RRB NTPC CBT-I Official Paper (Held On: 3 Feb 2021 Shift 2) (Previous Year Paper)

RRB NTPC • 2021 • 100 questions • 90 minutes • Answer key and solutions

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Scan the QR code or click the link to open it.

Q1. Select the option that is related to the third term in the same way as the second term is related to the first term.

Ranthambore : Tiger :: Kaziranga : ?

(a) Asiatic Lion
(b) Wild Ass
(c) Spotted Hyena
(d) One-horned Rhinoceros

Q2. The blue colour of the sky is due to the:

(a) scattering of light
(b) refraction of light
(c) dispersion of light
(d) diffraction of light

Q3. Read the given statements and conclusions carefully and decide which of the conclusions logically follows from the statements.

Statements:

1. All boards are black.
2. All blacks are white

Conclusions:

1. No white is black
2. All black are boards
3. All white are black
4. All boards are white.

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

Q4. Kalidas Samman Award has been instituted by which state government ?

(a) Government of Maharashtra
(b) Government of Rajasthan
(c) Government of Chhatisgarh
(d) Government of Madhya Pradesh

Q5. Which fraction bears the same ratio to 1/27 as 3/11 does to 5/9 ?

(a) 1/55
(b) 1/15
(c) 1/27
(d) 1/99

Q6. How many Indian states share their boundaries with Nepal?

(a) 3
(b) 5
(c) 4
(d) 8

Q7. What is RDX?

(a) An explosive
(b) An instrument to measure blood pressure
(c) A chemical used in the manufacturing of pesticides
(d) An instrument to measure current

Q8. The Government of India celebrates_____ every year as 'Civil Services Day' for the civil servants to rededicate themselves to the cause of citizens and renew their commitment to public service and excellence in work.

(a) 21 April
(b) 21 January
(c) 21 May
(d) 21 October

Q9. If a boy finds that he is 11 from the right in a line of boys and 5^(th) from the left, how many boys should be added to the line so that there are 29 boys in the line?

(a) 13
(b) 15
(c) 14
(d) 12

Q10. Who was known as the 'Iron Man of India'?

(a) Subhash Chandra Bose
(b) Sardar Vallabhbhai Patel
(c) Jawahar Lal Nehru
(d) Narendra Modi

Q11. An article is bought for Rs. 250. What should be its selling price so as to gain 10% as profit?

(a) Rs. 290
(b) Rs. 275
(c) Rs. 260
(d) Rs. 250

Q12. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.

Question:

Should the illiterates be debarred from casting their votes?

Arguments:

I. Yes, they can be easily misguided.

II. No, it is their constitutional right.

(a) Both argument I and II are strong.
(b) Neither argument I nor II is strong
(c) Only argument II is strong.
(d) Only argument I is strong.

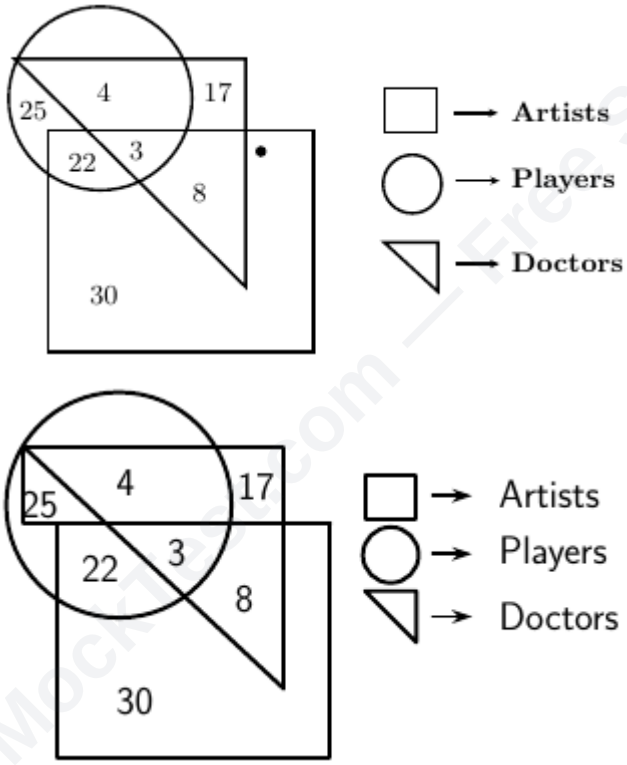
Q13. Which of the following is a cartilaginous fish?

(a) Rohu
(b) Shark
(c) Tuna

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(d) Salmon

Q14. Study the following figure and answer the question that follows.



How many doctors are neither artists nor players?

(a) 17
(b) 15
(c) 13
(d) 12

Q15. If the ratio of the heights of two cones is 1 : 4 and the diameters are in ratio 4 : 5 then what is the ratio of their volumes?

(a) 5 : 9
(b) 7 : 17
(c) 13 : 25
(d) 4 : 25

Q16. Ram and Shyam can finish a task in 6 days working together. Shyam can finish that task alone in 8 days. How much time will Ram alone take to finish it?

(a) 24 days
(b) 12 days
(c) 15 days
(d) 18 days

Q17. What will be the value after simplifying this continued fraction?

1/(2+1/(3+1/(1+1/4)))

(a) 19/43
(b) 5/19
(c) 43/19
(d) 43/5

Q18. Due to a cyclone, a tree is broken and makes an angle of 30° with the ground. The distance between the root and the tip of the tree that touches the ground is 10 m. What is the height of the tree?

(a) 10√3 m
(b) 20√3 m
(c) 10/√3 m
(d) √3 m

Q19. An amount doubles itself at compound interest in five years. In how many years will it amount to sixteen times itself?

(a) 16
(b) 25
(c) 20
(d) 15

Q20. Who is the author of 'Early History of India'?

(a) Vincent Arthur Smith
(b) R.G. Bhandarkar
(c) K.A. Nilakanta Sastri
(d) R.C.Majumdar

Q21. On which of the following occasions the lunar eclipse occurs?

(a) New moon
(b) Full moon
(c) Third quadrature
(d) First quadrature

Q22. How will you write 7.45 hours in hours, minutes and seconds?

(a) 7 hours, 40 minutes, 5 seconds
(b) 7 hours, 45 minutes, 0 seconds
(c) 7 hours, 20 minutes, 7 seconds
(d) 7 hours, 27 minutes, 0 seconds

Q23. What is the square root of the following?

$(x^2 - 14x + 49)(x^2 + 6x + 9)$

(a) (x - 7)(x + 3)
(b) (x - 1)(x +17)
(c) (x - 4)(x + 9)
(d) (x - 3)(x + 8)

Q24. Select the option that can replace the question mark (?) in the following series.

L34E, O46H, R58K, U70N, ?

(a) X41Q
(b) X82Q
(c) X41M
(d) X82P

Q25. Find the quotient of 0.5 ÷ 0.71 (correct to three decimal places)

(a) 0.704
(b) 0.705
(c) 0.706
(d) 0.714

Q26. Who among the following shall communicate to the President all the decisions of the council of ministers under article 78?

(a) Foreign Minister
(b) Vice-President

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(c) Home Minister
(d) Prime Minister

Q27. Murudeshwar Temple is situated on Kanduka Giri in the state of_____
(a) Tamilnadu
(b) Odisha
(c) Karnataka
(d) Kerala

Q28. In July 2020, Prime Minister Narendra Modi inaugurated the new Supreme Court Building of _____ which was completed with Indian assistance
(a) Afghanistan
(b) Maldives
(c) Bhutan
(d) Mauritius

Q29. The main aim of the 'Ganga Action Plan' is:
(a) Efficient use of Ganga water for drinking purpose
(b) Reduction of pollution in Ganga river
(c) Efficient use of Ganga water for irrigation
(d) Using Ganga river for generating hydel energy

Q30. If MOBILE = LMYEGY, then SONG will be equal to:
(a) TPHM
(b) TPMH
(c) RMCK
(d) RMKC

Q31. Find the number whose four-fifth is more than its three-fourth by 4.
(a) 70
(b) 100
(c) 90
(d) 80

Q32. Mary is taller than Aayushi, Gunjan is taller than Aayushi but shorter than Shalini, who is taller than Mary, Who among them is the tallest?
(a) Gunjan
(b) Shalini
(c) Mary
(d) Aayushi

Q33. Select the option that is related to the third term in the same way as the second term is related to the first term.
Clock : Time :: Thermometer : ?
(a) Weather
(b) Temperature
(c) Fever
(d) Illness

Q34. $1800 \div (11 \times 24 \div 8 \times 3 - 69)^2$
(a) 3
(b) 4
(c) 2
(d) 5

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Q35. The least number which on being divided by 2, 3, 4, 5 and 6 leaves a remainder of 1 but no remainder when divided by 7 is:

(a) 308
(b) 315
(c) 322
(d) 301

Q36. If a solution changes the colour of blue litmus paper to red, what will the pH of this solution be?

(a) 14
(b) 7
(c) less than 7
(d) more than 7

Q37. Forest Research Institute of India is located at_____

(a) Dehradun
(b) Trivandrum
(c) Shimla
(d) Guwahati

Q38. Which is the Sixth largest country of the world in terms of area?

(a) Brazil
(b) India
(c) Australia
(d) China

Q39. Which of the following options gives the value of $1999^2 - 999^2$?

(a) 1000000
(b) 2988000
(c) 2998000
(d) 3000000

Q40. Which other two countries were at the top in the world to possess an anti-satellite weapon system in 2010 when China became the third country?

(a) Germany and Russia
(b) The USA and Germany
(c) The USA and Russia
(d) The USA and India

Q41. Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement

Statement:

Music is very good for peace of mind.

Conclusions:

I. Arijit Singh has a good voice.

II. Kishor Kumar was a famous singer.

(a) Only conclusion II follows.
(b) Only conclusion I follows
(c) Both conclusions follow
(d) Neither of the conclusion follows

Q42. Select the option in which the words share the same relationship as that shared by the given pair of words.

Bag : Leather

(a) Suitcase : Travel
(b) Water : Drinking

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(c) Mobile : Network
(d) Plastic : Polymers

Q43. The annual increase in percentage of a population is 5% and the present number of people is 16,000. What will be the population in three years?
(a) 29,448
(b) 18,522
(c) 20,448
(d) 24.448

Q44. What is the value of (√5+1)/(√5-1) ?
(a) (3+√5)/2
(b) √5/2
(c) (3-√5)/2
(d) 3√5/2

Q45. Who among the following was involved in Alipore Bomb Case?
(a) Ramprasad Bismil
(b) Sri Aurobindo
(c) Bhagat Singh
(d) Chandrashekhar Azad

Q46. What is the correct full form of NABARD from below?
(a) National Bank for Agriculture and Resource Development
(b) National Bank for Asian Research Development
(c) National Bank for Agriculture and Rural Development
(d) National Bank for Agriculture Related Development

Q47. Two-fifth of Narendra's salary is equal to Amit's salary and seven-ninth of Amit's salary is equal to Arun's salary If the sum of the salaries is Rs. 770, what are the respective salaries of Narendra, Amit and Arun (in Rs)?
(a) 180, 450, 140
(b) 450, 180, 140
(c) 450, 140, 180
(d) 180, 140, 450

Q48. A man got a discount of 10% on sugar at Big Mart which allowed him to buy 25 kg more for Rs 225/-. What is the discounted price and the original price of the sugar per kg?
(a) 70p, Rs. 22
(b) 80p, Rs. 23
(c) 90p ,Rs. 1
(d) 50p, Rs. 22

Q49. Solve the following:
240 ÷ 8 × 512 ÷ 4
(a) 4040
(b) 3340
(c) 3940
(d) 3840

Q50. Sonal Mansingh is famous for:
(a) Playing
(b) Singing
(c) Acting
(d) Dance

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Q51. Find the variance of the following data points:

6, 7, 5, 9, 12, 15

(a) 81/3
(b) 37/6
(c) 37/3
(d) 67/6

Q52. Read the given statements and conclusions carefully and decide which of the conclusions logically follows from the statements.

