Army Soldier GD Rajput Regt Centre Fategarh (Lucknow) 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. Who was the first Muslim woman ruler of Delhi?

(a) Razia Sultan
(b) Noorjahan
(c) Chand Bibi
(d) Begam Hazarat Mahal

Q2. Term of Rajya Sabha member is

(a) 6 years
(b) 5 years
(c) 2 years
(d) None of these

Q3. The largest irrigation canal in India is _____.

(a) Upper Bari Doab Canal
(b) Indira Gandhi Canal
(c) Sirhind canal
(d) Yamuna canal

Q4. Which of the following kingdoms were associated with the life of Buddha?

(a) Gaandhara
(b) Kosala
(c) Avanti
(d) Magadha

Q5. The air that contains moisture to its full capacity:

(a) Relative humidity
(b) Saturated air
(c) Specific humidity
(d) Absolute humidity

Q6. Which of the following is an important tribe of the Dhauladhar Range?

(a) Gaddi
(b) Tharu
(c) Abor
(d) Lepcha

Q7. Headquarters of which bank are located in Manipal, Karnataka?

(a) Corporation Bank
(b) Syndicate Bank
(c) Canara Bank

(d) Vijaya Bank

Q8. Who was admired as a tempestuous Hindu in 1893 in the world Parliament of Religions in Chicago?

(a) Rabindra Nath Tagore
(b) Swami Dayanand Saraswati
(c) Swami Vivekanand
(d) Gautam Buddha

Q9. Meenabakkam International Airport is in?

(a) Chennai
(b) Hyderabad
(c) Bangluru
(d) Coimbatore

Q10. Important uranium mine in India is _____.

(a) Manavlakurichi
(b) Gaubindanur
(c) Jaduguda
(d) Vashi

Q11. 1^(st)session of the congress was held in _____.

(a) Bombay
(b) Delhi
(c) Calcutta
(d) Surat

Q12. 'Kambala race' a traditional buffalo race is being held in _____.

(a) Karnataka
(b) Tamil Nadu
(c) Kerala
(d) Telangana

Q13. Prime Meridian is located at _____ degree meridian.

(a) 90
(b) 180
(c) 0
(d) 60

Q14. Where is the Lal Bahadur Shastri National Academy of Administration located _____.

(a) Mussoorie
(b) Delhi
(c) Shimla
(d) Ooty

Q15. Khasi and Garo Tribes mainly live in _____.

(a) Mizoram
(b) Manipur
(c) Meghalaya
(d) Nagaland

GENERAL SCIENCE

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Q16. The molecular formula of cane sugar is _____.

(a) H2CO3
(b) C6H12O3
(c) H2C2O4
(d) C12H22O11

Q17. The melting point of copper is _____.

(a) 100°C
(b) 1038°C
(c) 1085°C
(d) None of these

Q18. Tooth decay starts when pH of mouth is lower than _____.

(a) 8
(b) 10
(c) 7
(d) 5.5

Q19. Which of the following is a primary fuel?

(a) Coal
(b) Charcoal
(c) Petroleum
(d) None of these

Q20. Photosynthesis occurs maximum in

(a) White light
(b) Red light
(c) Blue light
(d) Green light

Q21. Unit for measuring astronomical distances?

(a) Meter
(b) Centimeter
(c) kilometer
(d) Light year

Q22. Which among the following helps in the circulation of blood?

(a) None of these
(b) Lymphocytes
(c) Blood platelets
(d) Monocytes

Q23. At high altitude nose bleeding occurs due to:

(a) High atmospheric pressure
(b) Severe cold
(c) Low atmospheric pressure
(d) None of these

Q24. Botany is the study of _____.

(a) Birds life
(b) Plants life
(c) Human life
(d) Animals life

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Q25. The revolver was invented by _____.

(a) John Browning
(b) Samuel Colt
(c) Henry Deringer
(d) Theodor Bergmann

Q26. Coronagraph is used for _____?

(a) Studying the arteries
(b) Study Blood Pressure
(c) Study the veins
(d) Observing and photographing the sun's corona

Q27. Hertz (Hz) is the unit of _____.

(a) Frequency
(b) None of these
(c) Number of cycles
(d) Pressure

Q28. Which of the following is the first calculating device?

(a) Pascaline
(b) Abacus
(c) Calculator
(d) Turning machine

Q29. Who among the following is considered as the 'father of artificial intelligence'?

(a) Charles Babbage
(b) Lee De Forest
(c) JP Eckert
(d) John McCarthy

Q30. What do you understand by Aerodynamics?

(a) It is a science that deals with the study of body pain
(b) It is a science of movement in a flow of air or gas
(c) It is a science of generative organs
(d) None of these

MATHEMATICS

Q31. A person sells 320 mangoes at the cost price of 400 mangoes. What is his profit percentage?

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

Q32. Find 30% of (1500 + 600) = ?

(a) 630
(b) 650
(c) 610
(d) 600

Q33. The perimeter of a triangle is 600 m. If the ratio of sides is 12 : 13 : 15, then find the longest side.

