Agniveer Army GD 17 April 2023 (Shift 1) Memory-Based Paper. (Previous Year Paper)

Army GD Agniveer • 2023 • 50 questions • 60 minutes • Answer key and solutions

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GENERAL KNOWLEDGE

Q1. In court of which among the following rulers, numerous scholars were adorned as 'Navratnas'?

(a) Chandragupta II
(b) None of these
(c) Srigupta
(d) Samudragupta

Q2. Yamuna River is the tributary of which of the following river?

(a) Indus River
(b) Brahmaputra River
(c) Ganga River
(d) Godavari River

Q3. Harappa was discovered by

(a) R D Bannerjee
(b) Dayaram Sahni
(c) A O Hume
(d) A V Alexander

Q4. In March 2023, Who is the Chief Minister of Gujarat?

(a) Manik Saha
(b) Bhupesh Baghel
(c) Bhupendra Patel
(d) Jai Ram Thakur

Q5. Neeraj Chopra is related to which sport?

(a) Archery
(b) Javelin throw
(c) Horse race
(d) Kabbadi

Q6. The 7th edition of the bilateral air exercise between India and France concluded at Air Force Station, Jodhpur on 12th November 2022. What was the name of the exercise?

(a) Garuda
(b) Varuna-III
(c) Mitrata
(d) Hand in Hand

Q7. Modhera Sun Temple is situated at:

(a) Jharkhand
(b) Madhya Pradesh
(c) Gujarat
(d) Odisha

Q8. Which Indian state is the largest by area?

(a) Maharashtra
(b) Uttar Pradesh
(c) Rajasthan
(d) Madhya Pradesh

Q9. The famous revolt of 1857, of which Mangal Pandey was a part, is related to:

(a) 34th Native Infantry
(b) 2nd Lancer
(c) 10th Native Infantry
(d) 34th Artillery

Q10. "Ping Pong" is related to

(a) Badminton
(b) Table Tennis
(c) Judo
(d) Taikando

Q11. By which amendment of the Indian Constitution, the voting age was reduced from 21 years to 18 years?

(a) 59^(th)
(b) 61^(th)
(c) 62^(th)
(d) 60^(th)

Q12. The Capital of Thailand is ____.

(a) Bangkok
(b) Lome
(c) Dushanbe
(d) Dodoma

Q13. In March 2023, Who is the Home Minister of India?

(a) Narendra Modi
(b) Amit Shah
(c) Rajnath Singh
(d) Yogi Adityanath

Q14. Vasco da Gama, a Portuguese explorer came to India in _____.

(a) 1496
(b) 1498
(c) 1495
(d) 1497

Q15. What was the name of the rover of Chandrayaan - 2?

(a) Pragyan
(b) Vyommitra
(c) Vikram
(d) Orbiter

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GENERAL SCIENCE

Q16. Naturally occuring acid present in tamarind is:

(a) Oxalic acid
(b) Ascorbic acid
(c) Tartaric acid
(d) Tannic acid

Q17. The full form of DNA is:

(a) deoxyribeneutral acid
(b) deltanucleic acid
(c) deoxyribonucleic acid
(d) dyoxyenucleic acid

Q18. Polio is caused by a

(a) Protozoa
(b) Virus
(c) Bacteria
(d) Fungi

Q19. Rutherford's alpha-particle scattering experiment was responsible for the discovery of

(a) Atomic Nucleus
(b) Electron
(c) Proton
(d) Neutron

Q20. Which is the largest gland in our body that is characterised by its reddish brown colour?

(a) Pitutary
(b) Liver
(c) Pancreas
(d) Thymus

Q21. Which acid is present in the ant sting?

(a) Tartaric acid
(b) Methanoic acid
(c) Lactic acid
(d) Acetic acid

Q22. How many colours are there in a spectrum of light?

(a) 5
(b) 1
(c) 7
(d) 3

Q23. Who discovered the cell?

(a) Theodor Schwann
(b) Matthias Schleiden
(c) Robert Hooke
(d) Rudolf Virchow

Q24. _____ glands release tears from our eyes.

(a) Adrenal
(b) Pituitary
(c) Lacrimal
(d) Thyroid

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Q25. Which of the following is example/s for chemical change of substance?

(a) Rusting of iron
(b) Ripening of fruits
(c) Both 1 and 2
(d) None of the above

Q26. Average life span of human Red Blood Cells (RBC) is

(a) 40 days
(b) 80 days
(c) 120 days
(d) 160 days

Q27. Who discovered oxygen?

(a) Albert Einstein
(b) John Emburey
(c) Graham Bell
(d) Joseph Priestly

Q28. The unit of acceleration is _____?

(a) Newton Meter^2
(b) Newton Meter
(c) m/s^2
(d) m/s

Q29. Which among the following is a biotic component of an ecosystem?

(a) Wind
(b) Rainfall
(c) Grass
(d) Minerals

Q30. Who discovered penicillin?

(a) William Harvey
(b) Louis Pasteur
(c) Alexander Fleming
(d) Paul Ehrlich

MATHS

Q31. 3044 is divisible by ?

(a) 3
(b) 4
(c) 5
(d) 6

Q32. If $a - b = 1$, $a^2 + b^2 = 85$ then $a \times b = ?$

(a) 40
(b) 84
(c) 42
(d) 80

Q33. Find the average.