Statements:

1. Some bags are books.

2. All pen are books

.Conclusions:

1. All bags are pens.

2. All bags are books

3. No pen is a book

4. No pens are bag.

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

Q53. What will be the value of the following expression?

0.25 ÷ 0.0025 × 0.025 × 25

(a) 62.5
(b) 0.625
(c) 625
(d) 6.25

Q54. The number of non-permanent members of the UN Security Council is

(a) 11
(b) 9
(c) 12
(d) 10

Q55. Which type of mirror is used by dentists to see large images of patients' teeth?

(a) Spherical and Convex mirror
(b) Convex mirror
(c) Concave mirror
(d) Spherical mirror

Q56. Pointing to a lady Jayant says, "She is the sister of Prikshit, who is the brother of Dushyant and the brother of Abha."

Abha is the sister-in-law of Jayant and she has only one sister.

How is Jayant related to that lady?

(a) Father
(b) Son
(c) Husband
(d) Brother

Q57. A financial assistance of_____ rupees will be given to the community health centres so that they can be strengthened to meet the standards of sanitation, hygiene and infection control under the 'Swachh Swasth Sarvatra'.

(a) 10 Lakh
(b) 12 Lakh

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(c) 15 Lakh
(d) 20 Lakh

Q58. When was the Planning Commission of India dissolved by the Union Government of India?
(a) 2000
(b) 2015
(c) 2010
(d) 2014

Q59. What is not the main feature of FAME-2 India Scheme?
(a) It plans to support 1 million electric two wheelers, 500,000 electric three wheelers, 55,000 electric four wheelers and 7000 electric buses.
(b) Its target is only private transport vehicles
(c) Total outlay will be Rs. 10,000 crore
(d) It is to encourage faster adoption of electric and hybrid vehicles

Q60. Jaya and Hema can clean an apartment in 30 days. Hema and Sushma can do the same task in 40 days, while Jaya and Sushma take 60 days to do it. How many days will it take all three of them working together to clean the apartment?
(a) 62/3
(b) 2/3
(c) 152/3
(d) 262/3

Q61. A train that is 110 m in length is running at 90 km/h. How much time will the train take to cross a bridge that is 180 m in length?
(a) 10.6 s
(b) 9.6 s
(c) 11.6 s
(d) 7.6 s

Q62. As of October 2020, who among the following is the youngest Nobel Laureate?
(a) Tsung-Dao Lee
(b) Malala Yousafzai
(c) Tawakkol Karman
(d) Carl D. Anderson

Q63. In which year was the title 'Viceroy' given to 'Governor-General' of India?
(a) 1857
(b) 1905
(c) 1876
(d) 1858

Q64. The population of a town is 10,000. If the male population increases by 5% and the female population by 10%, the population will become 10,800. How much of the town's present population is female?
(a) 5000
(b) 6000
(c) 7000
(d) 8000

Q65. What do we call the force which affects the direction of wind and is caused by the rotation of the earth on its axis?
(a) Frictional force
(b) Coriolis force
(c) Gravitational force
(d) Pressure gradient force

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Q66. How many 7s are there in the following series which are not immediately followed by 3 but immediately preceded by 8?

89876226326973287277874794

(a) 7
(b) 1
(c) 8
(d) 3

Q67. What was the main reason for calling off the Non-Cooperation Movement by Gandhiji in 1922?

(a) Gandhiji was arrested and compelled to stop the movement
(b) A police station at Chauri Chaura in Uttar Pradesh was set on fire by a mob
(c) The movement was completed by achieving the target
(d) Gandhiji was seriously ill

Q68. What is the name of India's first planned manned space flight?

(a) Pushpakyaan
(b) Gagan Viman
(c) Gaganyaan
(d) Vayuyaan

Q69. Which one of the following is NOT an element?

(a) Silicon
(b) Graphite
(c) Silica
(d) Germanium

Q70. Ajmer is associated with the Sufi saint:

(a) Khwaja Nizamuddin Auliya
(b) Bandanawaz Gisudaraz
(c) Baba Farid
(d) Khwaja Muinuddin Chishti

Q71. Find the angle of elevation of a $200\sqrt{3}$ m tower's top from a point 200 m away from its base.

(a) 60°
(b) 90°
(c) 30°
(d) 45°

Q72. Which ministry of Government of India has published Goods and Service Tax (GST) Act, 2017?

(a) Ministry of Corporate Affairs
(b) Office of the Prime Minister
(c) Ministry of Finance
(d) Ministry of Law and Justice

Q73. Three bells started tolling together. Each of them then tolls after 0.25 sec, 0.1 sec and 0.125 sec. After how many seconds will they again toll together?

(a) 0.6
(b) 0.5
(c) 0.1
(d) 0.2

Q74. The first general election of Lok Sabha was held in the year:

(a) 1949 - 1950
(b) 1957 - 1958
(c) 1951 - 1952

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(d) 1953 - 1954

Q75. Which is the outermost part of the earth?

(a) Core
(b) Crust
(c) Asthenosphere
(d) Mantle

Q76. Who is the first chairperson of the NITI Aayog?

(a) Arun Jaitley
(b) Arvind Panagariya
(c) Narendra Modi
(d) Amitabh Kant

Q77. What is the area of the largest square that is inscribed in a semicircle of radius 10 cm?

(a) 90 cm^2
(b) 120 cm^2
(c) 80 cm^2
(d) 70 cm^2

Q78. A computer monitor is also known by the name:

(a) CPU
(b) LED
(c) CCTV
(d) VDU

Q79. Of which of the following organisations is India NOT a member?

(a) Shanghai Cooperation Organisation (SCO)
(b) North Atlantic Treaty Organisation (NATO)
(c) United Nations(UN)
(d) G20

Q80. If one of the roots of the equation $x^2 - 19x + 88 = 0$ is 8, then what is the other root?

(a) 12
(b) 13
(c) 1 1
(d) 17

Q81. From the following options, identify the name of the user interface element that is found on desktops as a small blinking symbol or an arrow.

(a) Task-bar
(b) Shortcut
(c) Icons
(d) Cursor

Q82. In a triangle ABC, incenter is at O. Find angle BAC if angle BOC = 110°.

(a) 50°
(b) 20°
(c) 40°
(d) 30°

Q83. The third Buddhist Council was held by:

(a) Kanishka
(b) Chandragupta
(c) Harshvardhana

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(d) Ashoka

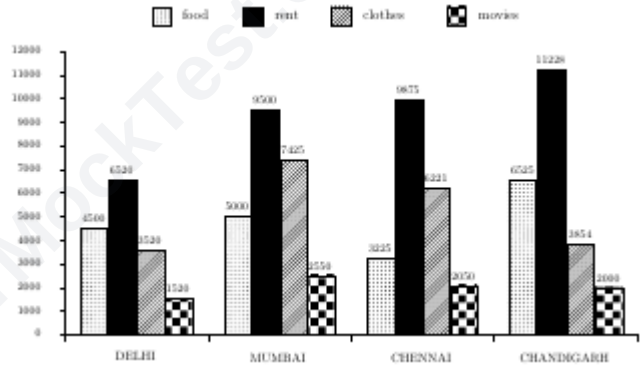
Q84. What is Ram's average speed if he goes from Point X to Point Y at 8 km/hr and returns from Point Y to Point X at 12 km/hr?

(a) 15.6 km/hr
(b) 9.6 km/hr
(c) 8.6 km/hr
(d) 10.6 km/hr

Q85. What is the remainder when 2^(20) is divided by 3?

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

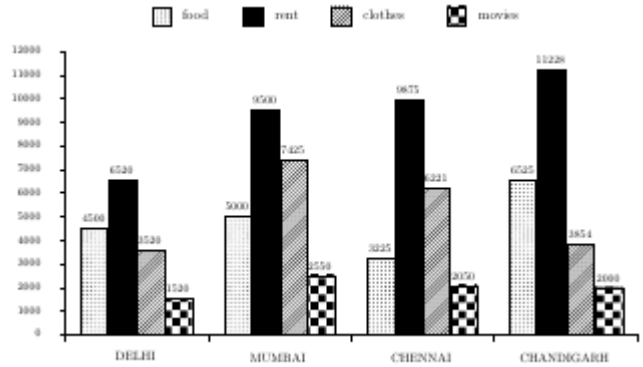
Q86. The given bar chart shows average expenditure on food, rent, clothes and movies by individuals in a month in 4 different cities.



Which city has the maximum expenditure by an individual in a month?

(a) Mumbai
(b) Chennai
(c) Chandigarh
(d) Delhi

Q87. The given bar chart shows average expenditure on food, rent, clothes and movies by individuals in a month in 4 different cities.

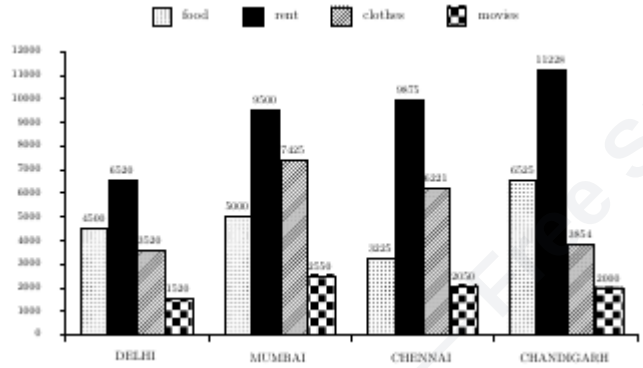


Which city has the highest gap in minimum and maximum expenditure by an individual in a month?

(a) Delhi
(b) Chandigarh
(c) Mumbai
(d) Chennai

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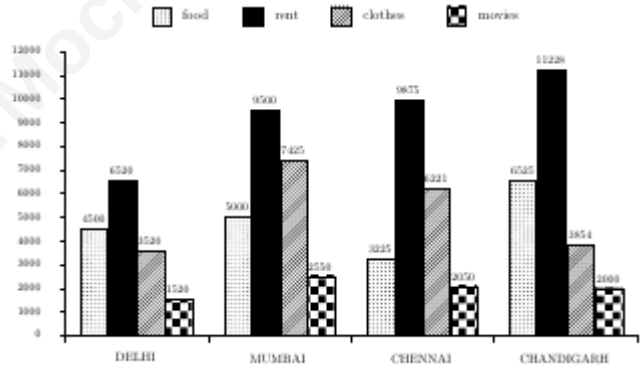
Q88. The given bar chart shows average expenditure on food, rent, clothes and movies by individuals in a month in 4 different cities.



What is the total expenditure on clothes as an approximate percentage of the total expenditure on Rent across all 4 cities?

(a) 51%
(b) 57%
(c) 53%
(d) 60%

Q89. The given bar chart shows average expenditure on food, rent, clothes and movies by individuals in a month in 4 different cities.



In which city is the expenditure on movies nearest to the average expenditure on movies across all four cities?

(a) Delhi
(b) Chennai
(c) Chandigarh
(d) Mumbai

Q90. Select the option in which the words share the same relationship as that shared by the given pair of words.

Photosynthesis = Sun Light

(a) Writing = Pen
(b) Book = Magazine
(c) Fan = Light
(d) Printer = Deskjet

Q91. Read the following information and answer the question that follows.

