RRB NTPC CBT-I Official Paper (Held On: 2 Feb 2021 Shift 1) (Previous Year Paper)

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

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Practise under exam conditions, then review your answers after you submit.

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

Q1. Rupert purchase a second-hand TV for Rs. 4,600, spends some money on its repairs, and then sells it for Rs. 5,406, thereby earning a profit of 6%. How much did Rupert spend on the repairs?

(a) Rs. 450
(b) Rs. 500
(c) Rs. 400
(d) Rs. 600

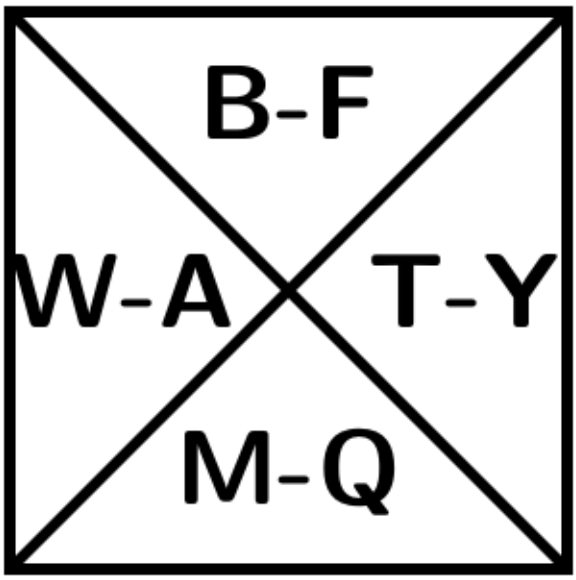
Q2. Which article of Indian Constitution contains provisions for the Panchayats and local body governments?

(a) Art. 270
(b) Art. 21
(c) Art. 243
(d) Art. 51 A

Q3. Four cows are tethered to the four corners of a square field of length 28 m so that each cow can just touch the two cows in the adjacent corners. If the grass in the area inside the square field that was accessible to the cows was enough to fee them for 22 days, for how many days would the grass that is beyond the reach of these cows be able to feed them if someone cuts it and leaves it inside the grazable parts? [Use π = 22/7]

(a) 5
(b) 4
(c) 7
(d) 6

Q4. Identify the letter-pair that does NOT belong to the following group.



(a) W-A
(b) T-Y

(c) M-Q
(d) B-F

Q5. Who among the following Mughal rulers of India gave permission to the British to establish their first factory in Surat?
(a) Shahjahan
(b) Jahangir
(c) Bahadurshah Zafar
(d) Aurangzeb

Q6. There are 35 street lamps in a row on a national highway. All are lit except one. The faulty lamp is 15^(th) from the right end. What is the position of the faulty lamp from the left end?
(a) 20^(th)
(b) 22^(nd)
(c) 21^(st)
(d) 23^(rd)

Q7. There are ten non-permanent members of the UN Security Council. They are elected by the General Assembly for a period of:
(a) 5 years
(b) 4 years
(c) 2 years
(d) 3 years

Q8. The two unequal sides of a rectangle are in the ratio of 3 : 4. If the perimeter is 42 cm, then the length of diagonal will be:
(a) 15 cm
(b) 30 cm
(c) 35 cm
(d) 25 cm

Q9. Where is the NSE (National Stock Exchange of India) headquartered?
(a) New Delhi
(b) Chennai
(c) Mumbai
(d) Pune

Q10. 'Heavy water' is a term related to which of the following?
(a) Fertilizer industry
(b) Pharmaceutical industry
(c) Nuclear power generation plants
(d) Hydro-electric power plants

Q11. Which of the following is correct about International Space Station (ISS)?
(a) It is expected to operate until 2050.
(b) It has been assembled mainly by USA and China
(c) Only astronauts from USA and China are allowed to visit ISS.
(d) It is located in low earth orbit.

Q12. Which of the following genetically modified (GM) crops has been given permission to be legally cultivated in India?
(a) Bt Potato
(b) Bt Brinjal
(c) Bt Cotton
(d) GM Mustard

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Q13. A vendor purchases an article for Rs. 500 and sells it for Rs. 550. What is the percentage gain?

(a) 5%
(b) 15%
(c) 20%
(d) 10%

Q14. If LIT is coded as 123, LEFT is coded as 4512 and YELL is coded as 2247, then what will be the code for 'FLY'?

(a) 475
(b) 527
(c) 741
(d) 623

Q15. Which of the following is INCORRECT about Paramparagat Krishi Vikas Yojana (PKVY)?

(a) It was launched in April, 2015.
(b) It was launched to promote organic farming.
(c) In three years 2,00,000 clusters will be formed.
(d) Every farmer under this scheme will be provided Rs. 20,000 per acre in three years for seeds, to harvest the crops and to transport the produce.

Q16. Which of the following planets rotates in Clockwise direction?

(a) Venus
(b) Jupiter
(c) Saturn
(d) Mars

Q17. From where have the words 'Satyameva Jayate' which are inscribed below the National Emblem of India, been taken?

(a) Mundaka Upanishads
(b) Puranas
(c) Bhagwad Gita
(d) Jataka tales

Q18. Cyclone Amphan hit West Bengal in May, 2020. Where did the cyclone originate from?