86, 88, 90, 72, 76 & 74

(a) 81
(b) 74

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(c) 90
(d) 88

Q34. The HCF and LCM of two numbers are 4 and 288 and one number is 32 then find the second number.
(a) 42
(b) 36
(c) 24
(d) 31

Q35. If the length, breadth, and total surface area of a cuboid are 15 cm, 10 cm, and 1300 cm^2, then its height is?
(a) 15 cm
(b) 20 cm
(c) 24 cm
(d) 30 cm

Q36. The average of three numbers is 27. The second is three times the first and the third number is five times the first. What is the sequence of the numbers?
(a) 27, 9, 45
(b) 9, 27, 45
(c) 24, 8, 40
(d) 8, 40, 24

Q37. Find the Simple Interest for 9 months on a principal amount of Rs. 19800 at 6% rate of interest per annum ?
(a) Rs. 871
(b) Rs. 874
(c) Rs. 898
(d) Rs. 891

Q38. If A : B = 11 : 7, B : C = 4 : 19 then find A : B : C.
(a) 33 : 21 : 76
(b) 33 : 14 : 19
(c) 44 : 28 : 133
(d) 22 : 28 :57

Q39. when a number is increased by 34, it becomes 3/2 of itself. what is the number?
(a) 102
(b) 34
(c) 68
(d) 17

Q40. Calculate the cylinder's total surface area if its radius is 7 cm and height is 12 cm.
(a) 564 cm^2
(b) 396 cm^2
(c) 836 cm^2
(d) 746 cm^2

Q41. If x and 2x are supplementary angles, then the value of 2x.
(a) 30°
(b) 60°
(c) 120°
(d) 90°

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Q42. 16 laborers take 35 days to complete construction. Exactly, how many days will the same work be completed by 28 laborers?

(a) 70
(b) 20
(c) 14
(d) 8

Q43. The cost of 2 pairs of pants and 3 shirts is Rs.650. If the cost of 4 pairs of pants and 2 shirts is Rs.700, then find the cost of each shirt.

(a) Rs.100
(b) Rs. 200
(c) Rs. 50
(d) Rs. 150

Q44. 83/500 = ? %

(a) 16.6%
(b) 23.5%
(c) 83%
(d) 415%

Q45. If a : b = 7 : 9 and b : c = 5 : 7, then find the value of a : c?

(a) 5 : 9
(b) 3 : 5
(c) 7 : 21
(d) 7 : 15

LOGICAL REASONING

Q46. If ROAD is written as "WTFI" in certain code language then what will be the code of BEAT ?

(a) GJFY
(b) GFJY
(c) GFYJ
(d) YFJG

Q47. NATION : ANTINO :: HUNGRY : ?

(a) HNUGRY
(b) UHNGYR
(c) YRNGUH
(d) UNHGYR

Q48. If in a certain code language 'PAPER' is written as '16116518', then how will 'BRINJL' be written in that language?

(a) 21891410112
(b) 23189140112
(c) 2189141012
(d) 2389411021

Q49. Refer to the following number-symbol series and answer the question that follows.

1 * 2 9 8 4 ! ^ 3 5 4 # 9 ! 3¹ 3 9 6 8 * $ 9 3

How many such symbols are there that are immediately preceded by a number and immediately followed by a number?

(a) 6
(b) 3
(c) 2
(d) 4

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Q50. If KHI = 28 and FSH = 33, then what is TBT?

(a) 30
(b) 42
(c) 36
(d) 32

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Chandragupta II

The correct answer is Chandragupta II.

Key Points

• Those Navratnas who lived in the court of Chandragupta II -
• Kalidas, Dhanvantari, Kspanaka, Amarsingh, Shanku, Betalabhatta, Ghatkarpar, Varahamihira, and Varruchi.

Additional Information

• Chandragupta II -
• He ascended the throne in 375 AD.
• He was born to Mahishi Dattadevi, the head of Samudragupta.
• He became famous in history by the name of Vikramaditya.
• He ruled from 375 to 415 AD (40 years).
• During his reign, the Chinese Buddhist traveller Fahien travelled to India from AD 399 to AD 414.
• He described India as a happy and prosperous country.
• The reign of Chandragupta II has also been called the Golden Age.
• Samudragupta -
• After Chandragupta I, in 335 AD, Kumaradevi's son Samudragupta ascended the throne.
• These are called grade numbers.
• The reign of Samudragupta is considered to be the period of the heyday of the Gupta Empire politically and culturally.
• The capital of this empire was Pataliputra. Samudragupta assumed the title of "Maharajadhiraja".
• He used to take pride in calling himself "Licchavi Dauhitra".

Q2. Answer: (c) Ganga River

The correct answer is Ganga River.

Key Points

• Ganga is the major river system in India.
• It starts from the Gangotri in the Himalayas and drains into the Bay of Bengal.
• The major tributaries of the Ganga are:
• Right bank tributaries: Yamuna, Chambal, Banas, Ken, Betwa, Son, Rihand, Koel
• Left bank tributaries : Bhagirathi, Alakananda, Ramganga,Ghahgra, Gomti, Gandak, Rapti, Kosi

Yamuna River System

• The Yamuna River is the largest tributary of the Ganga River.
• It originates from the Yamunotri glacier, at the Bandarpoonch peak in Uttarakhand.
• The main tributaries joining the river include the Sin, Hindon, Betwa Ken, and Chambal.
• The Tons is the largest tributary of the Yamuna.

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Q3. Answer: (b) Dayaram Sahni

The correct answer is Dayaram Sahni.

Key Points

• The Indus Valley Civilization flourished between 2500 BC and 1750 BC.

• Harappa is a site in eastern Punjab province.

• Harappa was located on the banks of the river Ravi.

• Most Harappan sites are located in semi-arid lands, where irrigation was probably required for agriculture.

• Harappa was discovered by archaeologist Daya Ram Sahni.

• He supervised the excavation of the Indus valley site at Harappa in 1921 and 1922.

• Harappa site was again excavated by Madho Swaroop Vatsa in 1926 and Wheeler in 1946.

• The major findings of Daya Ram Sahni from the Harappan site are:

• Sandstone statues of Human anatomy

• Granaries

• Bullock carts.

• Clay figures of Mother Goddess.

• Copper made mirror.

• Harappa was excavated by Mohammed Rafique Mughal of the Archaeological Survey of Pakistan in 1966 after independence.

• The Harappan city was heavily damaged under British rule when bricks from the ruins were used as track ballast in the construction of the Lahore–Multan Railway.

Additional Information

• Mohenjodaro was discovered by R.D Banerjee in 1922.

