steel

The correct answer is Steel.

Key Points

CONCEPT:

• Sound: A local disturbance whose propagation is facilitated by the collisions between particles this disturbance propagates in a

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longitudinal wave, imagine one molecule hitting the next molecule, and then that molecule hitting the next, and so forth.

• It is a mechanical wave that needs a medium to travel.

• The speed of sound is proportional to the density of the material.

• Since the density of a solid is maximum so the speed of sound is maximum in solid.

• Speed of sound in solid (6000 m/s) > Speed of sound in liquid (1402 to 1482 m/s) > Speed of sound in gas/air (330 to 345 m/s).

EXPLANATION:

• The distances between molecules in solids are very small, i.e., solids are denser - as compared to liquids and gases.

• Because they are so close, they can collide very quickly, i.e. it takes less time for a molecule of the solid to 'bump' into its neighbor.

• Solids are packed together tighter than liquids and gases, hence sound travels fastest in solids.

• The water is liquid, so the speed of sound in water is less than that in steel.

• As the steel is solid, so the sound waves travel fastest through it and minimum in Vacuum. So option 1 is correct.

Q19. Answer: (c) Archimedes

The correct answer is Archimedes.

Key Points

CONCEPT

• Density: It is defined as the mass of a body per unit volume. We can also say that how much mass it can contain in a specific volume.

• As of dense material like Iron takes more mass in a given volume than of wood.

• Mathematically it gives a formula Density (ρ) = mass (m) / Volume (V)

• SI Unit is kg/m3.

• 1m3 = 1000 liters of water.

• Flotation: It can be defined as the tendency of an object to rise to the upper levels of the fluid or to stay on the surface of the fluid.

• Sinking: The opposite of floatation is sinking and can be defined as the tendency of an object to go to the lower levels of the fluid.

EXPLANATION

Archimedes principle:

• It is used to explain the law of flotation or upward thrust experienced when immersed in a fluid. Therefore option 4 is correct.

• The principle of Archimedes states “When a body is immersed in a liquid, an upward thrust, equal to the weight of the liquid displaced, acts on it.”

• The flotation and sinking of an object are dependent upon the relative density with each other.

• If the density of the object is more than the density of the liquid, the object will sink.

• On the other side, if the density of an object is less than the liquid, then it will float over it.

• If the density of the object and liquid is equal to each other, they are in equilibrium and float and sink both at the same time

• Therefore, the sinking or floating of an object depends on the difference in density of objects and liquid.

Q20. Answer: (c) Charles Goodyear

The correct answer is Charles Goodyear.

Key Points

EXPLANATION:

Vulcanised rubber:

• Charles Goodyear was one of the early pioneers of the tyre and the Goodyear tyre is named after him. Therefore option 4 is correct.

• In 1844, more than 50 years before the first rubber tyres appeared on cars, Goodyear patented a process called vulcanization.

• Vulcanization refers to cross-linking at several locations. It is most commonly applied in Rubber in which sulphur is used for cross-linking polyisoprene at several locations.

• Vulcanized rubber has 3 - 5% sulphur content. The extent of stiffness of vulcanized rubber depends on the amount of sulphur added.

• During the vulcanization of natural rubber, it undergoes a cross-linking of Cis -1, 4-polyisoprene chains through the disulphide bonds.

• The vulcanization makes rubber elastic and stretchy. Therefore, vulcanized rubber is an elastomer.

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Q21. Answer: (b) Kidney failure

The correct answer is Kidney failure.

Key Points

• Dialysis is used for patients having kidney trouble.

• Dialysis is a treatment that filters and purifies the blood using a machine.

• This helps keep your fluids and electrolytes in balance when the kidneys can't do their job.

• Dialysis has been used since the 1940s to treat people with kidney problems.

• If the kidneys fail completely, the only treatment options available are dialysis for the rest of your life or transplant.

Additional Information

• Functions of Kidney:

• kidneys prevent extra water, waste, and other impurities from accumulating in your body.

• They also help control blood pressure and regulate the levels of chemical elements in the blood.

• These elements may include sodium and potassium.

• Your kidneys even activate a form of vitamin D that improves the absorption of calcium.

• Types of Dialysis:

• Hemodialysis -

• This process uses an artificial kidney to remove waste and extra fluid from the blood.

• The blood is removed from the body and filtered through the artificial kidney.

• The filtered blood is then returned to the body with the help of a dialysis machine.

• Peritoneal dialysis:

• Peritoneal dialysis involves surgery to implant a peritoneal dialysis (PD) catheter into your abdomen.

• The catheter helps filter your blood through the peritoneum, a membrane in your abdomen.