(a) Mediterranean Sea
(b) Bay of Bengal
(c) Persian Gulf
(d) Arabian Sea

Q19. Which author created the little village of 'Malgudi' as the backdrop for his stories of the little boy 'Swami'?

(a) Girish Karnad
(b) B. V. Karanth
(c) U. R. Ananthamurty
(d) R. K. Narayan

Q20. Where is the Kanha Tiger Reserve?

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

Q21. If del stands for operation "adding the first number to thrice the second number", then the value of (4 del 5) del 6 will be:

(a) 114
(b) 37
(c) 54

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(d) 35

Q22. Identify the term that does NOT belong to the following series.

2T3, 5S6, 11R9, 16Q12, 23P15

(a) 11R9
(b) 16Q12
(c) 2T3

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duplicate options found. English Question 1 options 1,2

(d) 23P15

Q23. Which of the following provinces had maximum representation in the constituent assembly of India as on 31^(st) December, 1947?

(a) Madras
(b) United Provinces
(c) Bombay
(d) West Bengal

Q24. The mean of the values 1, 2, 3, 4, ..., n with respective frequencies 1, 2, 3, ..., n is:

(a) (n - 1)/2
(b) (2n + 1)/3
(c) (n + 1)/2
(d) (2n - 1)/3

Q25. The rate at which a sum becomes 2 times of itself in 10 years at simple interest is:

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

Q26. Which among the following unit is used to count the speed of modern printers?

(a) BIT
(b) LPM
(c) PPM
(d) CPM

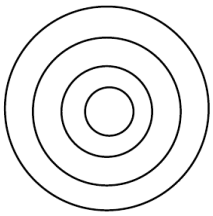
Q27. What is the Common name of mercury?

(a) Quicksilver
(b) Zinc white
(c) Pearl ash
(d) White lead

Q28. Select the Venn diagram that best represents the relationship between the following classes.

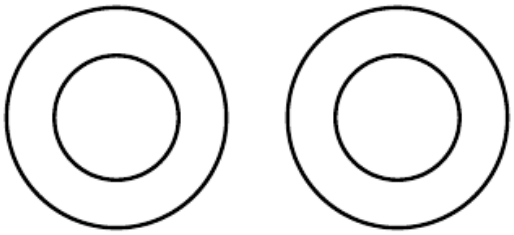
Ant, Insect, Fox, Mammal

(a)

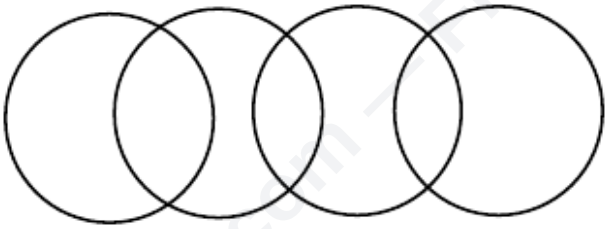


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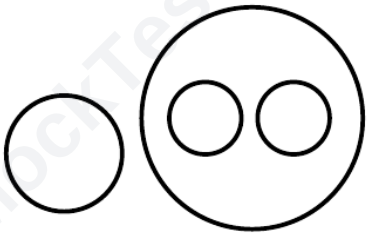
(b)



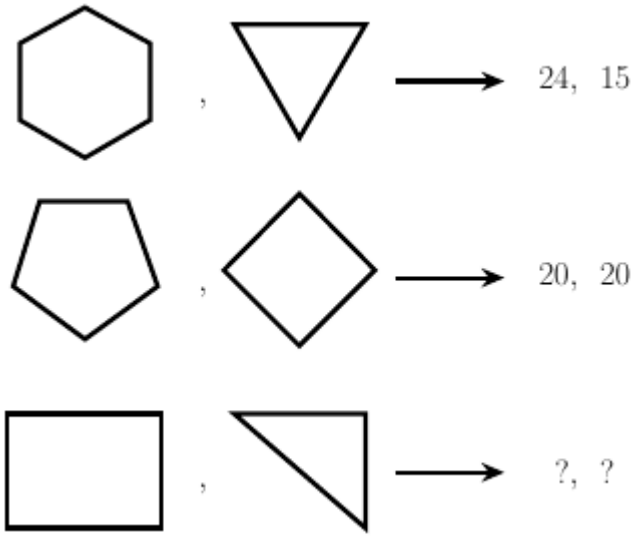
(c)



(d)



Q29. Study the given pattern carefully and select the numbers from among the options that can replace the question marks (?).



(a) 16, 15
(b) 30, 29
(c) 18, 10
(d) 40, 42

Q30. The difference between the compound interest and the simple interest accrued, at the same rate of interest, on an amount of Rs. 16,000 in 2 years was Rs. 1,000. What was the rate of interest percent per annum?

(a) 50%
(b) 10%
(c) 25%
(d) 12%

Q31. Atulit buys an old bicycle for Rs. 4,000 and spends Rs. 400 towards its repairs. If he sells the bicycle for Rs. 5,000, his percentage gain is:

(a) 137/11%
(b) 713/12%
(c) 713/11%
(d) 131/11%

Q32. The angles of a quadrilateral are in the ratio of 1 : 3 : 4 : 7. What is the difference between the largest and the smallest angle?