• The Harappa site was first briefly excavated by Sir Alexander Cunningham in 1872-73.

Important Points

Major Sites of Indus Valley Civilization

Year	Site	Location	Excavated by
1921	Harappa	Sahiwal District, Punjab	Daya Ram Sahni
1922	Mohenjo-Daro	Larkana District Of Sind on the bank of Indus	R. D Banerjee
1953	Kalibangan	Rajasthan	Amlanand Ghose
1953	Lothal	Gujarat	R. Rao
1964	Surkotada	Gujarat	J P Joshi
1974	Banawali	Haryana	R S Bisht
1968	Dholavira	Gujarat	J P Joshi

Q4. Answer: (c) Bhupendra Patel

The correct answer is Bhupendra Patel.

Key Points

• Bhupendra Patel will take oath as the 17th Chief Minister of Gujarat on 12 December 2022.

• Patel is an MLA from the Ghatlodia seat, a post previously held by Anandiben Patel.

• He had also served as the chairman of the Standing Committee of Ahmedabad Municipal Corporation and Ahmedabad Urban Development Authority (AUDA).

• He has been serving as the CM of Gujarat since September 2021.

Additional Information

• Tripura CM - Manik Saha

• Chhattisgarh CM - Bhupesh Baghel

• Himachal Pradesh CM - Sukhvinder Singh Sukhu

Q5. Answer: (b) Javelin throw

The Correct answer is Javelin Throw.

Key Points

• Neeraj Chopra is an Indian Track and field athlete and a Junior Commissioned Officer in India Army.
• Neeraj Chopra competes in the Javelin throw.
• He won a Gold Medal in 2018 Asian Games with the National record of 88.06 meters.
• He also clinched the gold medal in 2018 Commonwealth Games.
• He was the 2016 IAAF world U20 champion and set the world junior record of 86.48 meters at the U20 championship.
• Neeraj Chopra was selected as flag-bearer at the opening ceremony for India at the 2018 Asian Games.

Additional Information

Important Athlete For India:

Athlete	Important facts
Rani Rampal	• Rani Rampal is an Indian Field Hockey player. - At the age of 15, she was the youngest player in the national team which participated in the 2010 World Cup. - Awards:- Padma Shri, Rajiv Gandhi Khel Ratna award, for hockey. - She becomes the first-ever hockey player worldwide to win the prestigious 'World Games Athlete of the year 2019 award.
Deepa Malik	• Deepa Malik is an Indian Athlete. - She is the first woman to win a medal in Paralympic Games and won a silver medal at the Summer Paralympic in Shot put. - She also won the gold medal in the Javelin event at the para athletic Grand Prix held in Dubai in 2018. - Awards:- - Padma Shri Award (2017) - Rajiv Gandhi Khel Ratna Award for Para-athletics (2019). - Arjun Award (2012) - President Role model Award.
Hima das	• Hima Das is an Indian Sprinter From the state of Assam. - Her Nickname is Dhing Express. - She is the first Indian athlete to win a gold medal in a track event at the IAAF World U20 Championship. - She holds the current national Record in 400 Meters with a timing of 50.79 seconds that she clocked at the 2018 Asian Games in Jakarta, Indonesia. - Das win the Gold in Ponzam Athletics Grand Prix in Poland, on 2 July 2019. - She conferred with Arjun Award on 25 September 2018.

Q6. Answer: (a) Garuda

The correct answer is Garuda.

Key Points

• The 7th edition of the bilateral air exercise between the Indian Air Force (IAF) & the French Air & Space Force (FASF), 'Exercise Garuda-VII' concluded at Air Force Station, Jodhpur on 12th Nov 2022.
• It was the first occasion for IAF's LCA Tejas and the LCH Prachand to participate in any international exercise.
• The first, third & fifth editions were conducted in India in 2003, 2006, and 2014.

Additional Information

• List of Important Military Exercises in which Indian Armed Forces have participated:

Participating Countries	Exercise(s)
Australia	AUSTRA HIND, AUSINDEX, PITCH BLACK
Bangladesh	SAMPRITI, IN-BN CORPAT, IN-BN BILAT, IN-BN SF, TABLE TOP, SAMVEDNA
Brazil and South Africa	IBSAMAR
China	HAND IN HAND
Egypt	CYCLONE
France	SHAKTI, VARUNA, GARUDA
Indonesia	GARUDA SHAKTI, IND-INDO CORPAT, IND-INDO BILAT
Israel	BLUE FLAG
Japan	DHARMA GUARDIAN, JIMEX

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Q7. Answer: (c) Gujarat

The correct answer is Gujarat.

Key Points

• Modhera Sun Temple is situated at Gujarat.

• As per Archeological Survey of India Modhera Sun Temple was built in 1026-27 CE during the reign of Bhima I of the Chaulukya dynasty.

• As you enter the historical complex, you first come across the magnificent kund known as the Ramakund, built in rectangular shape containing 108 shrines to various gods and demi-gods.

• Three main shrines positioned on the three sides of the kund, dedicated to Ganesh and Vishnu and an image of Lord Shiva dancing the 'tandav'.

• Walk up the steps to the 'Sabha Mandap' or the assembly and convene with sculpted renderings of twelve 'Adityas' (another name for the sun god).

• The twelve representations carved on the pillars represent the sun according to the twelve months.

• In October, 2022 Honorable Prime Minister Shri Narendra Modi Inaugurated Solar powered 3-D Projection Mapping Show and Heritage Lighting at the Temple.

Additional Information

States	Important Temple
Jharkhand	Baidyanath Temple
Madhya Pradesh	Omkareshwar Temple
Odisha	Jagannath Temple Sun Temple, Konark · Lingaraj Temple,

Q8. Answer: (c) Rajasthan

The correct answer is Rajasthan.

Key Points

• Rajasthan is the largest state in India in terms of area.

• It covers an area of 342,239 sq. km and has a population of 6.85 crores as per the 2011 census.