1. Rohit, Shobit and Manu play volleyball, tennis and Kho-Kho.
2. Rohit, Ashu and Manu play volleyball, tennis and badminton.
3. Rohit, Shobhit, Dalip and Manu play Kho-Kho and tennis.

Which game is played by all the boys?

(a) Tennis
(b) Badminton
(c) Kho-Kho
(d) Volleyball

Q92. How will you write 3.78 hours in hours, minutes and seconds?

(a) 3 hours, 46 minutes, 48 seconds
(b) 3 hours, 45 minutes. 33 seconds
(c) 4 hours, 18 minutes, 0 seconds
(d) 3 hours, 7 minutes, 8 seconds

Q93. Select the option that is related to the third term in the same way as the second term is related to the first term.

Tongue : Taste :: Lungs : ?

(a) Cognition
(b) Circulation
(c) Perspiration
(d) Respiration

Q94. Select the letter that can replace the question mark (?) in the following series.

L, J, H, F, D, ?

(a) A
(b) C
(c) B
(d) E

Q95. A team of five members is sitting in a row facing towards the north. C is to the left of A and to the right of E. B is to the left of D and to the right of A. Who is sitting in the middle?

(a) A
(b) D
(c) C
(d) B

Q96. Select the number that can replace the question mark (?) in the following series.

5, 9, 17, 33, 65, ?

(a) 129
(b) 128
(c) 130
(d) 131

Q97. Select the number that can replace the question mark (?) in the following series.

12.24, 48.96, 192.384, ?

(a) 768.1546
(b) 768.1536
(c) 758.1536
(d) 748.1526

Q98. Select the letter that can replace the question mark (?) in the following series.

A, C, E, G, I, K, ?

(a) M
(b) O
(c) N
(d) L

Q99. Identify the number that does NOT belong to the following series.

289, 306, 340, 389, 459, 544

(a) 289
(b) 459
(c) 306
(d) 389

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Q100. Three friends, A, B and C work in an office, in the IT, HR and Banking departments. A works in the banking department and works 8 hours a day; but, the one who works in the HR department works only 5 hours a day. B is lazy and does not like to work the entire day. B has maths background but is not part of the banking department.

Who works in HR department?

(a) C
(b) Either B or C
(c) A
(d) B

ANSWER KEY

1	d	2	a	3	b	4	d	5	a	6	b	7	a	8	a	9	c	10	b
11	b	12	c	13	b	14	a	15	d	16	a	17	a	18	a	19	c	20	a
21	b	22	d	23	a	24	b	25	a	26	d	27	c	28	d	29	b	30	d
31	d	32	b	33	b	34	c	35	d	36	c	37	a	38	c	39	c	40	c
41	d	42	d	43	b	44	a	45	b	46	c	47	b	48	c	49	d	50	d
51	c	52	a	53	a	54	d	55	c	56	c	57	a	58	d	59	b	60	d
61	c	62	b	63	d	64	b	65	b	66	d	67	b	68	c	69	c	70	d
71	a	72	d	73	b	74	c	75	b	76	c	77	c	78	d	79	b	80	c
81	d	82	c	83	d	84	b	85	a	86	a	87	b	88	b	89	b	90	a
91	a	92	a	93	d	94	c	95	a	96	a	97	b	98	a	99	d	100	b

SOLUTIONS

Q1. Answer: (d) One-horned Rhinoceros

Explanation :

Ranthambore : Tiger

The Ranthambore national park is known for its large tiger population.

Similarly,

Kaziranga : One-horned Rhinoceros

The Kaziranga national park hosts two-thirds of the world's great one-horned Rhinoceros

Hence, Option 4) is the correct answer.

Q2. Answer: (a) scattering of light

The correct answer is scattering of light.

Key Points

• The blue colour of the sky is due to the scattering of light.

• The two most common types of matter present in the atmosphere are gaseous nitrogen and oxygen.

• These particles are most effective in scattering the higher frequency and shorter wavelength portions of the visible light spectrum.

• In physics, scattering is a change in the direction of motion of a particle because of a collision with another particle.

• Additional Information

• Refraction of light is accompanied by a change in the speed of light at the interface of two optical mediums.

• When white light is passed through a glass prism, it splits into its spectrum of colours (in order of violet, indigo, blue, green, yellow, orange, and red) and this process of white light splitting into its constituent colours is called as dispersion.

• Diffraction of light is defined as the bending of light around corners such that it spreads out and illuminates areas where a shadow is expected.

Q3. Answer: (b) 4

The least possible Venn diagram is:

Conclusion 1. No white is black

False (because all blacks are white so some white is black as given in the statement)

Conclusion 2. All black are boards

False (because all boards are black not all blacks are boards)

Conclusion 3. All white are black

False (as shown in the above diagram All white are not black but the reverse is true)

Conclusion 4. All boards are white.

True (as there is a definite relation between boards and white as shown above)

Hence, the correct answer is Option 2).

Q4. Answer: (d) Government of Madhya Pradesh

The correct answer is Government of Madhya Pradesh.

Key Points

• The Kalidas Samman is a reputable arts award presented annually by the government of Madhya Pradesh in India.

• The award is named after Kālidāsa, a renowned Classical Sanskrit writer of ancient India.

• It was to begin with conferred in alternate years in the fields of Classical Music, Classical Dance, Theatre and Plastic Arts.

• The award is presented for outstanding achievement in one of the four categories.

• From 1986-87 onwards, the awards were presented in all four fields every year.

Additional Information

• The Maharashtra Bhushan is a highest civilian award presented annually by the Government of Maharashtra state in India.

• Rajasthan Ratna award conferred by the Government of Rajasthan.

• The 'Chhattisgarh Veerni Awards' will be given to women who have set examples in the state of Chhattisgarh, and across the country, by becoming leaders in their chosen field, hopefully inspiring other female achievers.

Q5. Answer: (a) 1/55

Given:

x : 1/27 :: 3/11 : 5/9

Calculation:

According to the question,

x : 1/27 :: 3/11 : 5/9

=> x/(1/27) = (3/11)/(5/9)

=> x × 27 = 3/11×9/5

=> x = 27/(55× 27)

=> x = 1/55

Hence, The Required value is 1/55.

Q6. Answer: (b) 5

Correct answer is 5.

Key Points

• Range of 147,181 sq. km and a population of 29 million, Nepal shares a border of about 1850 km with five Indian States - Uttarakhand, Uttar Pradesh, Bihar, West Bengal and Sikkim.

• An approximate 6 million Nepalese live and work in India.

• India and Nepal are working jointly in a development partnership programme which is broad based with certain focus at the grass-roots level.

• Additional Information

• China, Pakistan, Bhutan, Myanmar, Afghanistan, Nepal and Bangladesh, are touch the border of india.

• Bangladesh has the longest border with India for the reason that it is surrounded by India on three sides, i.e. in north, east and west.

• India shares land border of 106 km with Afghanistan this is the shortest in length amongst all other neighbouring countries.

Q7. Answer: (a) An explosive

The correct answer is An explosive.

Key Points

• RDX is a nitramine explosive compound that can be utilized as a propellant, gunpowder.

• RDX stands for Royal Demolition eXplosive.

• It is also called cyclonite or hexogen.
• The chemical name for RDX is 1,3,5-trinitro-1,3,5-triazine.
• It is a white powder and is very explosive.
• Additional Information
• To measure blood pressure, a doctor uses an instrument called a sphygmomanometer.
• Pesticides made from phosphoric acid which meant to control pest and weeds.
• An ammeter is a measuring instrument used to measure the current in a circuit.

Q8. Answer: (a) 21 April

The correct answer is 21 April.

Key Points

• The government of India celebrates April 21 every year as "Civil Services Day".
• This is a moment for the civil servants to recommit themselves to the cause of citizens and renew their commitments to public service and excellence in work.
• On April 21, 1947, Sardar Vallabhbhai Patel label the first batch of Administrative Services at Metcalf House, Delhi, and mentioned them as the "steel frame of India'.
• Satyendranath Tagore was the first Indian who became an Indian Civil Service officer in 1863.
• Additional Information
• The Civil service responsible for the public administration of the government of a country.
• It keep out the legislative, judicial, and military branches.
• Members of the civil service have no official political allegiance and are not normally affected by changes of governments.

Q9. Answer: (c) 14

Explanation:

Boy is 11^(th) from the right i.e. there are 10 boys to his right

Boy is 5^(th) from the left i.e. there are 4 boys to the left

Total no. of boys in the line = 10 + 1 + 4 = 15 boys

Boys to be added so that there are 29 boys in the line 29 - 15 = 14

Hence, Option 3) is the correct answer.

Q10. Answer: (b) Sardar Vallabhbhai Patel

The correct answer is Sardar Vallabhbhai Patel.

Key Points

• Sardar Patel was popularly called the Iron Man of India.
• He played an important role in the Indian freedom struggle.
• He became the first Deputy Prime Minister and Home Minister of India.
• He was one of the conservative members of the Indian National Congress.
• Additional Information
• Subhas Chandra Bose is famous for his role in India's independence movement.
• Jawaharlal Nehru was an important leader of Indian Independence Movement and Indian National Congress.
• PM Narendra Modi voted 'world's most powerful leader 2019' as a prime minister of India.

Q11. Answer: (b) Rs. 275

Given:

Cost Price of an article = Rs 250

Profit percentage = 10%

Concept Used:

Selling Price = (100+Profit%)/100× CP

Calculation:

=> Putting the values, we get

=> Selling Price = (100+10)/100× 250=11/10× 250

=> Selling Price = 11 × 25 = Rs 275

Therefore, the selling price of an article to get 10% profit is Rs 275

Q12. Answer: (c) Only argument II is strong.

Explanation:

Argument I. Yes, they can be easily misguided.

False (This argument is negative with respect to basic human rights. We can educate them about the power of their votes but we can't debar them from casting their votes.)

Argument II. No, it is their constitutional right.

True (Everyone has their constitutional right to vote.)

Hence, Only argument II is strong is the correct answer.

Q13. Answer: (b) Shark

The correct answer is Shark.

Key Points

• Cartilaginous fishes ragarded the oldest surviving jawed vertebrates and, as the name suggests, have a skeleton made out of cartilage.

• They include sharks, rays, and skates (elasmobranchii) and chimeras (holocephali).

• Sharks are a special type of fish because their bodies are made out of cartilage instead of bones like other fish.

• The classification of this kind of fish is "elasmobranch."

• Additional Information

• The rohu is a large, silver-colored fish of typical cyprinid shape, with a conspicuously arched head.

• Tuna is and be one of the most eaten fish in the world.

• Salmon is the common name for many species of ray-finned fish in the family Salmonidae.

Q14. Answer: (a) 17

Given:

Calculation:

Number of doctors that are neither artists nor players

= Now of doctors represented in figures lying outside both circle and square

i.e., triangle - circle - square

As we can see there are 17 such doctors that are neither artists nor players.

Hence, the Required value is 17.

Q15. Answer: (d) 4 : 25

Given:

Ratio of heights of two cones = 1 : 4

Ratio of diameters of two cones = 4 : 5

Formula used:

Volume of cone = (1/3)πr2h

Where, r = radius of base and h = height of cone

Calculation:

Ratio of heights of two cones = 1 : 4

=> Let the heights be x and 4x, where 'x' be any positive integer

Ratio of diameters of two cones = 4 : 5

=> Let diameters be 4y and 5y, where 'y' be any positive integer

=> Radius are 2y and 5y/2

The Ratio of their volumes is

$1/3\pi(2y)^2x : 1/3\pi(5y/2)^2(4x)$

=> 4y2x : 25y2x

=> 4 : 25

Hence, The Required ratio is 4 : 25.