• During treatment, a special fluid called dialysate flows into the peritoneum.

• The dialysate absorbs waste.

• Once the dialysate draws waste out of the bloodstream, it’s drained from your abdomen.

• This process takes a few hours and needs to be repeated four to six times per day.

Q22. Answer: (a) DC into AC

The correct answer is DC into AC.

• An inverter is an electronic circuit that converts low voltage DC (direct current) into high voltage AC (alternating current) power.

Key Points

• An inverter may take the 12, 24, or 48 volts DC and convert to 230 volts AC.

• A Step-up transformer is used in home inverters.

• The main power AC is supplied to the inverter, and it is transformed into DC simultaneously, which keeps charging the battery continuously.

• There are a sensor and relay structure that always monitors the ON or OFF status of the main supply.

Additional Information

• The rectifier is an electrical device that converts A.C. to D.C.

• A frequency changer or frequency converter is an electronic or electromechanical device that converts alternating current (AC) of one frequency to alternating current of another frequency.

Q23. Answer: (d) 71.33 °F

The correct answer is 71.33°F.

Key Points

• The Fahrenheit scale is a temperature scale that is based on the freezing point of water at 32°F and the boiling point of water at 212°F.

• The region between these two temperatures is divided into 180 equal parts i.e. each part equals 1°F.

• The absolute zero value is at -459.67°F.

• The Kelvin scale is a temperature scale that is based on the freezing point of water at 273K and the boiling point of water at 373K.

• The region between these two temperatures is divided into 100 equal parts i.e. each part equals 1K.

• The absolute zero value is at 0K.

Temperature conversion formulas:

	to Celsius	to Fahrenheit	to Kelvin
Celsius	°C	9/5°C + 32	°C + 273.15
Fahrenheit	5/9 (°F - 32)	°F	5/9(°F - 32) + 273.15
Kelvin	K - 273.15	9/5(K - 273.15) + 32	K

CALCULATION:

Given that:

Temperature = 295 K

Kelvin to Fahrenheit: 9/5(K - 273.15) + 32 = 9/5(295 - 273.15) + 32 = 71.33°F

Q24. Answer: (a) Potash

The correct answer is Potash.

Key Points

• Some common name of the chemical compound, their chemical name, and chemical formula are as follows:

Important Points

Common name	Chemical name	Chemical formula
Washing soda	Sodium carbonate	Na2CO3
Baking soda	Sodium bicarbonate	NaHCO3
Caustic soda	Sodium hydroxide	NaOH
Bleaching powder	Calcium hypochlorite	Ca(ClO)2
Quick Lime	Calcium oxide	CaO
Marble	Calcium carbonate	CaCO3
Plaster of Paris	Calcium sulfate	CaSO4..1/2H2O
Aspirin	Acetylsalicylic acid	C9H8O4
Epsom salts	Magnesium sulfate	MgSO4·7H2O
Heavy Water	Deuterium oxide	2H2O or D2O
Pearl Ash/Potash	Potassium carbonate	K2CO3
Plumbago	Graphite	C
Prussic acid	Hydrogen cyanide	HCN
Saltpetre	Potassium nitrate	KNO3
Vinegar	Acetic acid	CH3CO2H

Q25. Answer: (d) Salinometer

The correct answer is the Salinometer.

Key Points

• Major instruments are following:-

Instrument	Use
Seismograph	used to measures the intensity of the earthquake
barograph	For the continuous recording of atmospheric pressure
Calorimeter	the quantity of heat is measured
Bolometer	heat radiation is measured
Barometer	measures atmospheric pressure
Viscometer	Measures the viscosity of liquids

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Telescope	Distance object in space is viewed by it
Salinometer	The salinity of the solution is determined by it
Hygrometer	It measures humidity
Fathometer	Depth of the ocean measured by it
Galvanometer	The electric current of low magnitude is measured
pH meter	A pH meter is a scientific instrument that measures the concentration of hydrogen-ion in water based solutions.

Q26. Answer: (c) Carbon di oxide

The correct answer is Carbon dioxide.

Key Points

Concept:

• Greenhouse gases such as methane and carbon dioxide in the atmosphere prevent the rays of the Sun reflected from the Earth's surface to escape the atmosphere thus trapping the radiations.

• The trapped radiations warm the Earth's atmosphere, causing increases in the global temperature. This is called the greenhouse effect.

• And because of the increase in temperature icy bodies start melting and increases the sea level.