(a) 144°
(b) 145°
(c) 140°
(d) 120°

Q33. Which articles of Indian Constitution ensures the abolition of titles?

(a) Article 18
(b) Article 25
(c) Article 23
(d) Article 22

Q34. Select the option that is related to the third word in the same way as the second word is related to the first word:
Himachal Pradesh : Dharamshala : : Maharashtra : ?

(a) Ahmednagar
(b) Nagpur
(c) Beed
(d) Pune

Q35. The value of (tan 45° - tan 30°)/(1 + tan 45° tan 30°) is:

(a) 2 - √3
(b) √(3 - 2)
(c) 2 + √3
(d) 1

Q36. Which gas is found in soda water?

(a) Nitrogen
(b) Carbon dioxide
(c) Hydrogen
(d) Freon

Q37. Which Prime Minister sent the Cripps Mission to India in 1942?

(a) Clement Attlee
(b) Ramsay MacDonald
(c) Winston Churchill
(d) Stanley Baldwin

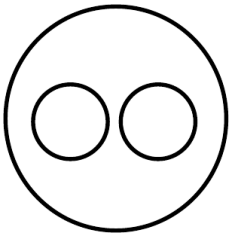
Q38. The possible value of x in the equation √(x/(1 - x)) + √((1 - x)/x) = 25/12 is:

(a) 9/25 or 16/25
(b) 8/25 or 17/25
(c) 19/25 or 6/25
(d) 12/25 or 13/25

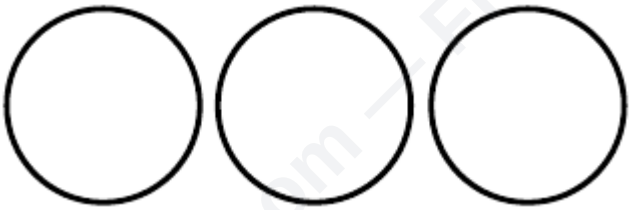
Q39. Select the Venn diagram that best represents the relationship between the following classes.
Swimming, Cycling, Exercises

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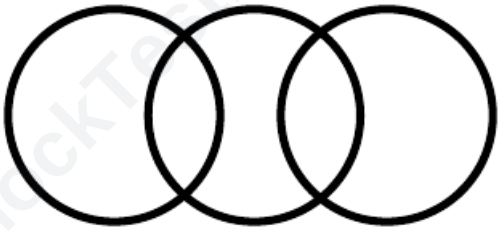
(a)



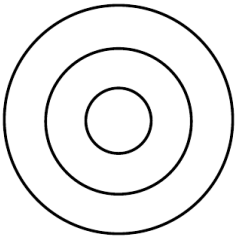
(b)



(c)



(d)

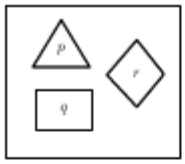


Q40. NITI Aayog was constituted on _____.

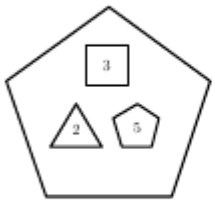
(a) 1^(st) April 2016
(b) 1^(st) January 2015
(c) 1^(st) September 2015
(d) 1^(st) April 2014

Q41. Study the given pattern carefully and select the number from among the given option that can replace the question mark (?).

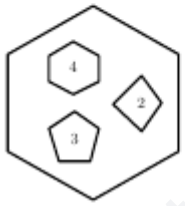
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I. 