(a) 180
(b) 225
(c) 195
(d) 220

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Q34. A motor boat takes 2 h to travel a distance of 9 km down the current and it takes 6 h to travel the same distance against the current. The speed of the boat in still water and that of the current (in km / h). respectively are.

(a) 3 km / h and 1.5 km / h
(b) 3 km / h and 1 km / h
(c) 3 km / h and 2.5 km / h
(d) 3 km / h and 2 km / h

Q35. In how many different ways can the letters of the word ARISE be arranged?

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

Q36. The product of a rational and an irrational number is (except 0)_____.

(a) Always an integer
(b) Always a rational number
(c) sometimes rational and sometimes irrational number
(d) Always an irrational number

Q37. Find which is the next number in series?

31, 7, 25, 13, 19, 19, 13, _____

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

Q38. A polygon has 44 diagonals. Find the number of its slides?

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

Q39. If an event cannot occur, then its probability is _____.

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

Q40. The difference of two number is 2 and difference of their squares is 28. The sum of the numbers will be:

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

Q41. Convert 1589 miligram into grams.

(a) 158.9 grams
(b) 15.89 grams
(c) 0.1589 grams
(d) 1.589 grams

Q42. A batsman in his 12^(th) inning makes a score of 63 runs and there by increase his average score by 2. What is his average after the 12^(th) innings?

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

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(d) 41

Q43. The average age of 7 boys is 20 years. If average age of the first six boys is 191/2 years then the 7th boy will be how many years old?

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

Q44. Which is the next number in the series

5, 25, 125, _____?

(a) 675
(b) 650
(c) 600
(d) 625

Q45. 'A' and 'B' can do a work in 10 days and 15 days respectively. If 'A' starts on the work and both work alternately days after day. In how many days will the work be completed?

(a) 12
(b) 10
(c) 9
(d) 8

LOGICAL REASONING

Q46. Select the number cluster/pair from the following which is different from others.

(a) 32 : 2
(b) 15 : 5
(c) 36 : 6
(d) 42 : 4

Q47. An exact clock shows 7 AM, when the clock strikes 1 PM, how many degrees does the hour hand rotate?

(a) 154°
(b) 170°
(c) 160°
(d) 180°

Q48. In a code language, man is written as woman, woman is written as girl, girl is written as boy, boy is written as worker, then what is the code of 6 year old woman?

(a) Woman
(b) Boy
(c) Man
(d) Girl

Q49. Find the odd one out in the series-

3, 5, 7, 9, 11

(a) 9
(b) 7
(c) 5
(d) 11

Q50. Mahesh's son Suresh is married to Siya whose sister Jiya is married to Suresh's brother Amar. How is Jiya related to Mahesh?

(a) daughter-in-law
(b) cousin

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(c) sister
(d) sister-in-law

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Razia Sultan

The correct answer is Razia Sultan.

Key Points

• Razia Sultan was the first and the only Muslim woman to ever sit on the throne of Delhi.
• She was appointed by Iltutmish.
• She served as the Sultan of Delhi from 10 October 1236- to 14 October 1240.

Additional Information

• Noor Jahan was the chief wife of the Mughal emperor Jahangir.
• Her real name was Mehr-un-Nissa.
• Chand Bibi was the Regent of Bijapur Sultanate during the minority of Ibrahim Adil Shah II in 1580-1590.
• Begum Hazrat Mahal was the second wife of Nawab of Awadh Wajid Ali Shah.
• She was also known as the
• Shajar Al Durr was an Egyptian ruler.
• Gevher Nesibe was the princess of Sultanate of Rum.
• Fatima Al Fihri was an Arab Muslim woman who founded the oldest existing educational institution in the world.

Q2. Answer: (a) 6 years

The correct answer is 6.

Key Points

• The tenure of a member of the Rajya Sabha is 6 years.
• Rajya Sabha or The Council of States or the Upper house:
• Rajya Sabha is a permanent body i.e. it is not subject to dissolution.
• One-third of the members retire every second year and are replaced by newly elected members.
• The Vice President of India is the ex-officio Chairman of Rajya Sabha.
• Article 80 of the Constitution lays down the maximum strength of Rajya Sabha as 250, out of which 12 members are nominated by President.
• The present strength of the Rajya Sabha is 245 (233 +12 nominated by the President).
• The representatives of the States and of the Union Territories in the Rajya Sabha are elected by the method of indirect election.
• They are elected by the elected members of the Legislative Assembly of that State and of that Union Territory.
• The Council of States is designed to maintain the federal character of the country.
• The number of members from a state depends on the population of the state.

Important Points

• There shall be a Parliament for the Union which shall consist of the President and two Houses to be known respectively as the Council of States and the House of the People (Article 79).
• Lok Sabha or the House of the people or the Lower house.
• The term of the Lok Sabha, unless dissolved, is five years from the date appointed for its first meeting.
• It is composed of representatives of the people chosen by direct election.
• The maximum strength of the House envisaged by the Constitution is 552.

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• Although it is known as the lower house it has more powers than the Rajya Sabha as it is directly elected by the people.

• The joint sitting of both houses is chaired by the speaker of the Lok Sabha.