• Uttar Pradesh is the largest state of India in terms of population.

Additional Information

• Area-wise states-

S.No.	States
1	Rajasthan
2	Madhya Pradesh
3	Maharashtra
4	Uttar Pradesh

• Population-wise states-

S.No.	States
1	Uttar Pradesh
2	Maharashtra
3	Bihar
4	West Bengal

Q9. Answer: (a) 34th Native Infantry

The Revolt of 1857 was the result of the character and the policies of British colonial rule. The causes of revolt emerged from all aspects- socio-cultural, economic, and political.

Revolt of 1857:

• The Revolt was started on 29th March 1857.

• The 19th Infantry at Berhampur (Barrackpore), refused to use the newly introduced Enfield rifle.

• The infantry was disbanded.

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• Mangal Pandey, a sepoy of the 34th Native Infantry at Barrackpore attacked and fired at his British Officers.
• Mangal Pandey was born on 19 July 1827.
• Mangal Pandey was an Indian soldier who took part in the revolt of 1857.
• He belongs to 34th Bengal Native Infantry (BNI) regiment.
• One of the major incidents that took place in this revolt was that he killed two British officers Hugeson and Baugh at Barrackpore.
• He died on April 8 and his regiment was banned on the 6th of May.
• A postage stamp was being issued on behalf of his name in 1984.
• "Shaheed Mangal Pandey Maha Udyan" is a park in Barrackpore.

Thus, the famous revolt of 1857, of which Mangal Pandey was a part, is related to the 34th Native Infantry.

Additional Information

• 90 men of the 3rd Native Cavalry stationed at Meerut refused to use the greased cartridge.
• 85 of them were dismissed and sentenced to 10 years imprisonment on 9th May.
• The next day, on 10th May, the entire Indian Garrison revolted.
• On 11th May 1857, a band of sepoys from Meerut, who had disobeyed and killed the European officers the previous day, marched to the Red Fort (Delhi).

Q10. Answer: (b) Table Tennis

Explanation:

Ping-Pong:

• Table tennis is also called the Ping-Pong game.
• The game was invented in England in the early days of the 20th century and was originally called Ping-Pong, a trend name.
• It is a ball game similar to lawn tennis and played on a flat table divided into two equal courts by a net fixed across its width in the middle.
• The object is to hit the ball so that it goes over the net and bounces on the opponent’s half of the table in such a way that the opponent cannot reach it or return it correctly.
• The lightweight hollow ball is propelled back and forth across the net by small rackets (bats, or paddles) held by the players.
• The game is popular all over the world.
• In most countries, it is very highly organised as a competitive sport, especially in Europe and Asia, particularly China and Japan.

Thus, "Ping Pong" is related to Table Tennis.

Additional Information:History:

• The name table tennis was adopted in 1921–22 when the old Ping-Pong Association formed in 1902 was revived.
• The original association had broken up about 1905, though apparently the game continued to be played in parts of England outside London and by the 1920s was being played in many countries.
• Led by representatives of Germany, Hungary, and England, the Federation Internationale de Tennis de Table (International Table Tennis Federation) was founded in 1926.
• The founding members were England, Sweden, Hungary, India, Denmark, Germany, Czechoslovakia, Austria, and Wales.
• By the mid-1990s more than 165 national associations were members.

Q11. Answer: (b) 61^(th)

The correct answer is 61st Amendment Act.

Key PointsEqual participation rights in political and public affairs play an important role in the promotion of democratic governance, the rule of law, social inclusion and economic development, as well as in the advancement of all human rights.

• In line with the International Conventions that India has signed and ratified so far, the Constitution of India provides its citizens with various provisions which promote equality among citizens.

Important Points

Article 326 of the Constitution initially provides that the elections to the House of the People and to the Legislative Assembly of every State shall be on the basis of adult suffrage, that is to say, a person should not be less than 21 years of age.

• The Sixty-first Amendment of the Constitution of India, officially known as The Constitution (Sixty-first Amendment) Act, 1989, lowered the voting age of elections to the Lok Sabha and to the Legislative Assemblies of States from 21 years to 18 years.
• The lowering of the voting age provided the unrepresented youth of the country an opportunity to express their feelings and help them to become a part of the political process.
• The present-day youth are very much politically conscious.
• It was, therefore, proposed to reduce the voting age from 21 years to 18 years.
• With the amendment, the percentage of voting has increased tremendously.

• Engaging the youth in the political process vocalized democracy as it includes more people in the electoral process.

• It improved the engagement of our citizens in the political process both qualitatively and quantitatively.

Thus, we can say that 61st Amendment Act, reduced the age of voting from 21 years to 18 years.

Additional Information

• 62nd Amendment Act

• The Sixty-second Amendment of the Constitution of India, officially known as The Constitution (Sixty-second Amendment) Act, 1989, extended the period of reservation of seats for the Scheduled Castes and Scheduled Tribes and representation of the Anglo-Indians in the Lok Sabha and the State Legislative Assemblies for another ten years, i.e. up to 26 January 2000.

• In January 2020, the Anglo-Indian reserved seats in the Parliament and State Legislatures of India were abolished by the 104th Constitutional Amendment Act, 2019.

• 59th Amendment:

• 59nd Amendment Act, 1988 of Indian Constitution empowered the Central Government to impose Emergency in Punjab when deemed necessary.

• Under the amendment, the President's rule can be extended up to three years.

• 60th Amendment:

• amended article 276 of the Constitution relating to taxes on professions, trades, callings, and employments.

Q12. Answer: (a) Bangkok

The correct answer is Bangkok.

Key Points

• Baht (B) is the official currency of Thailand.

• Thailand is a Southeast Asian country.

• Capital: Bangkok

• King: Maha Vajiralongkorn

• Thailand is called the country of white elephants.

Important Points

COUNTRY	CURRENCY	CAPITAL
Togo	CFA franc	Lome
Tajikistan	Tajikistani somoni	Dushanbe
Tanzania	Tanzanian Shilling	Dodoma

Q13. Answer: (b) Amit Shah

The correct answer is Amit Shah.