Q16. Answer: (a) 24 days

Given:

Ram and Shyam can finish a task in 6 days working together.

Shyam can finish the task in 8 days alone.
Formula used:
Work = Efficiency × Time taken
Calculation:
Shyam can complete the work in 8 days
Shyam's one-day work = 1/8
Let Ram can finish the work in x days
Ram's one-day work = 1/x
Total time taken by Ram and Shyam to complete the work = 6 days
Ram and Shyam's one-day work = 1/6
1/8 + 1/x = 1/6
=> 1/6 - 1/8 = 1/x
=> 1/24 = 1/x
=> x = 24
Hence, Ram can complete the work in 24 days.

Q17. Answer: (a) 19/43

Given:
1/(2+1/(3+1/(1+1/4)))
Calculation:
1/(2+1/(3+1/(1+1/4)))
= 1/(2+1/(3+1/(5/4)))
= 1/(2+1/(3+4/5))
= 1/(2+1/(19/5))
= 1/(2+5/19)
= 1/(43/19)
= 19/43
Hence, The Simplified value is 19/43.

Q18. Answer: (a) 10√3 m

Given:
Angle of elevation = 30°
Distance from the foot of the tree to the point, where the top point touches the ground = 10 m
Concept used:
tan θ = P/B
cos θ = B/H
P → Perpendicular
B → Base
H → Hypotenuse
Calculation:
In, Δ ABC
tan 30° = AB/BC
=> AB = 10/√3
Cos 30° = BC/AC
=> √3/2 = 10/AC
=> AC = 20/√3
Total height of the tree
= AB + AC
= 20/√3 + 10/√3
= 10√3 m
Therefore The height of the tree is 10√3 m.

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Q19. Answer: (c) 20

Given:

The amount doubles itself in 5 years.

Formula used:

A = P × {1 + (r/100) }t

where A = Amount

P = Principal

r = Rate of interest

t = time

Calculation:

Let the principal be Rs. x

So, amount will become Rs. 2x

A = P × {1 + (r/100)}t

=> 2x = x × {1 + (r/100)}5

=> 2 = {1 + (r/100)}5

=> 2(1/5) = {1 + (r/100)}.....(1)

Now, finding the equation for the amount 16x

=> 16x = x × {1 + (r/100)}t

=> 16 = {1 + (r/100)}t

Now, from equation (1) we get,

=> 24 = 2(t/5)

=> 220 = 2t

=> t = 20 years

Therefore The sum will become 16 times in 20 years.

Q20. Answer: (a) Vincent Arthur Smith

The correct answer is Vincent Arthur Smith.

Key Points

• V.A. Smith wrote the book "Early History of India" in 1904.

• Vincent Arthur Smith, CIE, was an Irish Indologist and art historian.

• He was one of the important figures who took a colonial approach to Indian historiography.

• Additional Information

• Sir Ramakrishna Gopal Bhandarkar was an Indian scholar, orientalist, and social reformer.

• Kallidaikurichi Aiyah Nilakanta Sastri was an Indian historian who wrote on South Indian history.

• Ramesh Chandra Majumdar was a historian and professor of Indian history.

Q21. Answer: (b) Full moon

The correct answer is Full moon.

Key Points

• A lunar eclipse can happen only when the moon is full.

• A lunar eclipse can be noticed from Earth at night.

• There are two kinds of lunar eclipses: total lunar eclipses and partial lunar eclipses.

• A total lunar eclipse happens when the moon and the sun are on exact opposite sides of Earth.

• Additional Information

• New moon happens when the moon is on the same side of Earth as the sun.

• The Third or Last Quarter Moon is also known a Half Moon because the Sun's rays illuminate just 50% of the Moon's surface.

• The moon is 90 degrees away from the sun in the sky and is half-illuminated from our point of view is called first quadrature.

Q22. Answer: (d) 7 hours, 27 minutes, 0 seconds

Given:

7.45 hours

Concept used:

To convert hours into minutes we multiply it by 60.

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Similarly, 60 is multiplied by minutes to convert it into seconds.

Calculation:

As we know, 7.45 hours can be written as :

7 hours + 0.45 hours

= 7 hours + (0.45 × 60) minutes

= 7 hours + 27 minutes

= 7 hours + 27 minutes + 0 seconds

Hence, The Required value is 7 hours, 27 minutes, 0 seconds.

Q23. Answer: (a) (x - 7)(x + 3)

Given:

(x2 - 14x + 49) (x2 + 6x + 9)

Concept used:

$A^2 - 2AB + B^2 = (A - B)^2$

$A^2 + 2AB + B^2 = (A + B)^2$

Calculation:

$\sqrt{(x^2 - 14x + 49)(x^2 + 6x + 9)}$

$= \sqrt{(x^2 - (2\times 7\times x) + 7^2)} \times \sqrt{(x^2 + (2\times 3\times x) + 3^2)}$

$= \sqrt{((x - 7)^2(x + 3)^2)}$

$= (x - 7)(x + 3)$

Hence, The Required value is (x - 7)(x + 3).

Q24. Answer: (b) X82Q

The pattern followed here is:

Hence, X82Q is the correct answer.

Q25. Answer: (a) 0.704

Given:

0.5 ÷ 0.71

Concept used:

Dividend = Divisor × Quotient + Remainder

Calculation:

We have,

0.5 ÷ 0.71

= 50/71

= 0.70422

≈ 0.704

Hence, The Required value of the quotient is 0.704.

Q26. Answer: (d) Prime Minister

The correct answer is Prime Minister.

Key Points

• An Article 78 proceeding is used to appeal the decision of a New York State or local agency to the New York courts.

• Article 78 of the Constitution concerns the duties of the Prime Minister with respect to the furnishing of information to the President.

• In the Indian constitution, the prime minister is referenced in only four of its articles (articles 74, 75, 78 and 366).

• The prime minister can be a member of the Lok Sabha or of the Rajya Sabha, the upper house of parliament.

Additional Information

• A foreign minister is a governmental minister for foreign affairs.

• The vice president of India is the deputy to the cheif of State of the Republic of India. It means the president of India.

• The Minister of Home Affairs is the head of the Ministry of Home Affairs of the Government of India.

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Q27. Answer: (c) Karnataka

The correct answer is Karnataka.

Key Points

• Murudeshwara is a temple town in Bhatkala Taluk, North Canara district in Coastal Karnataka.

• It is situated on the main Mangalore-Karwar Highway, And it is sandwiched between the picturesque Western Ghats and the Arabian Sea.

• The Murudeshwar temple is built on the Kanduka hill in the quaint town of Murudeshwar

• The breathtaking effigy of Shiva in Murudeshwar is a popular one.

• Additional Information

• The Meenakshi Amman Temple, situated in Madurai, is one of the most famous Shiva temples in Tamil Nadu.

• Odisha is also called the “Land of Lord Jagannath”, it means the Lord of all the Universe.

• Jagannath temple is situated in Puri.

• Sree Padmanabhaswamy Temple situated in Thiruvananthapuram is the most famous temple in Kerala.

Q28. Answer: (d) Mauritius

The correct answer is Mauritius.

Key Points

• Together, Prime Minister Narendra Modi and Prime Minister of Mauritius, Mr. Pravind Jugnauth, started the new Supreme Court Building.

• The building is the first India-helped infrastructure project inside the capital city of Port Louis to be inaugurated after the COVID pandemic.

• There are ten district courts on the island of Mauritius and one in Rodrigues.

• Mauritius has a single-structured judicial system made up of two levels: the Supreme Court and subordinate courts.

• Additional Information

• The court system in Afghanistan is composed of the Supreme Court, Courts of Appeal, and Primary Courts (Article 116, the Constitution of the Islamic Republic of Afghanistan, 2004).

• The Maldives keeps a three-tier court system: Supreme Court, High Court, and lower Courts.

• The Bhutanese legal system has a four-tier court system, Supreme Court, the High Court, the Dzongkhag Courts, the Dungkhag Courts.

Q29. Answer: (b) Reduction of pollution in Ganga river

Correct answer is Reduction of pollution in Ganga river.

Key Points

• Its main motive was to protect the river from the hazards of pollution.

• 'Ganga Action Plan’ aims at improving the quality of its water and preventing further pollution.

• It acts by preventing industrial waste from being dumped into the waters.

• The Ganga Action plan was started in India on 14th January 1986 by Rajiv Gandhi.

• Additional Information

• Ganga action plan was started in 1986 with the objective of pollution abatement from river Ganga.

• Ganga Action Plan is a 100% centrally sponsored scheme.

• Under this plan, the National River Ganga basin authority was began and announced Ganga as a national river of India.

Q30. Answer: (d) RMKC

Table of English alphabet positional value

MOBILE = LMYEGY

Similarly,

SONG = RMKC

Hence, the correct answer is option 4).

Q31. Answer: (d) 80

Given:

The number's four-fifth is more than its three-fourth by 4.

Calculations:

Let the required number be x.

According to the question,

4/5 x = 3/4 x + 4

=> [4/5-3/4] x = 4

=> (16 - 15)/20 x = 4

=> x = 80

Hence, The Required number is 80.

Q32. Answer: (b) Shalini

From the given information:

Step 1: Mary is taller than Aayushi.

Mary > Aayushi

Step 2: Gunjan is taller than Aayushi but shorter than Shalini, who is taller than Mary.

Shalini > Mary > Gunjan > Aayushi

So from this arrangement, we can say that Shalini is the tallest among all.

Hence the correct answer is option 2).

Q33. Answer: (b) Temperature

Explanation:

Clock : Time

A clock is a device used for measuring time.

Similarly,

Thermometer : Temperature

The thermometer is used to measure the temperature.

Hence, Option 2) is the correct answer.

Q34. Answer: (c) 2

Given:

1800 ÷ (11 × 24 ÷ 8 × 3 - 69)2

Concept used:

BODMAS

The preference will be given on the basis of the letter coming first in the word BODMAS.

Calculation:

1800 ÷ (11 × 24 ÷ 8 × 3 - 69)2

= 1800 ÷ (11 × 3 × 3 - 69)²

= 1800 ÷ (99 - 69)²

= 1800 ÷ (30)²

= 1800 ÷ 900

= 2

Hence, The Required simplified value is 2.

Q35. Answer: (d) 301

Given:

A number leaves 1 as a remainder when divided by 2, 3, 4, 5, and 6 but leaves no remainder when divided by 7.

Calculation:

Step 1:

LCM(2, 3, 4, 5, 6) = 60

So, According to the question, the number is 60(x) + 1

Step 2:

Now, the number when divided by 7 doesn't leave the remainder

Therefore,

60(1) + 1 = 61 = (7 × 8) + 3 is not divisible by 7.

60(2) + 1 = 121 = (7 × 17) + 2 is not divisible by 7.

60(3) + 1 = 181 = (7 × 25) + 6 is not divisible by 7.

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60(4) + 1 = 241 = (7 × 34) + 3 is not divisible by 7.

60(5) + 1 = 301 = (7 × 43) + 0 is divisible by 7.

So, the least number is 301 when divided by 2, 3, 4, 5, 6 leaves remainder 1, but when divided by 7, there will be no remainder.

Hence, The Required number is 301.

Q36. Answer: (c) less than 7

Correct answer is less than 7.

Key Points

• As the solution changes the colour of blue litmus paper to red, the solution is acidic in nature.

• So the pH of the solution will be less than 7.