Q3. Answer: (b) Indira Gandhi Canal

The correct answer is the Indira Gandhi canal.

Key Points

• Indira Gandhi canal:

• This Canal is India's longest canal and the world's biggest irrigation project. Hence, Option 2 is correct.

• Indira Gandhi Canal is 649 km long and consists of the Rajasthan feeder canal and Rajasthan main canal and runs 167 km in Punjab and Haryana and 492 km in Rajasthan.

• It is a huge canal in northwestern India that carries water from the Harike Barrage on the Sutlej River to the Thar Desert of Rajasthan.

Additional Information

• Upper Bari Doab canal :

• Originates at Madhopur, near Pathankot.

• It was the first canal to be excavated for irrigation purposes in Punjab; at that time, however, it was simply known as the Bari Doab Canal system.

• The prefix Upper was only added when a second canal was dug, known as the Lower Bari Doab Canal. Emperor Shah Jahan dug this 130-mile-long canal to carry water from the River Ravi to his garden in Lahore.

• Yamuna canal:

• Satluj Yamuna Link Canal or SYL, as it is popularly called, is a 214 kilometer (133 mi) long canal under construction in India to connect the rivers Sutlej and Yamuna.

• The plan did, however, face challenges and was referred to the Supreme Court of India.

• River water sharing between the states of Punjab and Haryana is established.

• Sirhind canal:

• The Sirhind Canal is a large irrigation canal in Punjab state, India that carries water from the Sutlej River.

• It is one of the Indus river system's oldest and largest irrigation works and was inaugurated in 1882 CE.

• The canal, which was built between 1958 and 1961, is 149.53 km long in the Punjab districts of Ferozepur, Muktsar, and Faridkot.

• To be agriculturally viable, Rajasthan requires extensive irrigation.

• The state receives a great deal of water from the Punjab Rivers, from the Western Yamuna Canal in Haryana and the Agra Canal in Uttar Pradesh, and from the Gujarat and Madhya Pradesh projects of Sabarmati and Narmada Sagar.

Important Points

• A canal:

• It is a man-made waterway that enables the movement of boats and ships from one body of water to another.

• Canals are also used for irrigation and other human uses to convey water.

• Canals can be divided into two categories, waterways used for navigation or transport, and water ducts used for irrigation and consumption of drinking water and other general uses.

• The canal is also known as navigation when it parallels the river and separates part of its waters and drainage basin and leverages its resources by constructing dams and locks to raise and lengthen its slow water levels while remaining in its valley.

Q4. Answer: (b) Kosala

The correct answer is Kosala.

Key Points

• Buddhism:

• Founded by Siddhartha Gautam.

• He was born in Lumbini near Nepal in 563 BC.

• After 49 days of meditation under a pipal tree, Gautama attained Bodhi (enlightenment) at Bodhgaya in Bihar.

• Buddha gave his first sermon at Sarnath, UP and the event is known as Dharma-Chakra-Pravartana.

• He followed 'Madhyam Marg' or the middle path

• He died at Kushinagar, UP and the event is known as Mahaparinirvan.

• The Tri Ratnas of Buddhism are Buddha (spiritual potential), Dhamma (teachings of Buddha) and Sangha (order of monks who follow Buddhism).

• Maha Maya, the mother of Gautama Buddha belongs to the Kosala Dynasty.

Additional Information

• Gandhara is not directly associated with the life of Buddha. It flourished during the ruling of the Mauryan Period, especially during the period of Ashoka.

• Rajgir was the early capital of Magadh Janapada, which was ruled by Bimbisara during Buddha's time.

• After the great departure (Mahabhinishkramana), Buddha had first gone to Rajgir, where he started living as an ascetic and turned down the offer given by Bimbisara to take the throne.

Q5. Answer: (b) Saturated air

The correct answer is Saturated air.

• Saturated air has a relative humidity of 100%.

• Humidity is the amount of water vapor in the air.

• If there is a lot of water vapor in the air, the humidity will be high. The higher the humidity, the wetter it feels outside.

• There are three main measurements of humidity: relative, absolute, and specific.

Additional Information

• Absolute humidity:

• Its unit is grams of water vapor per cubic meter volume of air.

• It is a measure of the actual amount of water vapor in the air, regardless of the air's temperature.

• The higher the amount of water vapor, the higher the absolute humidity.

• For example, a maximum of about 30 grams of water vapor can exist in a cubic meter volume of air with a temperature in the middle 80s.

• Relative humidity:

• It is expressed as a percent, which is a measure of the amount of water vapor that air is holding compared to the amount it can hold at a specific temperature.

• Warm air can possess more water vapor (moisture) than cold air, so with the same amount of absolute/specific humidity, air will have higher relative humidity.

• Relative humidity of 50% means the air holds on that day (specific temperature) holds 50% of the water needed for the air to be saturated.

• The relative humidity of an air-water mixture is also defined as the ratio of the partial pressure of water vapor in the mixture to the saturated vapor pressure of water at a given temperature.

• Thus the relative humidity of air is a function of both water content and temperature.

• Specific humidity:

• Specific humidity refers to the weight of water vapor contained in a unit weight (amount) of air (expressed as grams of water vapor per kilogram of air).