Key Points As of March 2023:

• The Home Minister of India - Amit Shah

• The Prime Minister of India - Narendra Modi

• The Defence Minister of India - Rajnath Singh

• The Finance Minister of India - Nirmala Sitharaman

• The Chief Minister of Uttar Pradesh - Yogi Adityanath

Q14. Answer: (b) 1498

The correct answer is 1498.

Key Points

• Vasco da Gama was a Portuguese explorer and the first European to reach India by sea.

• His initial voyage to India by way of the Cape of Good Hope (1497–1499) was the first to link Europe and Asia by an ocean route, connecting the Atlantic and the Indian oceans.

• On May 17, 1498, Basco da Gama discovered a new sea route between India and Europe by reaching the port of Calicut on the west coast of India.

• On this journey, Vasco da Gama was supported by Gujarati traveler Abdul Manind.

• At that time Zamorin was the king of Calicut.

• From the earlier part of the 15th century, Portuguese expeditions organized by Prince Henry the Navigator had been reaching down the African coastline, principally in search of west African riches (notably, gold and slaves).

Additional Information

Company	Established Year
Portuguese East India Company	1498
English East India Company	1600
Dutch East India Company	1602
Danish East India Company	1616
French East India Company	1664
Swedish East India Company	1731

1628

Q15. Answer: (a) Pragyan

The correct answer is Pragyan.

• Pragyan was the name of the rover Chandrayaan-2.

Key Points

• Pragyan

• Chandrayaan-2's Rover was a 6-wheeled robotic vehicle named Pragyan, which translates to 'wisdom' in Sanskrit.

• Its weight was 27 kg.

• Its work was to collect data from the surface of the moon and send it back to earth via Vikram.

Additional Information

• Chandrayaan 2

• Chandrayaan-2 is the second lunar exploration mission developed by the ISROafter Chandrayaan-1.

• It consists of a lunar orbiter, and also included the Vikram lander, and the Pragyan lunar rover, all of which were developed in India.

• The main scientific objective of the mission was to map and study the variations in lunar surface composition, as well as the location and abundance of lunar water.

• The spacecraft was launched on its mission to the Moon on 22 July 2019 by a GSLV Mark III-M1.

• It got a failure when was entering the atmosphere of the moon.

Q16. Answer: (c) Tartaric acid

The correct answer is Tartaric Acid.

Key Points

• Naturally occurring acids that occur naturally in foods.

• Food acids are the important acids found in natural food products that give them a distinct flavor or a tinge.

• The human body tends to react differently to different types of food acids.

• There are different types of food acids like citric acid, malic acid, and tartaric acid that are naturally occurring food acids.

Additional Information

• Tamarind is acidic in nature due to tartaric acid content (IUPAC-2,3-dihydroxybutanedioic acid).

• Tartaric acid, an antioxidant, is the reason why tamarind is sour.

• Tartaric acid is also present in grapes and bananas, but not in citrus fruits. That's why the sourness of tamarind is different from the sourness of lemons and limes, it is not as bitter as them.

• Ascorbic acid: It is a natural water-soluble vitamin (Vitamin C). Ascorbic acid is a potent reducing and antioxidant agent that functions in fighting bacterial infections, in detoxifying reactions, and in the formation of collagen in fibrous tissue, teeth, bones, connective tissue, skin, and capillaries.

• Oxalic acid: It is an organic compound with the formula $C_2H_2O_4$. it is a white crystalline solid that forms a colorless solution in water. Its condensed formula is HOOCCOOH, reflecting its classification as the simplest dicarboxylic acid. Its acid strength is much greater than that of acetic acid.

• Tannic acid: It is a specific form of tannin, a type of polyphenol. Its weak acidity (pKa around 6) is due to the numerous phenol groups in the structure.

• Chemical formula: $C_{76}H_{52}O_{46}$

• Melting point: decomposes above 200°C

• Solubility in water: 2850 g/L or 250g/L

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• Molar mass: 1701.19g/mol

Q17. Answer: (c) deoxyribonucleic acid

The correct option is 3 i.e Deoxyribonucleic acid.

Key Points

• The full form of DNA is Deoxyribonucleic acid.

• DNA is the carrier of genetic material. Genes present as series of ATGC sequences and packed as helical structure are coherently called as DNA.

• DNA is also responsible for introducing mutations in the species by random rearrangement of gene sequences or "recombination" during reproduction.

• DNA structure was given in 1953 by Dr James Watson and Dr Francis Crick with the help of Rosalind Franklin via X-ray crystallography of DNA molecule.

• DNA is a genetic carrier in human beings animals, bacteria etc.

Q18. Answer: (b) Virus

Concept:

Communicable disease: The diseases which are infectious or transmissible from a body to body through biological agents in humans and animals. Ex- Influenza, Ebola, Covid-19, polio etc.

Non-communicable disease: The disease that is not transmissible directly from one person to another through biological agents, Ex- Astana, Diabetes, etc.

Explanation:

Polio: Polio or Poliomyelitis is an infectious disease caused by the polio virus. Polio is transmitted through contaminated water or food, or contact with an infected person.

• Poliomyelitis, or simply Polio, is a highly contagious infectious disease caused by three types of Poliovirus. The Poliovirus is a virus that destroys the nervous system causing paralysis.

• Poliovirus is a highly contagious virus specific to humans.

• Jonas Salk discovered and developed the first polio vaccine.

• The first polio vaccine was the inactivated polio vaccine which came into use in 1955.

Hence, it becomes clear that Polio is caused by a Virus.

Q19. Answer: (a) Atomic Nucleus

The correct answer is Atomic Nucleus.

Key Points

• Rutherford's alpha-particle scattering experiment was responsible for the discovery of the atomic nucleus.

• Rutherford’s alpha-particle scattering experiment:

• Ernest Rutherford was interested in knowing how the electrons are arranged within an atom. Rutherford designed an experiment for this.