• pHs less than 7 are acidic while pHs greater than 7 are alkaline (basic).

• pH is a measure of how acidic/basic water is.

• Additional Information

• The range goes from 0 - 14, with 7 being neutral.

• pHs of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base.

• pH is really a measure of the relative amount of free hydrogen and hydroxyl ions in the water.

Q37. Answer: (a) Dehradun

Correct answer is Dehradun.

Key Points

• It is situated at Dehradun in Uttarakhand, and is among the oldest institutions of its type.

• The Forest Research Institute (FRI) started in 1906, is a pioneer institute in the field of environmental and forestry research.

• The Forest Research Institute (FRI) is an institute of the Indian Council of Forestry Research and Education.

• Forest Research Institute (FRI), Dehradun made a humble starting as Forest School established in 1878.

• Additional Information

• The Kerala Forest Research Institute is an organisation based in Peechi, in Thrissur, India.

• Himalayan Forest Research Institute (HFRI) is a Research institute situated in Shimla in Himachal Pradesh.

• Guwahati is an important river port and Assam's principal commercial centre.

Q38. Answer: (c) Australia

The correct answer is Australia.

Key Points

• Australia, is a sovereign country comprising the mainland of the Australian continent, the island of Tasmania, and numerous smaller islands.

• With an area of 7,617,930 square kilometres, Australia is the largest country by area in Oceania and the world's sixth-largest country.

• Australia is famous globally for many things – the Outback, venomous creatures, liveable cities, Aboriginal culture, the cliché of men in cork hats and natural icons such as Uluru and the Great Barrier Reef.

• Australia is considered a wealthy nation with a market-based economy that has a comparatively high gross domestic product and per capita income.

Additional Information

• Largest Countries in the World Are:

• Russia. 17,098,242.

• Canada. 9,984,670.

• United States. 9,826,675.

• China. 9,596,961.

• Brazil. 8,514,877.

• Australia. 7,741,220.

• India. 3,287,263.

• Argentina. 2,780,400.

Q39. Answer: (c) 2998000

Given:

19992 - 9992

Concept used:

$(A + B)^2 = A^2 + 2AB + B^2$

Calculation:

According to the question,

19992 - 9992

$= (1000 + 999)^2 - 999^2$

$= 1000^2 + 2(999)(1000) + 999^2 - 999^2$

$= 1000000 + 1998000$

$= 2998000$

Hence, The Required value is 2998000.

Q40. Answer: (c) The USA and Russia

The Correct answer is The USA and Russia.

Key Points

• USA and Russia are the other two at the top in the world to possess an anti-satellite weapon system in 2010 then China became the third country

• Due to the necessity of these types of satellites for national security, countries have developed anti-satellite (ASAT) weapons which can be used to destroy satellites in an orbit.

• Although no ASAT system has yet been utilized in war, A few countries like China, India, Russia, and the United States have successfully shot down their own satellites to show a demo of their ASAT capabilities in a show of force.

• ASATs have also been used to remove decommissioned satellites.

• Anti-satellite weapons, commonly referred to as ASATs, are any weapon that can temporarily impair or permanently destroy an orbiting satellite.

Additional Information

• Functions of Anti-Satellite Weapons:

• Defensive measures against an adversary's space-based and nuclear weapons

• A force multiplier for a nuclear first strike.

• A countermeasure against an adversary's anti-ballistic missile defense (ABM).

• An asymmetric counter to a technologically superior adversary, and a counter-value weapon.

Q41. Answer: (d) Neither of the conclusion follows

Explanation :

Conclusion I. Arijit Singh has a good voice.

False (This does not follow as statement is talking about peace of mind which music gives and there is no relation between statement and conclusion)

Conclusion II. Kishor Kumar was a famous singer.

False (This also does not follow as kishore kumar is a famous singer but it does not relate with peace of mind.)

Hence, Neither of the conclusion follows is the correct answer.

Q42. Answer: (d) Plastic : Polymers

Explanation:

Bag : Leather

Bags are made from leather.

Similarly,

Plastic : Polymers

Plastics are made up of polymers.

Hence, Option 4) is the correct answer.

Q43. Answer: (b) 18,522

Given:

P = 16,000

R = 5% (increase)

n = 3 years

Formula Used:

Population n years later = P(1 + R/100)n

Calculation:

Therefore According to the question:

=> P(1 + R/100)n

=> 16,000(1 + 5/100)3

=> 16,000(21/20 × 21/20 × 21/20)

=> 16,000 × (21× 21 × 21)/(20 × 20 × 20)

=> 2 × 21 × 21 × 21

=> 18,522

Therefore 3 years later, the population of the town will be 18,522.

Q44. Answer: (a) (3+√5)/2

Given:

(√5+1)/(√5-1)

Concept used:

Factorisation: Multiplying both numerator and denominator with the conjugate pair of denominator.

Calculation:

According to the question, we have:

(√5+1)/(√5-1)

= (√5+1)/(√5-1) × (√5+1)/(√5+1)

= ((√5+1)²)/4

= (6 + 2√5)/4

= (3 + √5)/2

Hence, The Required simplified value is (3 + √5)/2.

Q45. Answer: (b) Sri Aurobindo

The correct answer is Sri Aurobindo.

Key Points

• Sri Aurobindo was arrested in the aftermath of a number of bomb outrages linked to his organization in a public trial where he faced charges of treason for the Alipore Conspiracy.

• Alipore Bomb Case, the Muraripukur conspiracy, or the Manicktolla bomb conspiracy, was a criminal case held in India in 1908.

• Chittaranjan Das successfully defended Aurobindo Ghosh on charges of involvement in the Alipore bomb case.

Additional Information

• Ram Prasad Bismil was an Indian poet, writer and revolutionary who participated in the Mainpuri Conspiracy of 1918, and the Kakori Conspiracy of 1925, and fought against British Raj.

• Bhagat Singh was a charismatic Indian revolutionary who participated in the mistaken murder of a junior British police officer in what was to be retaliation for the death of an Indian nationalist.

• Chandrasekhar Azad was Indian revolutionary who organized and led a band of militant youth during India's independence movement.

Q46. Answer: (c) National Bank for Agriculture and Rural Development

The correct answer is National Bank for Agriculture and Rural Development.

Key Points

• NABARD, as a Development Bank, is mandated for providing andregulating credit and other facilities for the promotion and development of agriculture.

• NABARD was established 12 July 1982 on the recommendations of B. Sivaraman Committee (by Act 61, 1981 of Parliament).

• NABARD is entrusted with the responsibility for conduct of statutory inspections of State Cooperative Banks, District Central Cooperative Banks and Regional Rural Banks under the Banking Regulation Act, 1949.

• The regulatory powers continue to be vested with the Reserve Bank of India.

Additional Information

• NABARD includes:

• Regional Rural Banks (RRBs)

• State Cooperative Banks (StCBs)

• District Central Cooperative Banks (DCCBs)

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• Primary Agricultural Credit Societies (PACS)
• State Cooperative Agriculture and Rural Development Banks (SCARDBs)
• Primary Cooperative Agriculture and Rural Development Banks (PCARDBs)

Q47. Answer: (b) 450, 180, 140

Given:
Amit's salary is two-fifth of Narendra's salary and seven-ninth of Amit's salary is equal to Arun's salary.
Total sum of salaries is Rs. 2,770.
Calculation:
Let salary of Narendra's be x,
Then, Amit's salary is 2x/5,
Arun's salary is 7/9 × Amit salary = 14x/45.
Now, According to the question,
x + 2x/5 + 14x/45 = 770
=> (45x + 18x + 14x)/45 = 770
=> 77x/45 = 770
=> 77x = 770 × 45
=> x = 45 × 10 = 450
So,
Narendra's salary = x = Rs. 450
Amit's salary = 2x/5 = Rs. 180
Arun's salary = 14x/45 = Rs.140
Therefore The correct answer is option (2).

Q48. Answer: (c) 90p ,Rs. 1

Given:
Total expenditure is Rs. 225
Calculation:
Let us assume, initially, the price of sugar is P1 then the quantity of sugar is Q1, and later the price of sugar is P2 then the quantity of sugar is Q2 keeping the expenditure the same i.e. Rs. 225
=> P1Q1 = 225 ... (1)
=> P2Q2 = 225 ... (2)
=> By equations (1) and (2)
=> P1Q1 = P2Q2
According to the question,
=> P2 = 0.90P1, and Q2 = Q1 + 25
=> P1 × Q1 = (0.9)P1 × (Q1 + 25)
=> Q1 = 225 kg
Now, P1 = 225/225 = Rs. 1
=> P2 = 0.90 × P1
=> P2 = 0.90 × 1 = Rs. 0.90 = 90 paisa
Thus, Discounted price = 90 paisa and original price = Rs. 1
Therefore The correct answer is option (3).

Q49. Answer: (d) 3840

Given:
240 ÷ 8 × 512 ÷ 4
Concept used:
BODMAS
The preference will be given on the basis of the letter coming first in the word BODMAS.
Calculation:
240 ÷ 8 × 512 ÷ 4
= 30 × 128

= 3840

Hence, The Required value is 3840.

Q50. Answer: (d) Dance

The correct answer is Dance.

Key Points

• Sonal Mansingh is an Indian classical dancer.
• She is the Guru of Bharatanatyam and Odissi dancing style.
• She has been nominated by the President of India to become a Member of Parliament, Rajya Sabha.
• She is the youngest recipient of Padma Bhushan in 1992 and Padma Vibhushan in 2003.
• She started learning Manipuri dance at age four.
• At age seven she started learning Bharatnatyam from various gurus belonging to the Pandanallur school.
• She has "Praveen" and "Kovid" degrees in Sanskrit from Bharatiya Vidya Bhavan.

Additional Information

• In November 2019, Sonal Mansingh was felicitated with Lifetime Achievement Award.
• In 2018, she was honored with Sangeet Natak Akademi Fellowship.
• The Choreographies of Sonal are:
• Indradhanush
• Manavatta
• Mera Bharat
• Draupadi
• Gita Govinda
• Sabras

Q51. Answer: (c) 37/3

Given:

6, 7, 5, 9, 12, 15

Concept Used:

Mean = Total sum of values ÷ Total number of values

Variance = (∑ (Deviations)²)/n

Calculation:

=> Total numbers = 6

=> Mean = (6+7+5+9+12+15)/6=54/6=9

=> Value of the deviations (Number – Mean) are,

=> –3, –2, –4, 0, 3, 6

=> Variance = (∑ (Deviations)²)/n

=> Variance = ((-3)²+(-2)²+(-4)²+3³+6²)/6=(9+4+16+9+36)/6

=> Variance = 74/6=37/3

Therefore, the variance of the following data points is 37/3.

Q52. Answer: (a) 4

The possible Venn diagram is :

Conclusion1. All bags are pens

False(as there is no definite relation between bags and pens as shown above in venn diagram)

Conclusion2. All bags are books

False (because some bags are books)

Conclusion 3. No pen is a book

False (there is a definite relation between pen and book)

Conclusion4. No pens are bag

True (because all pens are books)

Only conclusion 4 logically follows from the statement

Hence, Option 1) is the correct answer.

Q53. Answer: (a) 62.5

Given:

0.25 ÷ 0.0025 × 0.025 × 25

Concept used:

BODMAS

The preference will be given on the basis of the letter coming first in the word BODMAS.

Calculation:

0.25 ÷ 0.0025 × 0.025 × 25

= 100 × 0.025 × 25

= 2.5 × 25

= 62.5

Hence, The Required simplified value is 62.5.

Q54. Answer: (d) 10

The correct answer is 10.