• Absolute and specific humidity are quite similar in concept.

Q6. Answer: (a) Gaddi

The correct answer is Gaddi.

Key Points

• Gaddi tribes are famous tribes of the Dhauladhar range.

• Gaddi tribes are mainly living in Himachal Pradesh and Jammu and Kashmir regions.

• Gaddi is a generic name and it includes Khatris, Brahmins, and Rajput.

Additional Information

• The Abor tribe is a native ethnic group found in southern Ethiopia.

• Lepcha tribes are found in Bhutan, Tibet, Darjeeling, eastern Nepal, and in the hills of West Bengal.

• Tharu tribes are found in Northern India and southern Nepal.

Q7. Answer: (b) Syndicate Bank

The correct answer is Syndicate Bank.

Key Points

• Syndicate Bank was founded in 1925 in Manipal, Udupi, Princely State of Mysore.

• Headquarters are located in Manipal, Karnataka.

• It was founded by Upendra Ananth Pai, T. M. A. Pai, and Vaman Srinivas Kudva.

• Syndicate Bank was nationalized in 1969.

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• At the time of its establishment, the bank was known as Canara Industrial and Banking Syndicate Limited.

• Syndicate bank, along with the other 13 major commercial banks of India, was nationalized on 19 July 1969, by the Government of India.

• The Bank was headquartered in Manipal, India.

• On 1st April 2020, the bank was merged into Canara Bank.

Additional Information

List of banks with their headquarters.

Banks	Headquarters
Andhra Bank	Hyderabad
Axis Bank	Mumbai
Bank of Baroda (Vijaya Bank & Dena Bank)	Vadodara
Bank of India	Mumbai
Bank of Maharashtra	Pune
Bandhan Bank	Kolkata
Canara Bank (Syndicate Bank)	Bengaluru
Central Bank of India	Mumbai
Corporation Bank	Mangalore
Citi Union Bank	Tamil Nadu
Dhanlaxmi Bank	Kerala
Federal Bank	Kerala
HDFC Bank	Mumbai
IDBI Bank	Mumbai
Indian Bank (Allahabad Bank)	Chennai
Indian Overseas Bank	Chennai
ICICI Bank	Mumbai
IDFC Bank	Mumbai
IndusInd Bank	Mumbai
Karnataka Bank	Mangaluru
Karur Vysya Bank	Tamil Nadu
Kotak Mahindra Bank	Mumbai
Lakshmi Vilas Bank	Chennai
Punjab National Bank (Oriental Bank of Commerce & United Bank of India)	New Delhi
Punjab & Sind Bank	New Delhi
RBL Bank (Ratnakar)	Mumbai
State Bank of India	Mumbai
Syndicate Bank	Manipal, Karnataka
South Indian Bank	Thrissur, Kerala
UCO Bank	Kolkata
Union Bank of India	Mumbai
Yes Bank	Mumbai

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Q8. Answer: (c) Swami Vivekanand

The correct answer is Swami Vivekananda.

Key Points

• Swami Vivekananda participated in the Parliament of Religions held in Chicago (USA) in September 1893.

• The first Parliament of the World's Religions was held in Chicago in 1893.

• It marked the first concerted effort to bring all the different religions to a common platform where leaders and representatives of all faiths were able to communicate and share their views.

• Swami Vivekananda won wide recognition for India's ancient culture, philosophy, and faith through his powerful words.

• The 1893 Parliament of the World's Religions was attended by 400 men and women, representing 41 religious traditions.

• It was there that Catholicism and Judaism were recognized as major American religions, and that Hinduism and Buddhism were first introduced to the West.

Additional Information

• Swami Vivekananda was born in 1863.

• He founded the Ramakrishna Mission in May 1897.

• He died in 1902 at Belur Math in present-day West Bengal.

• He was influenced by Ramakrishna Paramahansa who was also his Guru.

Q9. Answer: (a) Chennai

The correct answer is Chennai.

Key Points

• Chennai International Airport is an international airport serving the city of Chennai, Tamil Nadu.

• Chennai International airport is located in Meenambakkam, Kanchipuram district, Tamil Nadu. Hence it is also called Meenabakkam International Airport.

• It is located in Tirusulam, 21 km (13 mi) from the city centre. Chennai International Airport is the sixth busiest airport in India.

• It is also the 49th busiest airport in Asia making it one of the four major airports in India under the top 50 list. In the financial year 2021, the airport handled 5.49 million passengers.

Additional Information

All the international airports in India:

Q10. Answer: (c) Jaduguda

The correct answer is Jaduguda.

Key Points

• The first Uranium mine of India, the Jaduguda mines, is located in Jharkhand.

• The Jaduguda Mine is a uranium mine situated in Jaduguda village, in Jharkhand Indian state's Purbi Singhbhum district.

• It started operation in 1967 and became India's first uranium mine.

• The deposits were found at that mine in 1951.

• Some of these deposits like Bhatin, Narwapahar and Turamdih are well known uranium mines in the country.

Q11. Answer: (a) Bombay

The correct answer is Bombay.