• In this experiment, fast-moving alpha (α)-particles were made to fall on a thin gold foil.

• He selected a gold foil because he wanted as thin a layer as possible. This gold foil was about 1000 atoms thick.

• α-particles are doubly charged helium ions. Since they have a mass of 4 u, the fast-moving α-particles have a considerable amount of energy.

• It was expected that α-particles would be deflected by the sub-atomic particles in the gold atoms. Since the α-particles were much heavier than the protons, he did not expect to see large deflections.

• But, the α-particle scattering experiment gave totally unexpected results. The following observations were made:

• Most of the fast-moving α-particles passed straight through the gold foil.

• Some of the α-particles were deflected by the foil by small angles.

• Surprisingly one out of every 12000 particles appeared to rebound

• On the basis of his experiment, Rutherford put forward the nuclear model of an atom, which had the following features:

• There is a positively charged centre in an atom called the nucleus. Nearly all the mass of an atom resides in the nucleus.

• The electrons revolve around the nucleus in circular paths.

• The size of the nucleus is very small as compared to the size of the atom.

Additional Information

• Electron was discovered by J.J. Thomson in 1896.

• Sir James Chadwick discovered neutrons in the year 1932.

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• The discovery of the proton is credited to Ernest Rutherford, who proved that the nucleus of the hydrogen atom (i.e. a proton) is present in the nuclei of all other atoms in the year 1917.

Q20. Answer: (b) Liver

The correct answer is Liver.

Key Points

• Liver is the largest gland in our body that is characterised by its reddish brown colour.

• Liver is the largest gland, located in the upper right side of the abdomen below the diaphragm.

• It secretes bile, which gets collected in gall bladder and is finally poured into the duodenum through the common bile duct.

• Besides secreting bile, which helps in digestion, the liver has numerous other functions.

Additional Information

• Pancreas is a reddish brown gland located in the bend of the duodenum.

• Thymus and bone marrow are the central or primary lymphoid organs.

• The pituitary gland (also called hypophysis) is a small projection (about the size of a pea) which hangs from the base of the mid-brain.

Q21. Answer: (b) Methanoic acid

The correct answer is Methanoic acid.

Key Points

• Methanoic acid is present in the ant sting.

• Chemical formula- HCOOH.

• The sting causes a burning sensation.

• Methanoic acid is also known as formic acid.

• A mild base such as baking soda or soap may be applied to neutralize the effect.

• In 1671, the English naturalist John Ray describe the isolation of the active ingredient.

• He collected and distilled a large number of dead ants, and the acid he discovered later became known as formic acid.

• Formic acid is also present in a natural state in stinging nettles.

• Formic acid is a colourless, fuming liquid that is miscible with water. It is produced as a by-product in the manufacture of acetic acid.

Q22. Answer: (c) 7

The correct answer is 7.

Key Points

• The splitting of white light, when it passes through glass prism into its constituent spectrum is known as the dispersion of light.

• Due to this phenomenon, sunlight splits into 7 colours

• Violet, Indigo, Blue, Green, Yellow, Orange, and Red (VIBGYOR).

Additional Information

• A Rainbow is one of the natural phenomena which is caused because of the dispersion of light.

• White light is made of all seven colours of the rainbow which can be seen when the white light is passed through a prism.

• The colours are red, orange, yellow, green, blue, indigo and violet.

Q23. Answer: (c) Robert Hooke

The correct answer is Robert Hooke.

• Robert Hooke discovered the cell.

Key Points

• Cell:

• It is the basic structural and functional unit of all known living organisms.

• It is the smallest unit of life and is often called the building block of life.

• Robert Hooke coined the term cell.

• The first living cell was discovered by Leeuwenhoek.

• The smallest cell is PPLO (Mycoplasma).

• The human nerve cell is the longest animal cell.

• The largest unicellular plant is Acetabularia (10 cm) and the animal is Amoeba, (1mm).

• The largest human cell is the female ovum and the smallest human cell is the sperm.

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• The longest cell is the neuron.

• The biggest cell is the egg of Ostrich.

Additional Information

• Theodor Schwann, Rudolf Virchow, and Rudolf Virchow are known for the extension of cell theory.

• Theodor Schwann's discovery of the enzyme pepsin.

Q24. Answer: (c) Lacrimal

The correct answer is Lacrimal.

Key Points

• Lacrimal Glands are paired exocrine glands which secrete the aqueous layer of the tear film, resulting in tears in each eye.

• The lacrimal glands are situated in the upper lateral region of each orbit.

• In a human eye, lacrimal glands lubricate the eye by producing mucus, resulting in tears.

Additional Information

• Adrenaline hormone is secreted by the adrenal gland.

• Adrenaline hormones are rapidly secreted in response to the stress of any kind and during emergency situations and are called emergency hormones or hormones of Fight or Flight.

• The pituitary Gland is present below the hypothalamus.

• It secretes various hormones, like growth hormone, prolactin, thyroid-stimulating hormone, oxytocin, vasopressin, gonadotropin, etc.

• The thyroid gland is a butterfly-shaped gland located at the base of the neck just below Adam's apple.

• This gland produces thyroid hormones, which help regulate the body's metabolism, the chemical processes that occur in the body.

Q25. Answer: (c) Both 1 and 2

Chemical Change-Chemical changes occur when a substance combines with another to form a new substance.

Key Points

• In a chemical change, the chemical composition of the substance also changed.

• During the chemical change of any substance, bonds are broken and new ones are formed.

• Change in temperature, color, the formation of bubbles is the basic indicator of chemical change. Usually, chemical change can not reversed back.

• Iron Rusting- In the presence of moisture and oxygen the exposure of iron contributes to rust formation. Rust is an iron oxide. In iron rusting process iron oxide produced after chemical reaction with iron in the presence of moisture and oxygen. Iron rusting is a chemical change process because new substance iron oxide(rust) produced after a chemical reaction.