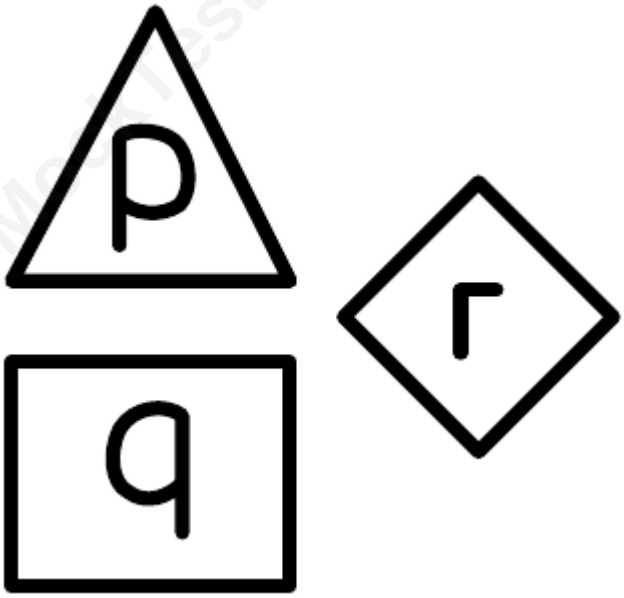
$4\,[(3+p)+(4+q)+(4+r)]$

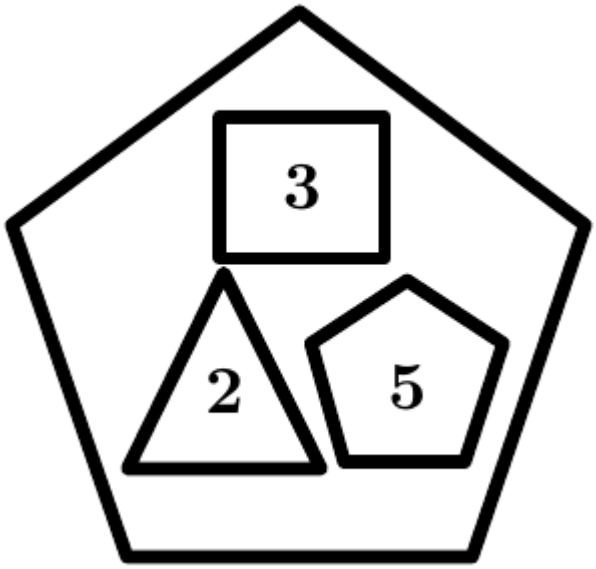
II. 

$5\,[(4+3)+(3+2)+(5+5)] = 110$

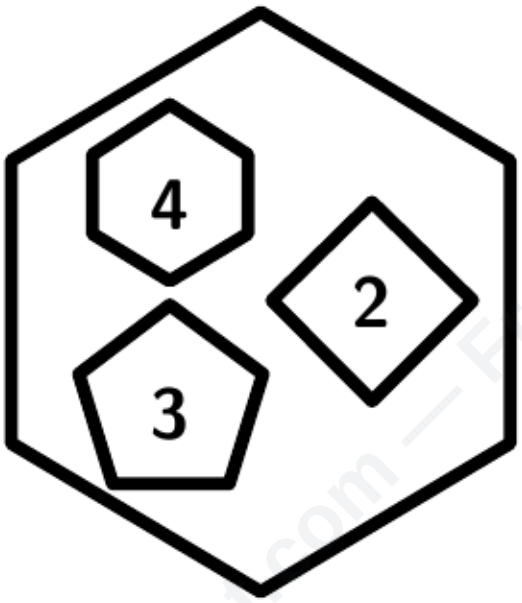
III. 

?





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(a) 96
(b) 144
(c) 120
(d) 100

Q42. Which of the following does the work of linking all the ATMs in India?
(a) National Institute of Banking and Management
(b) Reserve Bank of India
(c) Securities and Exchange Board of India
(d) National Payments Corporation of India

Q43. Select the option in which the terms share the same relationship as that shared by the given pair of terms.
DMO : WNL
(a) GHI : TSR
(b) CFH : XUT
(c) DQG : ELP
(d) ZAT : EGD

Q44. Two persons A and B start a journey from the same point at the speeds of 3 km/h and 4 km/h respectively. If they move in the same direction, then what will be the distance between them after 6 h?
(a) 4 km
(b) 6 km
(c) 9 km
(d) 3 km

Q45. Select the number that can replace the question mark (?) in the following series.
14, 2, 28, 3, 84, 4, ?
(a) 268
(b) 336
(c) 202
(d) 198

Q46. How many numbers less than 10000 are there which are exactly divisible by 21, 35 and 63?
(a) 34
(b) 31
(c) 30
(d) 32

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Q47. If the selling price of an article is 3 times the discount offered and if the percentage of the discount is equal to the percentage profit, find the ratio of the discount offered to the cost price.

(a) 7 : 11
(b) 5 : 12
(c) 7 : 6
(d) 7 : 12

Q48. Which of the following country has hosted the 2018 FIFA world Cup?

(a) England
(b) Russia
(c) Qatar
(d) Spain

Q49. Who among the following sportspersons won the highest number of Olympic Gold medals in swimming?

(a) Mark Spitz
(b) Michael Phelps
(c) Katie Ledecky
(d) Ryan Lochte

Q50. Which of the following statements is INCORRECT about the Great Rann of Kutch?

(a) It is inhabited by the Kutchi people.
(b) It is a salt marsh in the Thar desert.
(c) Flamingos migrate to nest in large numbers.
(d) It is a fresh water lake

Q51. If A < B < C > D < E > A, then which of the following can be concluded?

(a) A < D < B
(b) C > A < E
(c) B > A > E
(d) E > C > D

Q52. 60% of 40% of 32% of an amount is Rs. 432. What is the amount (in Rs.)?

(a) 5,555
(b) 5,625
(c) 5,605
(d) 5,525

Q53. The Lion Capital pillar is located at:

(a) Dhauli
(b) Barabar Hills
(c) Sarnath
(d) Nagarjuna Hills

Q54. A, B and C begin together to move around a circular stadium and they completed their revolution in 42 s, 63 s and 84 s respectively, After how much time will they come together at the starting point?

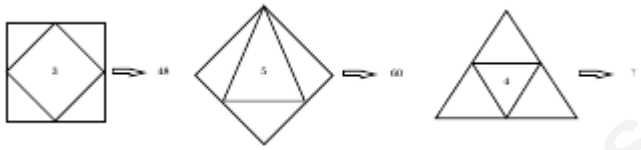
(a) 425 s
(b) 152 s
(c) 256 s
(d) 252 s

Q55. If $x + y + z = 0$, then what will be the value of $(x^2)/yz + (y^2)/zx + (z^2)/xy$?