Key Points

• The first session was held at a hall of Gokuldas Tejpal Sanskrit College in Bombay.

• Indian National Congress was formed in 1885 by A.O Hume a member of Imperial Civil Service.

• The first meeting of Indian National Congress was held on December 28th, 1885.

• Vyomesh Chunder Bonnerjee was the first president of the Indian National Congress. He was an Indian barrister.

• In the first session out of 72, 39 were lawyers and this trend continued i.e. more than one-third delegates were from the legal background.

Additional Information

The list of some of the sessions of the Indian National Congress before the Indian Independence.

Year	Location	President and significance
1885	Bombay	Womesh Chandra Bannerjee [1st session attended by 72 delegates]

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1886	Calcutta	Dadabhai Naoroji National [Congress and National Conference]
1887	Madras	Badruddin Tyyabji [fist Muslim President]
1889	Bombay	Sir William Wedderburn

Q12. Answer: (a) Karnataka

The correct answer is Karnataka.

• Kambala buffalo race is related to the state of Karnataka.

• The Kambala season starts in November and ends in March.

• The festival is dedicated to Kadri's Lord Manjunatha, an incarnation of Lord Shiva.

Additional Information

• The list of some Indian festivals are:

• Bihar - Chhath Puja

• Gujarat - Navratri, Janmashtami, Kutch Utsav

• Kerala - Onam, Vishu

• Tamil Nadu - Pongal

• Maharashtra - Ganesh Utsav, Gudi Padva

• Odisha - Rath Yatra, Raja Parba

• Rajasthan - Gangaur, Teej

• Sikkim - Losar, Saga Dawa

• Jammu and Kashmir - Har Navami, Chhari, Bahu Mela

• Himachal Pradesh - Rakhadumni, Gochi Festival

• Haryana - Baisakhi, Surajkund Mela

• Chhattisgarh - Maghi Purnima, Bastar

• Nagaland - Hornbill festival

Q13. Answer: (c) 0

The correct answer is 0°.

• The prime meridian passes through Greenwich in England which is zero degrees longitude. So It is also called the Greenwich Meridian.

Important Points

• For locating places on a map, imaginary lines called latitudes and longitudes are drawn.

• Longitudes are vertical lines that run from north to south.

• Prime Meridian is the 0° longitude that divides Earth into the Eastern and Western hemispheres.

Additional Information

• Opposite of prime meridian is IDL which is at 180-degree longitude.

• IDL(International Date Line) is a zigzag line and passes through Bering Strait.

• When one crosses the International Date Line, the day and date changes.

• When one crosses IDL to the west, one loses the day.

• When one goes from west to east, one gains a day.

• 1 degree of longitude is equal to 4 minutes.

• 15-degree longitude is 1 hour.

• One degree of latitude is 111 km on Earth's surface.

Q14. Answer: (a) Mussoorie

The correct answer is Mussoorie.

Key Points

• Lal Bahadur Shastri National Academy of Administration:-

• It is the premier training institution in our country.

• It was established in 1959 at Mussoorie, a famous hill station in Uttaranchal as the National Academy of Administration.

• In 1972, it was renamed the Lal Bahadur Shastri National Academy of Administration.

• Presently, it is under the Ministry of Personnel.

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• It provides the following training courses:

• A combined four-month foundational course for all the probationers of All India Services and Group-A Central Services (except the Central Secretariat Service).

• Professional training for the IAS probationers (in two spells).

• In-service training courses for officers of All-India and Central Services (Group-A).

• These are of two types:

• Management Development Programme of 4 weeks duration for officers of 11 to 16 years of service.

• Executive Development Programme of 6 weeks duration for officers of 6 to 10 years of service.

• Short courses of one week to the one-month duration for senior officers.

Q15. Answer: (c) Meghalaya

The correct answer is Meghalaya.

Key Points

• The Garo Khasi And Jayantia Hills were formed in the same age as of the Malwa Plateau.

• The Garo, Khasi, And Jayantia Hills are located in Meghalaya.

• The hills are named after the tribes found particularly in that region.

• Meghalaya is also known as the Scotland of the East.

Additional Information

• Garo Hills:

• It is part of the Garo- Khasi range in Meghalaya, India.

• The range is part of the Meghalaya Subtropical forest ecoregion. The Garo call themselves A'chik Mande (locally used).

• Nokrek Peak is the highest peak of Garo hills.

• Khasi Hills:

• It is located in the Shillong Plateau in the Meghalaya State of India.

• The Khasi hills are a part of the Garo-Khasi-Jaintia range and connect with the Purvanchal range and the larger Patkai range further east.

• The highest peak is Lum Shillong which is 1968m high.

• Jaintia Hills:

• The Jaintia hills are located further to the east of Khasi Hills in the state of Meghalaya.

• It is a part of the Patkai hill range that extends across the Indo- Myanmar borders.

Q16. Answer: (d) C12H22O11

The correct answer is C12H22O11.

Key Points

• The molecular formula for sucrose is C12H22O11.

• Cane sugar is called Sucrose, as it is obtained from sugarcane.

• Sucrose is also called Table Sugar. It is basically a nonreducing disaccharide composed of glucose and fructose.