• Ripening of fruits- Ripening of fruits is a chemical change. Several changes take place during the ripening phase like the color and texture of the fruit changes. The chemical composition of the fruit also change the fruit's sugar level increases, and the fruit becomes sweeter.

Both 1 and 2 are an example of chemical change.

Q26. Answer: (c) 120 days

The correct answer is 120 days.

Key Points

• Red blood cells (RBC) are also called "Erythrocytes".

• The average life span of RBC is 120 days.

Additional Information

• Red Blood Cells -

• It is the most important cell of the blood.

• It accounts for 40% of the whole blood, it is the medium of oxygen delivery in vertebrates.

• This cell does not have a nucleus. Its average lifespan is 120 days.

• It was discovered by Antoine Louvain Hoc, that the smallest cell in the human body is considered to be RBC.

• It contains a protein called haemoglobin.

• Red blood cells (RBCs) are destroyed in the liver and spleen

• Spleen is called the graveyard of RBC.

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Q27. Answer: (d) Joseph Priestly

The correct answer is Joseph Priestley.

Key Points

• Joseph Priestly discovered Oxygen.

• It is a chemical element with the symbol O and atomic number 8.

• It is a member of the chalcogen group in the periodic table, a highly reactive nonmetal, and an oxidizing agent that readily forms oxides with most elements as well as with other compounds.

• When Joseph Priestley discovered oxygen in 1774, he answered age-old questions of why and how things burn.

Important Points

• Symbol: O

• Atomic mass: 15.999 u

• Atomic number: 8

• Electron configuration: [He] 2s²2p^4

• Electronegativity: 3.44

• Discoverers: Joseph Priestley, Antoine Lavoisier, Carl Wilhelm Scheele

Additional Information

• Albert Einstein

• He was a German-born Physicist, widely acknowledged to be one of the greatest physicists of all time.

• He revolutionized modern physics and quantum mechanics with his famous thesis on the Theory of Relativity and the photoelectric effect.

• He is widely known to the people for the mass-energy equivalence formula, E= mc².

• In 1921, he won the Nobel Prize for physics for his explanation of the photoelectric effect.

• Alexander Graham Bell invented the telephone in 1876.

• Alexander Graham Bell called on his assistant Thomas Watson on 10 March 1876.

Q28. Answer: (c) m/s²

option(3)

CONCEPT:

• Acceleration: Acceleration of anybody is defined as the rate of change of velocity.

Its formula is given by:

a =(Δ v)/(Δ t)

EXPLANATION:

• We know Acceleration = Change in velocity/ Time taken

a =(Δ v)/(Δ t)

• The unit of velocity is meter per second (m/s).

• The unit of time is second (s).

a =(m/s)/s

a =m/(s²)= ms^(-2)

• Hence option 3 is the correct answer.

Q29. Answer: (c) Grass

The correct answer is Grass.

Key Points

• Biotic components are made up of organisms, living organisms, dead organisms, and the waste products of these.

• Biotic components are classified on how they obtain energy.

• Autotrophs: these organisms feed themselves and are thus known as self-feeders.

• They prepare their food using sunlight, water, CO2 and nutrients.

• They are also known as producers.

• Heterotrophs: these organisms can’t produce their food and thus rely on the other organisms for their energy requirements.

• They are also called consumers as they consume food from the producers.

• There is another category apart from the heterotrophs and autotrophs without which life can’t function, the decomposers.

• Decomposers are the second most important organisms after the producers.

• These decomposers also help the producers to produce their food too.

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• They are the second most important organisms because they decompose all the remaining organic matter.
• They also provide nutrients that the producers use to produce food.

Additional Information

• Abiotic components are usually the non-living components of our ecosystem which are, sun, rainfall, temperature, air, and soil.
• The abiotic components are affected by many things such as altitude, location and seasons.
• The abiotic factors change from weather to weather, climate to climate, season to season and place to place.

Q30. Answer: (c) Alexander Fleming

The correct answer is Alexander Fleming.

Key Points

• Alexander Fleming discovered penicillin.
• This discovery led to the introduction of antibiotics that greatly reduced the number of deaths from infection.
• Penicillin prevents the bacteria from synthesizing peptidoglycan, a molecule in the cell wall that provides the wall with the strength it needs to survive in the human body.

Important Points

• William Harvey discovered that the heart's four valves permitted the flow of blood in one direction only.
• Louis Pasteur developed the Rabies Vaccine.
• Paul Ehrlich introduced the concept of the 'magic bullet'.

Q31. Answer: (b) 4

Concept:

Divisibility rule of 3: If the sum of the digits of a whole number is a multiple of 3, then the original number is also divisible by 3.

Divisibility rule of 4: A given number is divisible by 4 if the last two digits of the number are zeros, or they form a number that is divisible by 4.

Divisibility rule of 5: If the last digit of a number is either 0 or 5 then it is said to be divisible by 5.

Divisibility rule of 6: A number is said to be divisible by 6 if it is divisible by 2 and 3 both.

Calculation:

The given number is 3044

Sum of digit = 3 + 0 + 4 + 4 = 11

Not divisible by 3 & 6.

The unit digit is 4. Hence

Not divisible by 5.

The last two digits (i.e. 44) are divisible by 4.

Therefore The given number is also divisible by 4.

Q32. Answer: (c) 42

Formula Used:

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

Calculation:

Given that,

a - b = 1 ------(1)

$(a^2 + b^2) = 85$ ------(2)

We know that

(a - b)2 = a2 + b2 - 2ab

=> $(1)^2 = (85) - 2ab$

=> 2ab = 85 - 1 = 84

Therefore a × b = 84/2 = 42

Q33. Answer: (a) 81

Given: 86, 88, 90, 72, 76 & 74

The logic follows here is,

Formula used:

Average = (Sum of all the observations)/(The number of observations)

Calculation:
Average = (86 + 88 + 90 + 72 + 76 + 74) / 6
=> Average = 486/6
=> Average = 81
Hence, the correct answer is "81".