(a) $x^2 + y^2 + z^2$
(b) 3
(c) $(x^2y^2z^2)/x$
(d) $(3x^2 + 3y^2 + 3z^2)/x$

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Q56. Study the given pattern carefully and select the number from the given options that can replace the question mark (?).



(a) 100
(b) 36
(c) 72
(d) 90

Q57. Which of the following is the correct sequence of crops in the decreasing order of their production in India in 2019-20?

(a) Wheat-pulses-coarse cereals-rice
(b) Rice-wheat-coarse cereals-pulses
(c) Wheat-rice-coarse cereals-pulses
(d) Rice-coarse cereals-wheat-pulses

Q58. What is the value of the following expression?

$\sqrt{225/14} \times \sqrt{196/22} \times \sqrt{484/15}$

(a) 3
(b) 1
(c) 14
(d) 2

Q59. In recognition technology OMR is used, what does M stand for?

(a) Mark
(b) Manipulator
(c) Mirroring
(d) Magnetic

Q60. Solve the following.

$(1 + 1/x)(1 + 1/(x + 1))(1 + 1/(x + 2))(1 + 1/(x + 3)) = ?$

(a) 1/x
(b) (x+4)/x
(c) x + 4
(d) 1 + 1/(x + 4)

Q61. Who among the following personalities has been awarded the Gandhi Peace Prize in 2018 for his/her contribution to leprosy eradication?

(a) Yohei Sasakawa
(b) Jane Addams
(c) Harriet Tubman
(d) Nelson Mandela

Q62. Which of the following states is the least urbanised state of India, as per the census of 2011?

(a) Bihar
(b) Odisha
(c) Himachal Pradesh
(d) Assam

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Q63. The speeds of three trains are in the ratio of 2 : 3 : 5. The amount of time taken by these trains to travel the same distance is in the ratio of:

(a) 2 : 3 : 4
(b) 2 : 3 : 5
(c) 1/2:1/3:1/5
(d) 6 : 12 : 18

Q64. Which of the following is NOT an output device?

(a) Printer
(b) Speaker
(c) Monitor
(d) Scanner

Q65. The Karakoram pass, the mountain pass which lies between India and China, is in close proximity to:

(a) Pathankot
(b) Srinagar
(c) Tawang
(d) Kargil

Q66. Identify the term that does NOT belong to the following series.

A5, F11, K24, P51, T105, Z217

(a) Z217
(b) T105
(c) P51
(d) F11

Q67. The Hornbill festival is a famous tribal festival. It is celebrated in which of the following North-Eastern states of India?

(a) Assam
(b) Nagaland
(c) Arunachal Pradesh
(d) Mizoram

Q68. If (1 + tanA) (1 + tanB) = 2, then what will be the value of tan(A + B)?

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

Q69. The value of $\sqrt{(10 + \sqrt{(221 + \sqrt{(12 + \sqrt{16})})})}$ is:

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

Q70. What is the value of the following expression?

103 - [144 ÷ (12 × 12) + 5 + 12 ÷ (6 - 2) + 10]

(a) 85
(b) 84
(c) 90
(d) 86

Q71. The value of $((5.4)^3 - 0.064)/((5.4)^2 + 2.16 + 0.16)$ is:

(a) 3.6
(b) 3
(c) 5

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(d) 8

Q72. Four persons A, B, C and D completed a task in 2/3 h, 3/4 h, 4/5 h and 1/5 h respectively. Who among the following took the highest amount of time to complete the task?

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

Q73. The value of √0.04 + √1.44 + √1.69 + √0.0009 is:

(a) 2.03
(b) 1.70
(c) 10.3
(d) 2.73

Q74. The first session of Indian National Congress was held in 1885. In which city of India was it held?

(a) Bombay
(b) Madras
(c) Patna
(d) Calcutta

Q75. With reference to GPS, which of the following is correct?

(a) Mountains and building blocks can act as obstacles to GPS signals.
(b) Its full form is Global Placing System.
(c) It has been developed by Russia
(d) Its full form is Galileo Positioning System.

Q76. Where is the world's largest coral reef found?

(a) Chile
(b) Australia
(c) Japan
(d) Philippines

Q77. For a symmetric distribution, the empirical relationship between mean, median and mode is:

(a) Mean > Median > Mode
(b) Mean = Median = Mode
(c) Mode – Mean = 3(Mean – Median)
(d) Mode – Mean = 3(Median – Mean)

Q78. Who was the teacher of Chandragupta Maurya?

(a) Vishnu Gupta
(b) Kalhan
(c) Vishnu Sharma
(d) Skandgupta

Q79. IMF and World Bank were formed in 1944. In which city is their headquarters located?

(a) Geneva
(b) Vienna
(c) New York
(d) Washington DC

Q80. Among A, B, C, D, E, F, and G, A is the mother of B, B is C's sister's son, C is the only son of D, D is the maternal grandmother of B and E is the son-in-law of F. If F has only one daughter and is the husband of D, then how is E related to A?