Explanation:

The greenhouse effect is due to an increase in the temperature of the planet due to an increase in carbon dioxide concentration of the atmosphere

Mistake Points

Global Warming

• An increase in average temperature of the earth surface due to the greenhouse effect is called global warming

• It also refers to the increase in average temperature of the air and sea at the earth's surface

• Hence, the surface of the earth becomes warm which causes global warming

• The phenomenon is similar to that of greenhouse in which the glass-enclosed atmosphere gets heated up due to its insulation from the rest of the environment

Q27. Answer: (a) Flint glass

The correct answer is Flint glass.

Key Points

• Flint glass, also called Crystal, is heavy and durable glass characterized by its brilliance, clarity, and highly refractive quality.

• In the optical glass industry, flint glass is any highly refractive lead-containing glass used to make lenses and prisms.

• Because it absorbs most ultraviolet light but comparatively little visible light, it is also used for telescope lenses.

• The light-dispersive power of flint glass can be made twice as high as that of crown glass (of conventional soda-lime composition).

• In the container glass industry, flint glass is any clear glass free of coloring.

Additional Information

• Ordinary glass:

• Soda lime glass is often referred to as ordinary glasses that are composed of silicon oxide, sodium oxide, and calcium oxide.

• A typical fundamental constituent of glass is silicon dioxide.

• Pyrex glass:

• It is also called borosilicate glass.

• It has some specific characteristics of chemical durability and more thermal resistance power.

Q28. Answer: (a) Finger prints

The correct answer is fingerprints.

Key Points

• Dactylography refers to the scientific study of fingerprints as a method of identification.

• This method of identification is also called Dectyloscopy.

• Fingerprints have been a very effective method of developing the identity of the individual for a long.

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• Fingerprints play a critical role in investigating criminals because the court law considers fingerprints as conclusive evidence.
• It is considered one of the most accurate methods of identification of any person.
• This method is the cheapest and works by using patterns found on the fingertips.
• The ridge pattern of two persons can never be the same.
• Moreover, there is no change in an individual’s fingerprint throughout life.

Q29. Answer: (a) Chlorophyll

The correct answer is chlorophyll.

Key Points

• The green pigment present in leaves is called chlorophyll.
• Chlorophyll is located in a plant's chloroplasts.
• It is green in colour because it does not absorb the green wavelengths of white light.
• Phloem is tissues in plants that conducts food to other parts of the plant.
• Phloem is also called as bast.
• Xylem is a vascular tissue which conveys water and dissolved minerals to the rest of the plant.
• It also provides physical support.

Q30. Answer: (d) Diamond

The correct answer is Diamond.

Key Points

• The hardest known substance available naturally on earth is Diamond.
• Diamond is composed of pure carbon and the atomic bonding of the atoms makes it the hardest material.
• In diamond, every layer of carbon atom is bonded with strong sigma bonds.
• The presence of such strong covalent bonding between the carbon atoms arranged in a tetrahedral manner imparts rigidity to the substance making it the hardest known substance.

Important Points

• Industrial diamonds have three varieties
• 'ballas' which is a mass of minute diamond crystals difficult to cleave
• 'bort' is yellowish-grey to a black colour and massive, flawed, or irregular in shape
• 'carbonado' is black, very hard opaque, and without cleavage.
• Diamond occurrences in India have been reported since prehistoric times.
• Presently, the diamond fields of India are grouped into four regions
• South Indian tract of Andhra Pradesh, comprising parts of Anantapur, Kadapa, Guntur, Krishna, Mahabubnagar, and Kurnool districts
• Central Indian tract of Madhya Pradesh, comprising Panna belt
• Panna is famous for diamond mines.
• It is Asia's biggest and only active diamond mine.
• The mine is run by the National Mineral Development Corporation.
• Behradin-Kodawali area in Raipur district and Tokapal, Dugapal, etc. areas in Bastar district of Chhattisgarh
• Eastern Indian tract mostly of Odisha, lying between Mahanadi and Godavari valleys.
• Hindustan Copper Ltd. at Maubhandar smelter in Singhbhum district of Jharkhand obtains silver from copper slimes.

Q31. Answer: (b) 120

Given:

Word = ARISE

Formula Used:

n! = n(n - 1)(n - 2).....3.2.1

Calculation

Here number of letters in word arise is 5

Different ways in which arise can be arranged is 5!

5! = 5 × 4 × 3 × 2 × 1

5! = 120

Therefore The way of arrange of the word ARISE is 120.

Q32. Answer: (c) Sometimes Rational Numbers and Sometimes Irrational Numbers

Concept used:

Any number which can be represented in the form of p/q is rational number.