• The fructose and glucose molecules are connected via a glycosidic bond.

• It can also undergo a combustion reaction to yield carbon dioxide and water.

• Commercially, it is obtained from sugarcane, sugar beet, etc.

• It is extensively used as a sweetener.

• It also serves as an antioxidant and a food preservative.

Additional Information

Sugar	Common name	Reason
Glucose	Grape sugar	Obtained from ripe grapes
Sucrose	Cane sugar	Obtained from sugarcane
Fructose	Fruit sugar	Obtained from several fruits like berries

Q17. Answer: (c) 1085°C

The correct answer is 1085°C.

• The melting point of copper: 1080-1085°C.

Additional Information

• The melting point of aluminum: 660°C

• The melting point of brass:

• Red: 990-1025°C

• Yellow: 905-932°C

• The melting point of iron:

• Wrought: 1482-1593°C

• Cast: 1127-1204°C

• The melting point of stainless steel: 1510°C

• The melting point of steel (carbon):1371-1540°C

• The melting point of titanium: 1670°C

Q18. Answer: (d) 5.5

The correct answer is 5.5.

• Tooth decay starts when the pH of the mouth is less than 5.5.

Additional Information

• the pH scale is used to specify how acidic or basic the solution is. If the pH value of the solution is less than 7, it is acidic. If the pH value is more than 7, it is basic.

• In the given case, if the pH of the mouth gets less than 5.5, it means that our mouth is very acidic.

• The acid in our mouth has started to attack the enamel of our teeth and has started to corrode it. The sugar and food particles that get stuck in teeth are degraded by Bacteria and acid is produced as a result.

• Please note that the enamel of teeth is made up of calcium phosphate which is the hardest substance in the body.

• Saliva has a pH normal range of 6.2-7.6.

• The normal resting pH of the mouth does not fall below 6.3.

Q19. Answer: (a) Coal

The correct answer is Coal.

Key Points

• Primary fuels are fuels that are found in nature and can be extracted, captured, cleaned, or graded without any sort of energy conversion or transformation process.

• Coal is a Primary fuel because it can be extracted directly without any sort of energy conversion or transformation process.

• There are other primary energy sources like wind and solar power.

• Please note that there is a difference between fuel and energy sources.

• Fuels are anything that can be burned to release energy. Energy sources on the other hand provide energy that can be transformed into usable forms to meet our needs (burning not required necessarily).

• All fuels are energy sources but all energy sources are not fuels.

Additional Information

Image of Primary Fuel:

Q20. Answer: (b) Red light

The correct answer is Red Light.

Concept:

Photosynthesis:

• The leaves have a green pigment called chlorophyll.

• It helps leaves to capture the energy of the sunlight.

• This energy is used to synthesise (prepare) food from carbon dioxide and water. Since the synthesis of food occurs in the presence of sunlight, it is called photosynthesis.

In the presence of sunlight Carbon dioxide + water → Carbohydrate + oxygen.

• Some plants, green algae, and cyanobacteria can perform photosynthesis.

• The process of photosynthesis is commonly written as

$6CO_2 + 6H_2O + \text{Sun-Light} \rightarrow C_6H_{12}O_6 + 6O_2$

Explanation:

• Photosynthesis is maximum in the Red colour of Light and Least in the Green colour of Light.

• In the absorption spectrum, the red & blue lights are absorbed while the majority of green light gets reflected

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• Photosynthesis range from 400 to 700 nm, It absorbs the Violet, Blue and Red colour of Light.

Q21. Answer: (d) Light year

The correct answer is Light year.

• The proper units for measuring terrestrial distances are light-year, parsec and astronomical unit.

Key Points

CONCEPT:

• Light year: The distance travelled by light in one year is called a light-year.

• It is the unit of astronomical distance.

• 1 light-year = 9.461 trillion kilometres which is a very large distance.

EXPLANATION:

• A light-year is a distance travelled by light in a year so a light-year is a unit of distance.

• We can measure a very large distance with the help of a light-year. Thus light-year is a unit for measurement of a very large distance.

Q22. Answer: (b) Lymphocytes

The correct answer is Lymphocytes.

Key Points

• Lymphocytes: These are a type of white blood cell that provides an immune response to the body.

• Lymphocytes, which are part of the lymphatic system collect excess fluid that drains from cells and tissue throughout your body and returns it to your bloodstream, which is then recirculated through your body.

• Hence, we can say that Lymphocytes help in the overall circulation of blood by maintaining the concentration of blood.

Additional Information

• Lymphocytes are mainly of two types: B-lymphocytes & T-lymphocytes.

• Both B & T-lymphocytes originates in the bone marrow.

• T-lymphocytes move to the thymus for maturation while B-lymphocytes mature in the bone marrow only.

• The B-lymphocyte cells produce antibodies to fight foreign pathogens like viruses & bacteria entering the body.

• The T-lymphocytes act on self-body cells, which have become cancerous or taken over by viruses and destroy them.

Q23. Answer: (c) Low atmospheric pressure

The correct answer is Low atmospheric pressure.

Key Points

• We know that atmospheric pressure decreases with high altitude.