(a) Husband
(b) Sister's husband

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(c) Son
(d) Mothe's Brother

Q81. Every year 'ease of doing business index' is released. It is released by:
(a) International Monetary Fund (IMF)
(b) World Bank Group
(c) World Economic Forum
(d) Harvard Business School

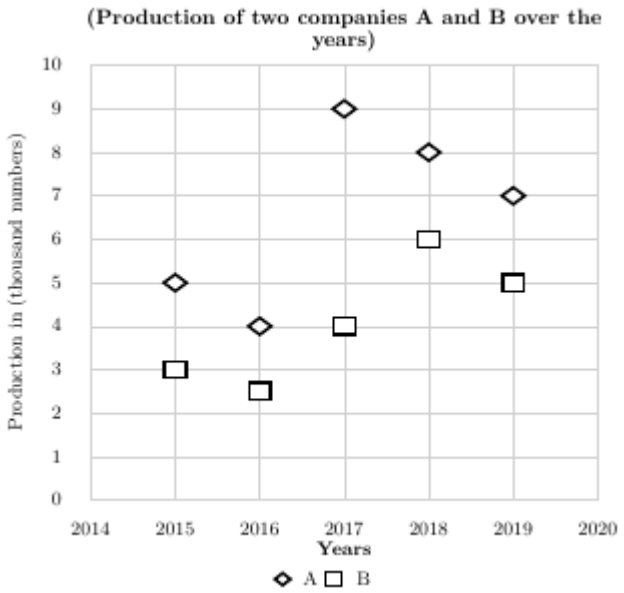
Q82. Deficiency of which of the following causes colour blindness and poor vision?
(a) Vitamin K
(b) Vitamin C
(c) Calcium
(d) Vitamin A

Q83. If $x^3 + 1/(x^3) = 18$, then what will be the value of $x + 1/x$?
(a) 9
(b) 4
(c) 1
(d) 3

Q84. Ulat Bansi is a distinct contribution of which Bhakti poet?
(a) Surdas
(b) Tukaram
(c) Nanak
(d) Kabir

Q85. A, B and C can complete a task in 36, 54 and 72 days respectively. Together they started the task but A left 8 days before the completion of the task while B left 12 days before the completion. The number of days for which C worked is:
(a) 24
(b) 40
(c) 32
(d) 28

Q86. Study the given graph that shows production (in thousand numbers) of two companies, A and B, over 7 years, and answer the following question.

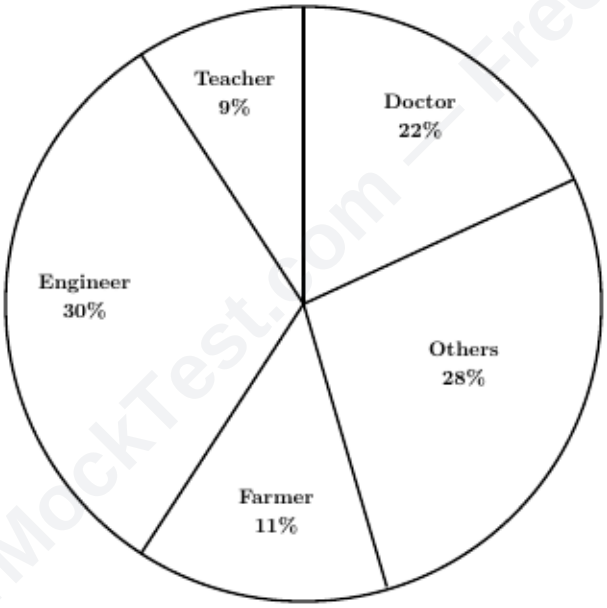


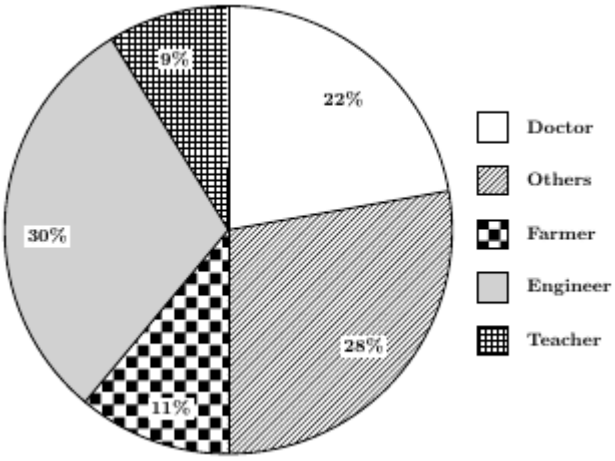
For company B, what is the percentage increase in production from 2017 to 2018?

(a) 20%
(b) 50%
(c) 25%
(d) 15%

Q87. The following pie chart shows the percentage-wise distribution of the number of people of various occupation from different states of India.

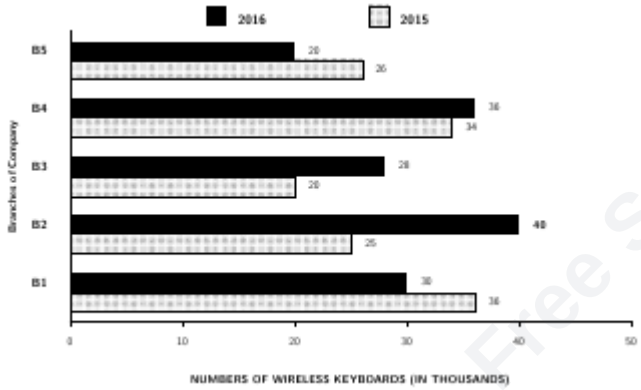
Which of the given options would be the angle at the centre of the pie chart for the Engineer segment?