An irrational number is a real number that cannot be expressed as a ratio of integers, for example √2

Calculation:

The product of rational and irrational numbers is always irrational if the rational number is non-zero.

Rational number = 4

Irrational number = √2

Rational × Irrational = 4√2

The product of rational and irrational numbers is always rational if the rational number is zero.

Second case Rational number = 0

Irrational number = √3

Rational × irrational = 0 × √3 = 0

Hence, Sometimes Rational Numbers and Sometimes Irrational Numbers

Q33. Answer: (d) 3 km/h and 1.5 km/h

Given:

A motor boat takes 2 h to travel a distance of 9 km down the current. It takes 6 h to travel the same against the current

Formula used:

Speed = Distance / Time

Speed of boat downstream = (x + y) km/hr

Speed of boat upstream = (x - y) km/hr

Calculation

Let the speed of boat in still water be x km/hr

Speed of current be y km/hr

Speed of boat downstream

=> x + y = 9/2

=> x + y = 4.5 km/hr - - (i)

Speed of boat against the current

=> x - y = 9/6

=> x - y = 1.5 km/hr - - (ii)

Solving equations i and ii

Add eqn i and ii we get

=> x = (4.5 + 1.5) / 2

=> x = 3 km/hr

Substracting eqn 1 from 2 we get

=> y = (4.5 - 1.5) / 2

=> y = 1.5 km/hr

Speed of boat in still water = 3 km/hr

Speed of boat against the current = 1.5 km/hr

Q34. Answer: (b) 25%

Given

A person sells 320 mangoes at the cost price of 400 mangoes

Concept used

Profit = SP - CP

Profit % = (Profit/CP) × 100

Calculation

Let the cost price of one mango be Rs.1

Cost price of 320 mangoes = Rs.320

Selling price of 320 mangoes = Rs.400

Gain = 400 - 320

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Gain = Rs.80
Profit% = (80/320) × 100
Profit% = (1/4) × 100
Profit% = 25%
Therefore The profit percentage is 25%.

Q35. Answer: (d) 225

Given:
Perimeter of triangle = 600 m
Ratio of sides of triangle = 12 : 13 : 15
Concept used:
Sum of all sides of triangle = Perimeter of triangle
Calculation:
Sum of all sides of triangle
=> 12x + 13x + 15x = 40x
=> 40x = 600
=> x = 15
Longest side = 15x
=> 15 × 15 = 225 cm
Therefore The longest side is 225 cm.

Q36. Answer: (d) 630

Calculation:
30% of (1500 + 600)
=> 30/100 × 2100
=> 30 × 21
=> 630
Therefore The value of 30% of (1500 + 600) is 630.

Q37. Answer: (c) 20

Given:
'A' and 'B' can do a work in 30 days and 15 days respectively.
'A' starts on the work and both work alternately days after days.
Concept used:
Total work = Number of days × efficiency
Calculation
Let the total work be: Lcm of 30 and 15
Total work be 30 units.
Efficiency of A = 30/30 = 1 unit
Efficiency of B = 30/15 = 2 unit
A and B works on the alternate days
=> 2 days = (1 + 2) units
=> 2 days = 3 unit
=> Multiplying 10 on both sides
30 units work done in
=> 2 × 10 = 20 days
Therefore In 20 days will be work be completed

Q38. Answer: (b) 625

Calculation:
=> 5 × 5 = 25
=> 25 × 5 = 125
=> 25 × 5 = 625

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Therefore The next number is 625.

Q39. Answer: (a) 23

Given:

The average age of 7 boys is 20 years.

The average age of the first 6 boys is 191/2 years

Concept used:

Average = Sum of observations / Number of observations

Calculation:

Sum of Age of 7 boys

=> 20 × 7 = 140

Sum of Age of six boys

=> 6 × 39/2 = 117

Age of 7th boy

=> 140 - 117 = 23 years.

Therefore 7th boy is 23 years old.

Q40. Answer: (b) 25

Shortcut Trick

This is an alternate series (mixed series) containing two patterns.

First series (odd positions): 40, 7, 13, 19, ? (Not needed for the next term).

Second series (even positions): 31, 25, 19, 13, ?

Pattern for even positions: 31 − 6 = 25, 25 − 6 = 19, 19 − 6 = 13, 13 + 12 = 25? No, the next term in the overall sequence (9^(th) term) belongs to the first series.

Pattern for first series: 40 (outlier), then 7 + 6 = 13, 13 + 6 = 19, 19 + 6 = 25.

Therefore The correct answer is 25.

Alternate Method

40skip→7+6→13+6→19+6→25

The sequence is a combination of two series placed alternatively. We need the 9^(th) term, which follows the logic of the 1^(st), 3^(rd), 5^(th), and 7^(th) terms.