• The blood pressure is counterbalanced with the atmospheric pressure at normal altitude.

• But, at higher altitudes, atmospheric pressure is lower compared to the pressure at the surface of the earth.

• So, at higher altitudes, the blood pressure inside our body is more than the atmospheric pressure which forces the blood to ooze out from openings like the nose.

• Hence, bleeding starts from body parts having weak skin like the nose and eyes (in severe cases).

• In some cases, internal bleeding may also occur from capillaries.

Q24. Answer: (b) Plants life

The correct answer is Plants life.

Key Points

• Biology is the science of life.

• Biology can be divided into several branches like Botany, Zoology, microbiology, virology, genetics, ecology, morphology, biotechnology, etc.

• Botany: It is the scientific study of plants. Botany is further divided into many branches: Morphology, histology, anatomy, plant physiology, taxonomy, plant breeding, plant embryology, etc

Additional Information

• Zoology: It is the study of both living and extinct animals.

• Physiology: It is the study of how the human body works.

• Ornithology: It is the study of Birds.

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Q25. Answer: (b) Samuel Colt

The correct answer is Samuel Colt.

Key Points

• Samuel Colt was an inventor and industrialist who created the revolver and paved the way for the interchangeable parts system of manufacturing.

• Samuel Colt worked in submarine technology before his design for a pistol with a revolving cartridge was commissioned in mass quantity by the U.S. for the Mexican War.

• His factory would also supply arms for the Civil War as well as popularized the concept of interchangeable part manufacturing in other industries.

• The company's most notable pistol is the .45-calibre Peacemaker model, which was introduced in 1873.

Additional Information

• John Browning:

• He was the American designer of small arms and automatic weapons, is best known for his commercial contributions to the Colt, Remington, and Winchester firms and for his military contributions to the U.S. and Allied armed forces.

• Henry Deringer:

• Henry Deringer was an American gunsmith who lived from October 26, 1786, to February 28, 1868.

• He is primarily known for developing the derringer handgun, which bears his name.

• Theodor Bergmann:

• Theodor Bergmann was a renowned manufacturer, designer, and occasionally inventor who had a passion for firearms.

• His first automatic pistol patent was issued in 1892 in Gaggenau, Germany.

• By 1894, he'd perfected prototype handguns with the help of Louis Schmeisser, and they were being tested by several countries.

Q26. Answer: (d) Observing and photographing the sun's corona

The correct answer is Observing and photographing the sun's corona.

Key Points

• A coronagraph is a specialized instrument designed to block out the light of the sun so that researchers can glimpse the burning star's hot, thin, outermost layer, called the corona.

• A French astronomer Bernard Lyot invented the coronagraph in the 1930s, according to the American Museum of Natural History, and the instrument has since found many other uses.

• The sun's corona is normally visible only during solar eclipses when the moon's shadow covers the bright central layers of our parent star and allows its dimmer corona to appear.

• A coronagraph mimics this natural phenomenon with a circular mask that sits inside a telescope and selectively blocks the bulk of the sun's light.

• More recently, the development of a new class of coronagraph has allowed scientists to directly view the light from distant exoplanets.

• Planetary are often between a thousand and a billion times fainter than the stars they orbit, making it nearly impossible to image them without blocking light from the overpowering star.

• In such cases, coronagraph has proved itself to be of immense importance.

Q27. Answer: (a) Frequency

The correct answer is Frequency.

Key Points

• Frequency is the number of occurrences of a repeating event per unit of time.

• It is also known as temporal frequency.

• Frequency is measured in units of hertz (Hz) which is equal to one occurrence of a repeating event per second.

• The relation between the frequency and the period, T, of a repeating event, is given by

• F=1/T

Additional Information

• Pressure:

• Pascal is the SI unit of pressure(Pa).

• The unit of pressure is named after scientist Blaise Pascal.

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

• The Barometer is a scientific instrument that is used to measure air pressure.

Q28. Answer: (b) Abacus

The correct answer is Abacus.

Key Points

• An abacus is said to be one of man's first calculating gadgets.

• It's a manual instrument that takes a long time and a lot of practice to master.

• An abacus represents numbers with numerous rows of beads; each row represents a place value, and the arrangement of beads in a row represents a digit.

• The abacus, which was usually in the form of a huge calculating board, was widely used in Europe, the Arab world, and Asia during the Middle Ages.

• In the 16th century, it made its way to Japan. The abacus was progressively displaced by the Hindu-Arabic notation, which included place value and zero, though it was still frequently used in Europe as late as the 17th century.

Additional Information

• Pascaline:

• Pascaline, also known as the Arithmetic Machine, was the first calculator or adding machine to be mass-produced and used.

• Blaise Pascal, a French mathematician, and philosopher conceived and built the Pascaline between 1642 and 1644.

• Calculator:

• A calculator is a machine that performs arithmetic operations and some mathematical functions automatically.

• Modern calculators are descendants of Blaise Pascal's 1642 digital arithmetic machine.

• Gottfried Wilhelm Leibniz developed a more advanced machine later in the 17th century

• Turning machine:

• For milling and drilling, a turning machine is a machine tool having additional spindles and/or rotating tools.