(a) 108°
(b) 100°
(c) 90°
(d) 95°

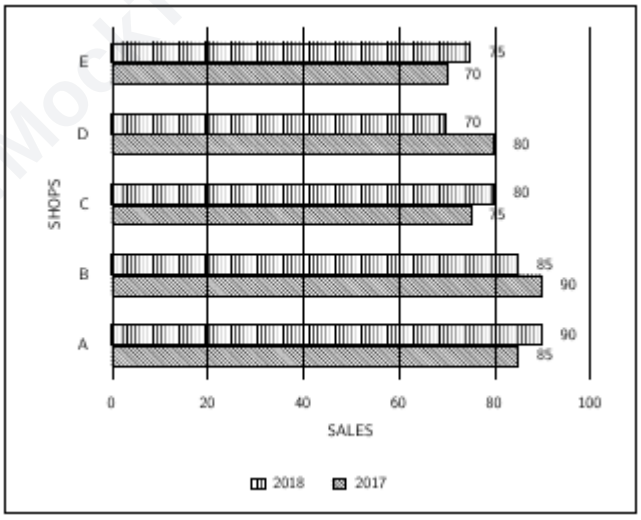
Q88. The given bar graph shows the total number of wireless keyboards (in thousands) produced by five different branches of a company, B1, B2, B3, B4 and B5, in 2015 and 2016. Study the graph and answer the following question.

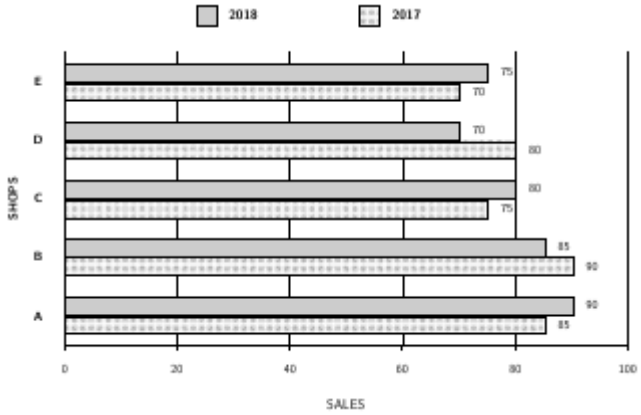


The number of wireless keyboards produced by branch B4 in 2016 is equal to that produced by which branch in 2015?

(a) B1 and B3
(b) Only B2
(c) Only B1
(d) B3 and B5

Q89. The given bar graph shows the sales of inverters of five different shops, A, B, C, D and E, in the years 2017 and 2018.





What is the ratio of the total sales of shop A for both the years to that of shop D for both the years?

(a) 5 : 3
(b) 6 : 5
(c) 7 : 6
(d) 1 : 3

Q90. Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) Hut
(b) Burrow
(c) Cobweb
(d) Den

Q91. Read the given dialogue and answer the question the follows.

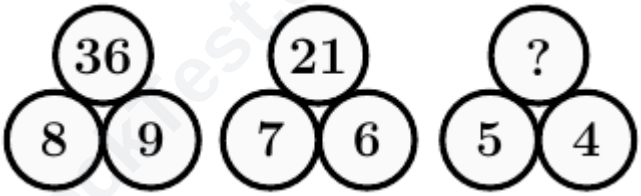
Davy: "Every pancake made by my mother is lip smacking."

Jones: "That's not true. Many pancakes made by your father are also very lip smacking."

What did Jones, apparently, assume regarding Davy's statement?

(a) Davy's father is good for nothing.
(b) Only Davy's mother makes lip-smacking pancakes.
(c) Davy's mother makes lip-smacking pancakes.
(d) Some of the pancakes made by Davy's mother are not lip smacking.

Q92. Study the given pattern carefully and select the number that can replace the question mark (?) in it.



(a) 20
(b) 31
(c) 11
(d) 10

Q93. Four terms have been given, out of which three are alike in some manner and one is different. Select the odd one.

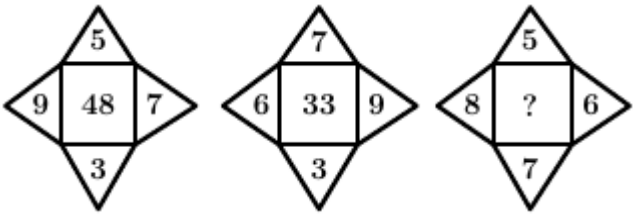
(a) NMLK
(b) FEDC
(c) XWVT
(d) SRQP

Q94. If '+' means 'division', '–' means 'addition', '×' means 'subtraction' and ' ÷ ' means 'multiplication', then what will be the value of the following expression?

([{(20 × 18) - (6/2)} + (5 - 2)])/1

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

Q95. Study the given pattern carefully and select the number from among the given options that can replace the question mark(?).