Key Points

• The Security Council consists of fifteen members, of which five are permanent.

• China, France, Russia, the United Kingdom and the United States are permanent members.

• These were the great powers that were the victors of World War II.

• The other ten members are elected on a regional basis for a term of two years.

• The body's presidency rotates monthly among its members.

• The ten non-permanent members are Albania, Brazil, Gabon, Ghana, India, Ireland, Kenya, Mexico, Norway and United Arab Emirates.

Additional Information

• The United Nations Security Council (UNSC) is one of the six principal organs of the United Nations (UN).

• It is charged with ensuring international peace and security and recommending the admission of new UN members to the General Assembly.

• It approves any changes to the UN Charter.

• Its powers include establishing peacekeeping operations, enacting international sanctions, and authorizing military action.

• The UNSC is the only UN body with the authority to issue binding resolutions on member states.

Q55. Answer: (c) Concave mirror

The Correct Answer is Concave Mirror.

Key Points

• Concave Mirror

• The mirror whose reflecting surface is inward is called a concave mirror.

• It can form both real as well as a virtual image of any object.

• The concave;mirror can be used to obtain the real image of an object.

• A real image is formed when rays converge i.e. Real images are formed due to the actual intersection of light rays.

• Virtual images are formed due to the imaginary intersection of light rays.

• A plane mirror always forms a virtual image.

• The image and object are the same distance from a flat mirror, the image size is the same as the object size, and the image is upright.

Important Points

• if an object is placed beyond the center of curvature then the image will be real, inverted, and diminish

• if an object is placed at the center of curvature then the image will be real, inverted and of the same size

• if an object is placed at the principal focus image formed in this case will be highly enlarged, real and inverted.

• if an object is placed between the principal focus and pole of the mirror then the image will be virtual, erect, and magnified

Explanation:

• When the object is between the center of curvature and focus or between the focus and pole of a concave mirror, the image formed is virtual, erect, and magnified.

• Therefore, doctors use concave mirrors to examine the Theeth, eyes, ears, nose, and throat from a close range as the image

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formed is enlarged and provides a better view to the doctor.

Q56. Answer: (c) Husband

Explanation:

Let us represent the given relations in the form of a family tree:

Thus, Jayant is the Husband of that lady.

Hence, the correct answer is option 3).

Q57. Answer: (a) 10 Lakh

The Correct answer is 10 lakh.

Key Points

• 'Swachh SwasthSarvatra,' an inter-ministerial cooperative project of the Ministries of Drinking Water and Sanitation and Health and Family Welfare,Secretary, Ministry of Drinking Water and Sanitation.

• The Ministry of Drinking Water and Sanitation has certified approximately 700 blocks as Open Defecation Free under this campaign (ODF).

• Community Health Centres (CHCs) across the country's ODF blocks would get Rs 10 lakhs under the National Health Mission (NHM) to focus on sanitation and hygiene.

Additional Information

• Each district receives one Primary Health Centre (PHC) for meeting quality requirements such as sanitation and hygiene.

• The initiative's goal is to build on and harness the accomplishments of two complementing programmes, Swachh Bharat Mission (SBM) and Kayakalp.

• Under SBM, the Gram Panchayat in which the PHC granted under Kayakalp for that district will be recognised, and special attention will be paid to making it ODF as soon as possible.

Q58. Answer: (d) 2014

Correct answer is 2014.

Key Points

• The Planning Commission of India was formed on 15 March 1950.

• It formulated the Five-Year Plans of India. On 17 August 2014.

• It was breakdown and put back by the NITI Aayog.

• The Planning Commission consults the Central Ministries and the State Governments while formulating Five Year Plans and Annual Plans and also oversees their implementation.

Additional Information

• The Union government is mainly composed of the executive, the legislature, and the judiciary.

• Union has jurisdiction over subjects of national importance such as defence of the country, foreign affairs, banking, communications and currency and also subjects present in concurrent list.

• Legislature of the Union, known as Parliament, consists of the President and two Houses, known as Council of States (Rajya Sabha) and House of the People (Lok Sabha).

Q59. Answer: (b) Its target is only private transport vehicles

The correct answer is Its target is only private transport vehicles

Key Points

• FAME India is a part of the National Electric Mobility Mission Plan.

• Main thrust of FAME is to encourage electric vehicles by providing subsidies.

• The FAME India Scheme is aimed at incentivising all vehicle segments.

Additional Information

• Two phases of the scheme:

• Phase I: started in 2015 and was completed on 31st March, 2019

• Phase II: started from April, 2019, will be completed by 31st March, 2022

• The scheme covers Hybrid & Electric technologies like Mild Hybrid, Strong Hybrid, Plug in Hybrid & Battery Electric Vehicles.

• Monitoring Authority: Department of Heavy Industries, the Ministry of Heavy Industries and Public Enterprises.

Q60. Answer: (d) 262/3

Given:

Jaya + Hema = 30 days

Hema + Sushma = 40 days

Jaya + Sushma = 60 days

Formula used:

Work rate (R) = 1 / Time (T)

Combined work rate = Sum of individual work rates

Calculation:

LCM of 30, 40, and 60 is 120.

=> Rate of Jaya and Hema = 120 /30 = 4

=> Rate of Hema and Sushma = 120/40 = 3

=> Rate of Jaya and Sushma = 120/60 = 2

=> Total = (4 + 3 + 2)/ 2 = 4.5

=> Total = 120/4.5

=> Total = 240/9 = 26 2/3 days

Thus, all three working together can clean the apartment in 262/3 days.

Q61. Answer: (c) 11.6 s

Given:

Length of train = 110 m

Speed of train = 90 km/hr

Length of bridge = 180 m

Formula used:

Distance = Speed × Time

1 km/hr = (5/18) m/sec

Calculation:

Length of train = 110 m

Speed of train = 90 km/hr = 90 × (5/18) = 25 m/sec

Length of bridge = 180 m

Total distance = 110 + 180 = 290 m

Time = Distance/Speed

Time = 290/25

=> Time = 11.6 seconds

Therefore The required time is 11.6 seconds.

Q62. Answer: (b) Malala Yousafzai

The correct answer is Malala Yousafai

Key Points

• Malala Yousafzai, often referred to mononymously as Malala, is a Pakistani activist for female education and the 2014 Nobel Peace Prize laureate. Awarded when she was 17, she is the world's youngest Nobel Prize laureate.

• The second Pakistani and the first Pashtun to ever receive a Nobel Prize.

• For her work in drawing global attention to the threat to girls' education in Pakistan, in 2014 at age 17 Malala Yousafzai became the youngest Nobel Prize laureate up to that time.

• She also won other accolades, and several funds and education initiatives were established in her honour

Additional Information

• Tsung-Dao Lee is a Chinese-American physicist, known for his work on parity violation, the Lee–Yang theorem, particle physics, relativistic heavy ion physics, nontopological solitons and soliton stars

• Tawakkol Karman, a Yemeni journalist, was the first woman to win the Nobel Peace Prize from the Arab world. She shared the award with two Liberian women, Ellen Johnson Sirleaf and Leymah Gbowee, for their non-violent efforts to promote peace and their struggle for women's right.

• Carl Anderson discovered a positively-charged particle with a mass seemingly equal to that of an electron. Anderson's particle was the first antiparticle proven by experiment and was named a “positron”

Q63. Answer: (d) 1858

The correct answer is 1858

Key Points

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• In August 1858, the British Parliament enacted the government of India Act, 1858 that terminated the rule of East India company.

• The british governor general of India was now given the title of viceroy which meant the representative of Monarch.

• The Governor-General of India was given the title of Viceroy for the first time in 1858.

Additional Information

• After the mutiny of 1857 the title of Viceroy was created in 1858.

• Lord Canning was the first Viceroy of India.The first Governor-General of Bengal was Warren Hastings with tenure of office from 1772-1785.

• Warren Hastings was an English statesman, the head of the Supreme Council of Bengal. He brought an end to the Dual Government system by enforcing the Regulating Act of 1773.

Q64. Answer: (b) 6000

Shortcut Trick

Total increase in population = 10,800 − 10,000 = 800

Overall increase percentage = (800 ÷ 10,000) × 100 = 8%

Using Alligation: (Male 5%) : (Overall 8%) : (Female 10%)

Ratio of Male : Female = (10 − 8) : (8 − 5) = 2 : 3

Female population = (3 ÷ 5) × 10,000 = 6000

Therefore The correct answer is 6000.

Alternate Method

Given: Total population = 10,000 | New population = 10,800 | Male increase = 5% | Female increase = 10%

=> Let the number of females be x and males be (10,000 − x).

=> Increase in males + Increase in females = 800

=> 5% of (10,000 − x) + 10% of x = 800

=> 0.05 × (10,000 − x) + 0.10x = 800

=> 500 − 0.05x + 0.10x = 800

=> 0.05x = 300

=> x = 300 ÷ 0.05 = 6000

Therefore The correct answer is 6000.

Additional Information

Rule of Alligation

It is a shorter method to find the ratio in which two components are mixed to get a final mean value. Ratio = (Higher Value − Mean) : (Mean − Lower Value).

Percentage Change

Percentage change = (Difference ÷ Original Value) × 100. This is used to find the average growth rate of a population.

Linear Equation Method

Setting up an equation based on the total sum of individual changes is the most reliable method for complex percentage problems.

Q65. Answer: (b) Coriolis force

The correct answer is Coriolis force

Key Points

• The invisible force that appears to deflect the wind is the Coriolis force.

• The Coriolis force applies to movement on rotating objects. It is determined by the mass of the object and the object's rate of rotation.

• The Coriolis force is perpendicular to the object's axis. The Earth spins on its axis from west to east.

Additional Information

• The frictional force is defined as the force that is generated between the surfaces that slide against each other The frictional force is said to be a contact force.

• The force of attraction between any two bodies is directly proportional to the product of their masses and is inversely proportional to the square of the distance between them.

• Pressure Gradient Force directed from high to low pressure. The change in pressure measured across a given distance is called a "pressure gradient". The pressure gradient results in a net force that is directed from high to low pressure and this force is called the "pressure gradient force".

Q66. Answer: (d) 3

Given series: 898762263269732872778747794

'7' is immediately preceded by 8 but not immediately followed by 3

898762263269732872778747794

There is a total of three 7s which are not immediately followed by 3 but immediately preceded by 8.

Hence, Option 4) is the correct answer.

Q67. Answer: (b) A police station at Chauri Chaura in Uttar Pradesh was set on fire by a mob

The correct answer is A police station at Chauri Chaura in Uttar Pradesh was set on fire by a mob.

Key Points

• The non-cooperation movement was launched in 1920 with the aim of obtaining self-governance and ultimately getting the British colonial authorities to grant full independence to India

• The Non-Cooperation Movement was called off by Gandhiji after the incident of Chauri Chaura in Uttar Pradesh.

• On 5th Feb of 1922, the protest became violent when protesting people set fire a police station, burning 22 policemen alive

Additional Information

• After an angry mob murdered police officers in the village of Chauri Chaura (now in Uttar Pradesh state) in February 1922, Gandhi himself called off the movement; the next month he was arrested without incident.

• The movement marked the transition of Indian nationalism from a middle-class to a mass basis

Q68. Answer: (c) Gaganyaan

The Correct Answer is Gaganyaan.

Key Points

• Gaganyaan project envisages demonstration of human spaceflight capability by launching a crew of 3 members to an orbit of 400 km for a 3 days mission and bringing them back safely to earth, by landing in Indian sea waters.

• The project is accomplished through an optimal strategy by considering in-house expertise, experience of Indian industry, intellectual capabilities of Indian academia & research institutions along with cutting-edge technologies available with international agencies.