Q29. Answer: (d) John McCarthy

The correct answer is John McCarthy.

Key Points

• The Father of Artificial Intelligence is John McCarthy.

• John McCarthy (September 4, 1927 – October 24, 2011) was an American computer scientist and cognitive scientist.

• McCarthy was one of the founders of the discipline of artificial intelligence.

• He co-authored the document that coined the term "artificial intelligence" (AI), developed the Lisp programming language family, significantly influenced the design of the ALGOL programming language, popularized time-sharing, invented garbage collection, and was very influential in the early development of AI.

Additional Information

• JP Eckert designed the first general-purpose electronic digital computer.

• Lee De Forest invented the audion which is a vacuum tube device that could take a weak electrical signal and amplify it into a larger one.

• Charles Babbage is considered the father of the computer.

Q30. Answer: (b) It is a science of movement in a flow of air or gas

The correct answer is It is a science of movement in a flow of air and gas.

Key Points

• Aerodynamics is the way air moves around things. The rules of aerodynamics explain how an aeroplane is able to fly.

• Anything that moves through air reacts to aerodynamics. A rocket blasting off the launch pad and a kite in the sky react to aerodynamics. Aerodynamics even acts on cars, since air flows around cars.

Additional Information

• The Four Forces of Flight are-

• Lift,

• weight,

• thrust and

• drag.

• These forces make an object move up and down, and faster or slower. How much of each force there are changes how the object moves through the air.

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Q31. Answer: (c) 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 = Rs.400

Gain = 400 - 320

Gain = Rs.80

Profit% = (80/320) × 100

Profit% = (1/4) × 100

Profit% = 25%

Therefore The profit percentage is 25%.

Q32. Answer: (a) 630

Calculation:

30% of (1500 + 600)

=> 30/100 × 2100

=> 30 × 21

=> 630

Therefore The value of 30% of (1500 + 600) is 630.

Q33. Answer: (b) 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.

Q34. Answer: (a) 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)

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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

Q35. Answer: (c) 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.

Q36. Answer: (d) Always an irrational number

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:
Product of rational and irrational number is always irrational if rational no is non zero
Example :
Rational no = 4
irrational no = √2
Rational × irrational = 4√2

Q37. Answer: (c) 25

Calculation
31, 7, 25, 13, 19, 19, 13 _
Here we can see the difference of six in first, third, fifth and same in the second, fourth and sixth term
=> 7 + 6 = 13
=> 13 + 6 = 19
=> 19 + 6 = 25
Therefore The next number is 25

Q38. Answer: (c) 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

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=> 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.

Q39. Answer: (c) 0

If there is no event then its probability is zero.
For probability some event has to happen.

Q40. 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 sun of the number is 14.

Q41. Answer: (d) 1.589 grams

Concept used
1000 miligram = 1 gram
Calculation
1000 miligram = 1 gram
1589 miligram = ?
=> 1589/1000 = 1.589 grams

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

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=> 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: (b) 23 years

Given:
The average age of 7 boys is 20 years.
average age of the first six 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.

Q44. Answer: (d) 625

Calculation:
=> 5 × 5 = 25
=> 25 × 5 = 125
=> 25 × 5 = 625
Therefore The next number is 625.

Q45. Answer: (a) 12

Given:
'A' and 'B' can do a work in 10 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 10 and 15
Total work be 30 units.
Efficiency of A = 30/10 = 3 unit
Efficiency of B = 30/15 = 2 unit
A and B works on the alternate days
=> 2 days = (3 + 2) units

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=> 2 days = 5 unit
=> Multiplying 6 on both sides
30 units work done in
=> 2 × 6 = 12 days
Therefore In 12 days will be work be completed

Q46. Answer: (d) 42 : 4

The logic follows here is :
First number is completely divisible by the second number.
1. 32 : 2 → 32 ÷ 2 = 16 → Completely divisible
2. 15 : 5 → 15 ÷ 5 = 3 → Completely divisible
3. 36 : 6 → 36 ÷ 6 = 6 → Completely divisible
4. 42 : 4 → 42 ÷ 4 = 10.5 → Not Completely divisible
Hence, "42 : 4" is different from others.

Q47. Answer: (d) 180°

According to the given information :
Angle covered by the hour hand in 12 hours = 360°
Angle covered by the hour hand in 1 hour = 360° ÷ 12 = 30°
Total hours from 7 AM to 1 PM = 6 hours
Angle covered by the hour hand in 6 hours = 30° × 6 = 180°.
Hence, the correct answer is "180°".

Q48. Answer: (b) Boy

The logic follows here is :

Word	Written as
man	woman
woman	girl
girl	boy
boy	worker

We know that a 6-year-old woman is called a girl.
But the girl is written as boy.
Hence, the correct answer is "Boy".

Q49. Answer: (a) 9

The logic follows here is :
All except 9 are Prime numbers.
Hence, "9" is the odd one.

Q50. Answer: (a) daughter-in-law

Family Chart :
Family Tree :
Thus, Jiya is the "daughter-in-law" of Mahesh.

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