=> 1^(st) term = 40 (Exception or starting point)

=> 3^(rd) term = 7

=> 5^(th) term = 7 + 6 = 13

=> 7^(th) term = 13 + 6 = 19

=> 9^(th) term = 19 + 6 = 25

=> For verification, the even series is: 31, 25, 19, 13 (decreasing by 6 each time).

Therefore The correct answer is 25.

Additional Information

Alternate Series

A series where two different logic patterns are applied to odd and even positions separately.

Arithmetic Progression (AP)

A sequence of numbers such that the difference between consecutive terms is constant. Common difference d = a_n − a_(n−1).

Mixed Series Identification

If terms fluctuate (increase then decrease), check for two independent series interleaved together.

Q41. Answer: (b) 1.589 gram

Concept used

1000 miligram = 1 gram

Calculation

1000 miligram = 1 gram

1589 miligram = ?

=> 1589/1000 = 1.589 grams

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Q42. Answer: (d) 41

Given

A batsman in his 12th inning makes a score of 63 runs and there by increase his average score by 2

Concept used

Average = Sum of the observation/Total observation

Calculation

Let the total number of runs in 11 innings be "x".

the average number of runs in 11 innings is x/11

Let the total number of runs in 12 innings after scoring 63 runs in 12th innings be x + 63.

Average number of runs in 12th innings is = (x + 63)/12

=> (x + 63)/12 = x/11 + 2

=> (x + 63)/12 = (x + 22)/11

=> 11(x + 63) = 12(x + 22)

=> 11x + 693 = 12x + 264

=> 693 - 264 = 12x - 11x

=> 429 = x

Average of his score after 12 innings

=> (x + 63)/12

=> (429 + 63)/12

=> 41

Therefore His average after the 12th innings is 41.

Alternate Method

A batsman in his 12th inning makes a score of 63 runs

His average increases by 2 runs

Increased runs = 11 × 2

Increased runs = 22 runs

His average after 12 innings

=> 63 - 22

=> 41

Q43. Answer: (d) 14

Given:

Difference of two numbers is 2

Difference of their squares is 28.

Concept used:

a2 - b2 = (a - b) (a + b)

Calculation:

Let the two number be x and y

=> x - y = 2 - - (i)

Difference of their squares

=> x2 - y2 = 28 - - (ii)

Using the formulae

=> 28 = 2 (x + y)

=> x + y = 28/2

=> x + y = 14

Therefore The sum of the number is 14.

Q44. Answer: (c) 0

If there is no event then its probability is zero.

For probability some event has to happen.

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Q45. Answer: (b) 11

Given:

Number of diagonal = 44

Formula Used:

Number of diagonal = Number of sides (Number of sides - 3)/2

Calculation:

Let assume the number of sides be x

Number of diagonal = Number of sides (Number of sides - 3)/2

=> 44 = x (x - 3)/2

=> 88 = x2 - 3x

=> x2 - 3x - 88 = 0

=> x2 - 11x + 8x - 88 = 0

=> x(x - 11) + 8(x - 11) = 0

=> (x - 11)(x + 8) = 0

=> x - 11 = 0 or x + 8 = 0

=> x = 11, or -8

Sides can't be negative,

Side of polygon = 11

Therefore The number of sides is 11.

Q46. Answer: (a) Wheel

Logic:

Types	Mode
Train	Mode of Transport
Bus	Mode of Transport
Boat	Mode of Transport

Whereas a Wheel is not a vehicle but it is a part of it.

Hence, "Wheel" is the odd word.

Q47. Answer: (b) Barber

All except a barber require raw materials to work.

A tailor needs fabric.

A blacksmith needs iron.

A carpenter needs wood.

Hence, "barber" is different from the other three.

Q48. Answer: (d) Constantly

According to the sequence in the dictionary:

The correct order of the given words is:

i) Bosh

ii) Checked

iii) Clear

iv) Constantly

v) Contrast

Hence, "Constantly" will be the second last word if we arrange the words in the alphabetical order.

Q49. Answer: (d) EQHDMC

AWAKE → ZVZJD

The pattern followed here is:

To form the code of the word, each letter of the word is replaced by its predecessor as per the English alphabetical series.

Similarly,

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Hence, "EQHDMC" is the code for the word FRIEND.

Q50. Answer: (b) 40

Given series: 1, 5, 10, 16, 23, 31, ?

The pattern followed here is,

Therefore, the number that replace the question mark (?) is 40.

Hence, ‘40’ is the correct answer.

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