• The pre-requisites for the Gaganyaan mission include the development of many critical technologies including human-rated launch vehicle for carrying crew safely to space, Life Support System to provide an earth-like environment to crew in space, crew emergency escape provision and evolving crew management aspects for training, recovery and rehabilitation of crew.

• Various precursor missions are planned to demonstrate the Technology Preparedness Levels before carrying out the actual Human Space Flight mission.

• These demonstrator missions include Integrated AirDrop Test (IADT), Pad Abort Test (PAT) and Test Vehicle (TV) flights.

• Safety and reliability of all systems will be proven in unmanned missions preceding manned missions.

Additional InformationHuman rated LVM3 - HLVM3 (LVM3 rocket) -

• The well proven and reliable heavy lift launcher of ISRO, is identified as the launch vehicle for Gaganyaan mission.

• It consists of solid stage, liquid stage and cryogenic stage.

• All systems in LVM3 launch vehicle are re-configured to meet human rating requirements and christened Human Rated LVM3.

• HLVM3 will be capable of launching the Orbital Module to an intended Low Earth Orbit of 400 km.

• HLVM3 consists of Crew Escape System (CES) powered by a set of quick acting, high burn rate solid motors which ensures that Crew Module along with crew is taken to a safe distance in case of any emergency either at launch pad or during ascent phase.

New technologies being developed for Gaganyaan

• Human safety is of paramount importance in Gaganyaan mission.

• In order to ensure the same, various new technologies comprising of Engineering systems and Human centric systems are being developed and realised.

Orbital Module -

• Orbital Module (OM) that will be Orbiting Earth comprises of Crew Module (CM) and Service Module (SM).

• OM is equipped with state-of-the-art avionics systems with adequate redundancy considering human safety.

• CM is the habitable space with Earth like environment in space for the crew.

• It is of double walled construction consisting of pressurized metallic Inner Structure and unpressurised External Structure with Thermal Protection System (TPS).

• It houses the crew interfaces, human centric products, life support system, avionics and deceleration systems.

• It is also designed for re-entry to ensure safety of the crew during descent till touchdown.

• SM will be used for providing necessary support to CM while in orbit.

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• It is an unpressurized structure containing thermal system, propulsion system, power systems, avionics systems and deployment mechanisms.

Q69. Answer: (c) Silica

The correct answer is Silica

Key Points

• Silicon dioxide, also known as silica, is an oxide of silicon with the chemical formula SiO_2, most commonly found in nature as quartz and in various living organisms. In many parts of the world, silica is the major constituent of sand.

• It appears naturally in several crystalline forms, one of which is quartz. Silicon dioxide, commonly known as silica (and/or quartz), is a prevalent element in the Earth's crust.

Additional Information

• Silicon is one of the most useful elements to mankind. Most is used to make alloys including aluminium-silicon and ferro-silicon (iron-silicon). These are used to make dynamo and transformer plates, engine blocks, cylinder heads and machine tools and to deoxidise steel. Silicon is also used to make silicones.

• Graphite is a crystalline form of the element carbon. It consists of stacked layers of graphene. Graphite occurs naturally and is the most stable form of carbon under standard conditions.

• Germanium is a chemical element with the symbol Ge and atomic number 32. It is a lustrous, hard-brittle, grayish-white metalloid in the carbon group.

Q70. Answer: (d) Khwaja Muinuddin Chishti

The correct answer is Khwaja Muinuddin Chishti

Key Points

• Khwaja Moinuddin Chisti was one of the most outstanding saints of the Indian subcontinent, and an international spiritual inspiration who lived during the 6th Century AD.

• He arrived in Ajmer at the age of 52 years around 1190 AD during the reign of Prithviraj Chauhan.

• The main beliefs of Khwaja Moinuddin Chishti were achieving oneness with God, devotion to the Divine, leading a pure life, showing compassion and charity for the helpless and poor.

Additional Information

• Nizamuddin Auliya was the founder of the Chisti Nizami order. He had hundreds of disciples (khalifa) who had Ijaza (khilafat) from him to spread the order.

• Baba Fariduddin Mas'ud Ganjshakar was a Sufi and Muslim missionary in Punjab. Baba Farid (1173 -1266) was a Punjabi poet and saint of the Chisti order of Sufism. He was among the first known Punjabi poets

• Gaisu Daraz was a disciple and then successor of Sufi saint Nasiruddin Chiragh Dehlavi. When he moved to Daulatabad around 1400, owing to the attack of Timur on Delhi, he took the Chishti Order to South India. He finally settled down in Gulbarga.

Q71. Answer: (a) 60°

Given:

Height of tower = $200\sqrt{3}$ m

Base distance from angle of elevation to tower = 200 m

Formula used:

$\tan(\theta)$ = Height/(distance from tower's base)

Where θ = angle of elevation.

Calculation:

Let the angle of elevation be θ.

According to the question,

$\tan(\theta)$ = Height/(distance from tower's base)

$\Rightarrow \tan(\theta) = (200\sqrt{3})/200$

$\Rightarrow \tan(\theta) = \sqrt{3}$

$\Rightarrow \tan(\theta) = \tan(60°)$

$\Rightarrow \theta = 60°$

Hence, the required angle of elevation is 60°.

Q72. Answer: (d) Ministry of Law and Justice

The correct answer is Ministry of Law and Justice.

Key Points

• Ministry of Law and Justice. Goods and Services Tax (GST) is an indirect tax used in India on the manufacture, sale, and consumption of goods and services in India.

• The Goods and Service Tax (GST) Act, 2017 was published by the Ministry of Law and Justice.

• Telangana was the first amongst states to pass the Act on April 9 followed by Bihar on April 24. Karnataka passed the bill on June 15.

Additional Information

• The Ministry of Corporate Affairs is an Indian government ministry primarily concerned with administration of the Companies Act 2013, the Companies Act 1956, the Limited Liability Partnership Act, 2008, and the Insolvency and Bankruptcy Code, 2016.

• The Ministry of Finance is a ministry within the Government of India concerned with the economy of India, serving as the Treasury of India. In particular, it concerns itself with taxation, financial legislation, financial institutions,

• The Prime Minister's Office consists of the immediate staff of the Prime Minister of India, as well as multiple levels of support staff reporting to the Prime Minister. The PMO is headed by the Principal Secretary.

Q73. Answer: (b) 0.5

Given:

Three bells started tolling together.

Each of them then tolls after 0.25 sec, 0.1 sec and 0.125 sec.

Calculations:

Required LCM = (LCM of 250, 100, and 125) × 0.001

LCM of 250, 100 and 125

2	**250,100,125**
5	125, 50,125
5	25, 2, 25
5	5, 2, 5
	1, 2, 1

Therefore LCM = 2 × 5 × 5 × 5 × 2 = 500

Therefore Required LCM = 500 × 0.001 = 0.5

Hence, The three bells will toll together after 0.5 seconds.

Q74. Answer: (c) 1951 - 1952

The correct answer is 1951 - 1952

Key Points

• General elections were held in India between 25 October 1951 and 21 February 1952.

• They were the first elections to the Lok Sabha after independence in August 1947.

• It was conducted under the provisions of the Indian Constitution, which was adopted on 26 November 1949.

Additional Information

• Members of the Lok Sabha are elected by an adult universal suffrage.

• A first-past-the-post system to represent their respective constituencies.

• And they hold their seats for five years or until the body is dissolved by the President on the advice of the council of ministers

Q75. Answer: (b) Crust

The correct answer is Crust

Key Points

• In geology, the crust is the outermost solid shell of a rocky planet, dwarf planet, or natural satellite.

• It is usually distinguished from the underlying mantle by its chemical makeup; however, in the case of icy satellites, it may be distinguished based on its phase.

Additional Information

• The mantle is the mostly-solid bulk of Earth's interior. The mantle lies between Earth's dense, super-heated core and its thin outer layer, the crust. The mantle is about 2,900 kilometers (1,802 miles) thick, and makes up a whopping 84% of Earth's total volume.

• Earth's core is the very hot, very dense center of our planet. The ball-shaped core lies beneath the cool, brittle crust and the mostly-solid mantle. The core is found about 2,900 kilometers (1,802 miles) below Earth's surface,

• Asthenosphere, zone of Earth's mantle lying beneath the lithosphere and believed to be much hotter and more fluid than the lithosphere. The asthenosphere extends from about 100 km (60 miles) to about 700 km

Q76. Answer: (c) Narendra Modi

The correct answer is Narendra Modi

Key Points

• The first meeting of NITI Aayog was chaired by Narendra Modi on 8 February 2015.

• Finance Minister Arun Jaitley made the following observation on the necessity of creating NITI Aayog.

• NITI Aayog is developing itself as a state-of-the-art resource centre with the necessary knowledge and skills that will enable it to act with speed, promote research and innovation, provide strategic policy vision for the government, and deal with contingent issues.

Additional Information

• Arun Jaitley was an Indian politician and attorney. A member of the Bharatiya Janata Party, Jaitley served as the Minister of Finance and Corporate Affairs of the Government of India from 2014 to 2019

• Arvind Panagariya is an Indian-American economist who is the Jagdish Bhagwati Professor of Indian Political Economy at Columbia University and is also the Director of Deepak and Neera Raj Center on Indian Economic Policies at School of International and Public Affairs.

• Amitabh Kant was also the National Project Director of the Rural Tourism Project of UNDP which made a paradigm shift in spreading tourism to Indian villages which had core-competency in handicrafts, handloom and culture. In his capacity as Secretary (Industries) Govt. of India.

Q77. Answer: (c) 80 cm²

Shortcut Trick

For the largest square inscribed in a semicircle of radius r, the area is given by the formula:

Area = (4/5) × r^2

Given radius (r) = 10 cm

=> Area = (4/5) × 10^2 = (4/5) × 100 = 80 cm^2

Therefore The correct answer is 80 cm^2.

Alternate Method

Given: Radius (r) of the semicircle = 10 cm.

Let the side of the square be a.

The base of the square lies on the diameter of the semicircle. Since the square is centered, the distance from the center O to one base vertex is a/2.

The height of the square is a. The top vertex of the square lies on the circumference of the semicircle.

In the right-angled triangle formed by the center, the base vertex, and the top vertex:

=> $(Base)^2 + (Height)^2 = (Radius)^2$

=> $(a/2)^2 + a^2 = r^2$

=> $a^2/4 + a^2 = 10^2$

=> $(5a^2)/4 = 100$

=> $5a^2 = 100 \times 4$

=> $5a^2 = 400$

=> $a^2 = 400 \div 5 = 80$ cm^2

The Area of the square is a^2.

Therefore The correct answer is 80 cm^2.

Additional Information

Largest Square in a Circle

The side of the largest square inscribed in a circle is $a = r\sqrt{2}$, and its area is $2r^2$.

Largest Circle in a Square

The radius of the largest circle inscribed in a square of side a is r = a/2, and its area is $\pi a^2/4$.

Area of Semicircle

The total area of a semicircle with radius r is $(1/2)\pi r^2$.

Perimeter of Semicircle

The total perimeter includes the arc and the diameter: $P = \pi r + 2r$.

Q78. Answer: (d) VDU

The correct answer is VDU

Key Points

• A video display unit (VDU) consists of: A computer output device that uses a cathode ray tube or other technology to present visual images. One or more input devices, such as a keyboard, a mouse, or both.

• A monitor is an electronic output device that is also known as a video display terminal (VDT) or a video display unit (VDU).

• It is used to display images, text, video, and graphics information generated by a connected computer via a computer's video card.