Q34. Answer: (b) 36

Given:
The HCF and LCM of two numbers are 4 and 288 and one number is 32
Concept Used:
The product of two numbers = LCM × HCF
Calculation:
Let the second number be x
According to the question, we have
32 × x = 4 × 288
=> x = 1152/32
=> x = 36
Therefore The second number is 36.

Q35. Answer: (b) 20 cm

Given:
The length & breadth of a cuboid are 15 cm, 10 cm
Total surface area of cuboid = 1300 cm2,
Concept:
If l, b & h are the length, breadth & height, then
Total surface area = 2(lb + bh + hl)
Calculation:
Let the required height be h.
According to the concept discussed above
2(lb + bh + hl) = 1300
=> 2(15 × 10 + 10 × h + h × 15) = 1300
=> 2(150 + 10h + 15h) = 1300
=> 150 + 25h = 650
=> 25h = 650 - 150 = 500
=> h = 500/25 = 20
Therefore The required height of the cuboid is 20 cm.

Q36. Answer: (b) 9, 27, 45

Average of three numbers is 27
So, the sum of the three numbers = (27 × 3)
= 81
Let the first number be ‘a’.
The second is three times the first.
So, 2^(nd) number = 3a
The third number is five times the first.
So, 3^(rd) number = 5a
According to question:
(a + 3a + 5a) / 3 = 27
9a = 27 × 3
a = 81 ÷ 9
a = 9
Therefore 1^(st) number = a = 9
2 ^(nd) number = 3a = 3 × 9 = 27

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3^(rd) number = 5a = 5 × 9 = 45

Hence, '9, 27, 45' is the correct answer.

Q37. Answer: (d) Rs. 891

Given :

The principal is Rs. 19800 and the rate of interest is 6%.

Time = 9 months = 9/12 = 3/4 years

Concept used :

Interest = (principal × interest rate × time)/100

Calculations:

According to the question

Interest = [19800 × 6 × (3/4)]/100

=> Rs. 891

Therefore The simple interest is Rs. 891

Q38. Answer: (c) 44 : 28 : 133

Given

A : B = 11 : 7

B : C = 4 : 19

Calculation

A : B = 11 : 7] × 4 = 44 : 28

B : C = 4 : 19] × 7 = 28 : 133

A : B : C = 44 : 28 : 133

Therefore The required answer is 44 : 28 : 133

Q39. Answer: (c) 68

Calculation:

Let the required number be N.

According to the question

=> N + 34 = 3/2 × N

=> 3N/2 - N = 34

=> (3N - 2N)/2 = 34

=> N/2 = 34

=> N = 68

Therefore The required number is 68.

Q40. Answer: (c) 836 cm²

Given:

Radius of the cylinder (r) = 7 cm

Height of the cylinder (h) = 12 cm

Formula used:

Total surface area of a cylinder = 2πr(r + h)

Calculation:

=> Total surface area = 2 × 22/7 × 7 × (7 + 12)

=> 44 × 19

=> 836 cm²

Therefore The answer is 836 cm².

Q41. Answer: (c) 120°

Concept:

Supplementary Angles: Pair of angles that always sum up to 180°.

Calculation:

According to the concept discussed above

=> x + 2x = 180°

=> 3x = 180°
=> x = 180°/3 = 60°
Therefore 2x = 2 × 60° = 120°

Q42. Answer: (b) 20

Given:
16 laborers → 35 days
Concept used:
M1× D1 = M2 × D2
where, M = Men; D = Days
Calculation:
=> 16 × 35 = 28 × D2
=> D2 = 20
Therefore 28 laborers will take 20 days to complete the same work.

Q43. Answer: (d) Rs. 150

Calculation:
Let the cost of one pair of pants be x & one shirt be y.
The cost of 2 pairs of pants and 3 shirts is Rs.650.
=> 2x + 3y = 650
Multiply 2 on both sides
=> 4x + 6y = 1300 -----(1)
The cost of 4 pairs of pants and 2 shirts is Rs.700
=> 4x + 2y = 700 -------(2)
Doing equation (2) - (1)
=> (4x + 6y) - (4x + 2y) = 1300 - 700
=> 4y = 600
=> y = 150
Therefore The cost of each shirt is Rs. 150

Q44. Answer: (a) 16.6%

Calculation:
We have 83/500
To convert it into %, we need to multiply by 100
=> 83/500 × 100
=> 83/5
Therefore 83/500 = 16.6%

Q45. Answer: (a) 5 : 9

Calculation:
a : b = 7 : 9
=> a/b = 7/9 ------(1)
b : c = 5 : 7
=> b/c = 5/7 ------(2)
Multiplying (1) by (2)
=> a/b × b/c = 7/9 × 5/7
=> a/c = 5/9
Therefore The correct answer is 5 : 9

Q46. Answer: (a) GJFY

The logic followed here is:
Similarly,
Hence, the correct answer is "option (1)".

Q47. Answer: (b) UHNGYR

The logic followed here is:

As given NATION : ANTINO

Similarly, HUNGRY : ?

Therefore, the required answer is HUNGRY : UHNGYR

Hence, "Option (2)" is the correct answer.

Q48. Answer: (c) 2189141012

Given:

Similarly,

Hence, the correct answer is "option (3)".

Q49. Answer: (d) 4

Symbols that are immediately preceded by a number and immediately followed by a number are highlighted below:

Number => Symbol => Number

There are 4 such patterns:

1. 1 * 2
2. 4 # 9
3. 3 ^ 1
4. 3 & 9

Hence, the correct answer is Option (4).

Q50. Answer: (b) 42

Here, we use the table given below:

The logic followed in the given data:

Logic: "Addition of the positional values of letters".

KHI = 28 → (11 + 8 + 9) = 28

FSH = 33 → (6 + 19 + 8) = 33

Similarly, TBT:

TBT → (20 + 2 + 20) = 42

Hence, the correct answer is "42".

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