Additional Information

• A Light Emitting Diode (LED) is a semiconductor device, which can emit light when an electric current passes through it. To do this, holes from p-type semiconductors recombine with electrons from n-type semiconductors to produce light.

• CCTV (closed-circuit television) is a TV system in which signals are not publicly distributed but are monitored, primarily for surveillance and security purposes.

• The component of a computer system that controls the interpretation and execution of instructions. The CPU of a PC consists of a single microprocessor, while the CPU of a more powerful mainframe consists of multiple processing devices, and in some cases, hundreds of them.

Q79. Answer: (b) North Atlantic Treaty Organisation (NATO)

The correct answer is North Atlantic Treaty Organisation (NATO)

Key Points

• NATO is an alliance of countries from Europe and North America.

• It provides a unique link between these two continents, enabling them to consult and cooperate in the field of defence and security.

Additional Information

• The Shanghai Cooperation Organization (SCO) was established as a multilateral association to ensure security and maintain stability across the vast Eurasian region, join forces to counteract emerging challenges and threats, and enhance trade, as well as cultural and humanitarian cooperation.

• The United Nations is an intergovernmental organization whose stated purposes are to maintain international peace and security, develop friendly relations among nations, achieve international cooperation, and be a centre for harmonizing the actions of nations.

• The G20 or Group of Twenty is an intergovernmental forum comprising 19 countries and the European Union. It works to address major issues related to the global economy, such as international financial stability, climate change mitigation, and sustainable development

Q80. Answer: (c) 1 1

Given:

One of the roots of the equation x^2- 19x + 88 = 0 is 8.

Concept used:

If a is a root of a quadratic equation then (x - a) must be one of it's factors.

Calculations:

According to question,

x2 - 19x + 88 = (x - 8) × y, where y is it's other factor.

=> (x2 - 19x + 88) ÷ (x - 8) = y

=> (x^2 - 8x - 11x + 88) ÷ (x - 8) = y

=> {x(x - 8) - 11(x - 8)} ÷ (x - 8) = y

=> {(x - 8)(x - 11)} ÷ (x - 8) = y

=> (x - 11) = y

=> y = (x - 11)

Therefore, (x - 11) is the other factor of the equation x2 - 19x + 88, Also, 11 is its other root.

Hence, The other root of the equation x2 - 19x + 88 is 11.

Q81. Answer: (d) Cursor

The correct answer is Cursor

Key Points

• A cursor is the position indicator on a computer display screen where a user can enter text.

• In an operating system with a graphical user interface (GUI), the cursor is also a visible and moving pointer that the user controls with a mouse, touch pad, or similar input device.

• It is also called "the text cursor," or "the insertion point."

Additional Information

• The taskbar on a computer screen is the narrow strip of icons, usually located at the bottom of the screen, that shows you which windows are currently open and that allows you to control functions such as the Start button and the clock. Compare toolbar.

• Icons are designed to enable quick access to frequently-used programs, files, folders and so on.

• Many of these icons will be shortcuts, which are used to launch a program (or whatever) from another location.

Q82. Answer: (c) 40°

Given:

angle BOC = 110°

Concept:

The single point in which the three bisectors of the interior angles of a triangle intersect and which is the centre of the inscribed circle.

Here from the triangle:

When bisectors of angle B and angle C intersect at O, then

angle BOC = 90 + angle A/2

Calculation:

According to the concept:

angle BOC = 90 + angle A/2

=> 110° = 90° + angle A/2

=> angle A/2 = 20°

=> angle A = 40°

Therefore The value of angle BAC is 40°.

Hence, the correct answer is option 3).

Q83. Answer: (d) Ashoka

The correct answer is Ashoka

Key Points

• The third council, held during the reign of the emperor Aśoka at his capital, Patliputra, about 247 bc, may have been confined to an assembly of the Theravādas.

• Ashoka the Great, was an Indian emperor of the Maurya Empire, son of Bindusara, who ruled almost the entire Indian subcontinent from c. 268 to 232 BC

• Additional Information

• Kanishka I, or Kanishka the Great, was an emperor of the Kushan dynasty, under whose reign the empire reached its zenith. He is famous for his military, political, and spiritual achievements.

• Chandragupta was the founder of the Mauryan dynasty (reigned c. 321–c. 297 BCE) and the first emperor to unify most of India under one administration. He is credited with saving the country from maladministration and freeing it from foreign domination.

• Harshavardhana was an Indian emperor who ruled northern India from 606 to 647 CE. He was a member of the Vardhana dynasty, who defeated the Alchon Huna invaders.

Q84. Answer: (b) 9.6 km/hr

Given:

Speed from X to Y = 8 km/h

Speed from Y to X = 12 km/h

Formula used:

Average speed = (Total distance)/(Time taken)

Calculation:

Let the total distance be 2D.

Distance = L.C.M of 8 and 12

=> Distance = 24 km ---(1)

Then,

Time is taken from A to B = 24/8

=> Time is taken from A to B = 3 hours
Time is taken from B to A = 24/12
=> Time is taken from B to A = 2 hour
Total time is taken = 2 hours ---(2)
Now,
The total distance = 2D
=> The total distance = 48 km ---(3)
Average speed = (Total distance)/(Time taken)
=> Average speed = 48/5
=> Average speed = 9.6 km/h
Therefore The average speed of Ram is 9.6 km/h.

Q85. Answer: (a) 1

Given:
2^(20)is divided by 3
Calculation:
2^(20) / 3
When 2 is divided by 3, then we get -1 as the remainder,
Thus, remainder = (-1)^(20) = 1
Hence, the required remainder will be 1.
Therefore The correct answer is option (1).

Q86. Answer: (a) Mumbai

Given:
Calculation:
=> Total expenditure by an individual in a month for the city Delhi = 4500 + 6520 + 3520 + 1520 = 16,060
=> Total expenditure by an individual in a month for the city Mumbai = 5000 + 9500 + 7425 + 2550 = 24,475
=> Total expenditure by an individual in a month for the city Chennai = 3225 + 9875 + 6221 + 2050 = 21,371
=> Total expenditure by an individual in a month for the city Chandigarh = 6525 + 11228 + 3854 + 2000 = 23,607
Therefore, Mumbai city has the maximum expenditure by an individual in a month.

Q87. Answer: (b) Chandigarh

Given:
Calculation:
Gap between minimum and maximum expenditure in a month for the city Delhi
=> 6520 – 1520 = 5000
Gap between minimum and maximum expenditure in a month for the city Mumbai
=> 9500 – 2550 = 6950
Gap between minimum and maximum expenditure in a month for the city Chennai
=> 9875 – 2050 = 7825
Gap between minimum and maximum expenditure in a month for the city Chandigarh
=> 11228 – 2000 = 9228
Therefore, the highest gap in minimum and maximum expenditure by an individual in a month is in city Chandigarh.

Q88. Answer: (b) 57%

Given:
Calculation:
=> Total expenditure on clothes across all four cities = 3520 + 7425 + 6221 + 3854 = 21,020
=> Total expenditure on rent across all four cities = 6520 + 9500 + 9875 + 11228 = 37,123
=> Total expenditure on clothes as an approximate percentage of the total expenditure on rent across all 4 cities = 21020/37123× 100
=> Total expenditure on clothes as an approximate percentage of the total expenditure on rent across all 4 cities ≈ 0.57× 100=57%

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Therefore, the total expenditure on clothes as an approximate percentage of the total expenditure on rent across all 4 cities is 57%.

Q89. Answer: (b) Chennai

Given:

Concept Used:

Average = (Total sum of values)/(Total number of values)

Calculation:

Total expenditure from all four cities on movies

=> 1520 + 2550 + 2050 + 2000 = 8,120

Average expenditure on movies across all four cities = 8120/4=2030

Expenditure from Chennai city on movies = Rs 2,050

Therefore, the city in which expenditure on movies is nearest to the average expenditure on movies across all four cities is Chennai.

Q90. Answer: (a) Writing = Pen

Explanation:

Photosynthesis = Sun Light

Sunlight is essential for the process of photosynthesis.

Similarly,

Writing = Pen

Pen is essential for the process of writing.

Hence, Option1) is the correct answer.

Q91. Answer: (a) Tennis

Explanation :

1. Rohit, Shobit and Manu play volleyball, tennis and Kho-Kho.
2. Rohit, Ashu and Manu play volleyball, tennis and badminton.
3. Rohit, Shobhit, Dalip and Manu play Kho-Kho and tennis.

Names	Sports	sports	sports	sports
Shobit	×	tennis	Kho-Kho	×
Rohit	volleyball	tennis	Kho-Kho	×
Manu	volleyball	Tennis	Kho–Kho	×
Ashu	volleyball	tennis	×	badminton
Dalip	×	tennis	Kho–Kho	×

Tennis is played by all the boys as shown in the above table.

Hence, Option 1) is the correct answer.

Q92. Answer: (a) 3 hours, 46 minutes, 48 seconds

Given:

3.78 hours

Concept used:

1 hour = 60 minutes

1 minute = 60 Seconds

Calculation:

3.78 hours

= 3 hours + 0.78 hours

= 3 hours + 0.78 × 60 minutes

= 3 hours + 46.8 minutes

= 3 hours + 46 minutes + 0.8 minutes

= 3 hours + 46 minutes + 0.8 × 60 seconds

= 3 hours + 46 minutes + 48 seconds

Hence, 3.78 hours is 3 hours, 46 minutes, and 48 seconds.

Q93. Answer: (d) Respiration

Explanation:

Tongue : Taste

Tongue primary function is to taste through taste glands.

Similarly,

Lungs : ?

Lungs primary function is the process of gas exchange called respiration.

Hence, the correct answer is Respiration.

Q94. Answer: (c) B

The position of the letters according to the English alphabet series:

The pattern followed here is,

Hence, the correct answer is option 3).

Q95. Answer: (a) A

Given:

Step 1. Five members are sitting in a row facing towards the north.

Step 2. C is to the left of A and C is to the right of E.

Case I:

Case II:

Step 3. But, B is to the left of D and B is to the right of A. (Case II gets canceled)

Hence, the correct answer is option 1).

Q96. Answer: (a) 129

The logic here is:

[Next number = (Previous Number × 2) - 1]

The pattern followed here,

5 => 5 x 2 - 1 = 9

9 => 9 x 2 - 1 = 17

17 => 17 x 2 - 1 = 33

33 => 33 x 2 - 1 = 65

65 => 65 x 2 - 1 = 129

Hence, the correct answer is 129.

Q97. Answer: (b) 768.1536

The logic followed here is:

[Next number = (Previous number × 2)]

The pattern followed in the given series is:

Hence, the correct answer is option 2).

Q98. Answer: (a) M

The position of the letters according to the English alphabet series:

The logic followed here is,

Hence, the correct answer is option 1).

Q99. Answer: (d) 389

The logic here is:

The difference between the terms is an increasing multiple of 17.

The pattern followed in the given series is:

We know that,

17 × 3 = 51 and 17 × 4 = 68, so the only number associated with both of them is 389.

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Therefore 389 does not belong to the series and it could have been replaced by 391 to make it a perfect series.

Hence, the correct answer is option 4).

Q100. Answer: (b) Either B or C

From the given information:

A works in the banking department and works 8 hours a day.

But, the one who works in the HR department works only 5 hours a day.

B is lazy has a maths background does not like to work the entire day and is not part of the banking department.

Name	Department
A	Banking
B	HR or IT
C	HR or IT

From the table, we can see that there is no exact information given about B and C which means either B or C works in the HR department.

Hence the correct answer is option 2).

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