(a) 11
(b) 13
(c) 6
(d) 18

Q96. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

X did not solve the equation on the black board with a chalk.

Assumptions:

I. The equation was solved on a paper.

II. The equation was solved by X on the black board with a marker.

(a) Only assumption II is implicit.
(b) Both assumptions I and II are implicit.
(c) Neither assumption I nor II is implicit.
(d) Only assumption I is implicit.

Q97. If in a certain code, UNSURE is written as ELGEHU, which of the following options will be written as YNYHM in the same code?

(a) MONEY
(b) ALONE
(c) TELGU
(d) ALARM

Q98. Among A, B, C, D, E, F, G and H, H is the father of G, G is the only brother of F, F is the only sister-in-law of E, E is the mother of D, D is the brother of C and B is the father of H and husband of A. If F is unmarried, then how is D related to A?

(a) Son's Son's Son
(b) Son's Son
(c) Father's Mother
(d) Father's Father

Q99. In a certain code language, '924' means 'they like tomato', '935' means 'we love tomato' and '956' means 'tomato love mango'. Which digit is used for 'mango'?

(a) 9
(b) 4
(c) 6
(d) 2

Q100. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statement:

some balls bounce.

All balls vibrate.

Conclusion:

I. Even the balls that do not bounce, vibrate.

II. The balls that do not bounce, do not necessarily vibrate.

(a) Only conclusion I follows.
(b) Both conclusions I and II follow.
(c) Only conclusion II follows.
(d) Neither conclusion I nor II follows.

ANSWER KEY

1	b	2	c	3	d	4	b	5	b	6	c	7	c	8	a	9	c	10	c
11	d	12	c	13	d	14	b	15	c	16	a	17	a	18	b	19	d	20	b
21	b	22	b	23	b	24	b	25	d	26	c	27	a	28	b	29	a	30	c

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31	a	32	a	33	a	34	b	35	a	36	b	37	c	38	a	39	a	40	b
41	b	42	d	43	a	44	b	45	b	46	b	47	b	48	b	49	b	50	d
51	b	52	b	53	c	54	d	55	b	56	b	57	b	58	b	59	a	60	b
61	a	62	c	63	c	64	d	65	d	66	b	67	b	68	d	69	b	70	b
71	c	72	b	73	d	74	a	75	a	76	b	77	b	78	a	79	d	80	a
81	b	82	d	83	d	84	d	85	a	86	b	87	a	88	c	89	c	90	a
91	b	92	d	93	c	94	a	95	b	96	c	97	d	98	a	99	c	100	a

SOLUTIONS

Q1. Answer: (b) Rs. 500

Given:

Purchase price of TV = Rs. 4,600

Selling price of TV = Rs. 5,406

Profit percentage = 6%

Formula used:

Profit = Selling Price (SP) - Cost Price (CP)

Profit% = (Profit/CP) × 100

CP = Purchase price + Repair Cost

Calculation:

=> Profit = (Profit% × CP) / 100

=> 5,406 - CP = (6 × CP) / 100

=> 540,600 = 6 × CP + 100 × CP

=> 540,600 = 106 × CP

=> CP = 540,600 / 106

=> CP = 5,100

=> CP = Purchase price + Repair Cost

=> 5,100 = 4,600 + Repair Cost

=> Repair Cost = 5,100 - 4,600

=> Repair Cost = Rs. 500

Thus, Rupert spent Rs. 500 on the repairs.

Q2. Answer: (c) Art. 243

The correct answer is Art. 243.

Key Points

• A Gram Sabha may exercise such powers and perform such functions at the village level as the Legislature of a State may, by law, provide.

• A panchayat at the village level shall be elected. in such manner as the Legislature of a State may, by. law, provide.

• A Panchayat at the intermediate level or district level shall be elected by, and from amongst, the elected members thereof.

Additional Information

• According to the Article, 270 taxes were levied and collected by the Union and distributed between the Union and the States.

• The Right to Protection of Life and personal liberty is the main object of Article 21 and it is a right guaranteed against State Action as distinguished from violation of such right by private individuals.

• According to the Article 51 A: develop the scientific temper, humanism and the spirit of inquiry and reform to safeguard public property and to abjure violence

Q3. Answer: (d) 6

Given:

Four cows are tethered to the four corners of a square field of length 28 m

Each cow can just touch the two cows in the adjacent corners

The grass in the area inside the square field that was accessible to the cows was enough to fee them for 22 days

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Concept used:

Area of square = a^2

Area of sector = $\pi r^2 (\theta/360)$

Calculations:

According to the question,

Area of remaining part = Area of square field - Area of 4 sectors

=> $(28)^2 - 4 \times \pi \times (14)^2 \times (90°/360°)$

=> $784 - 4 \times \pi \times 196 \times (1/4)$

=> $784 - (22/7) \times 196$

=> $784 - 22 \times 28$

=> $784 - 616 = 168\ m^2$

Area of the part that is accessible to the cow is 616 m^2 which is enough to feed for 22 days.

=> 22 = 616

=> 1 = 28

=> 1 × 6 = 28 × 6

=> 6 = 168

Therefore It is enough to feed for 6 days.

Q4. Answer: (b) T-Y

The alphabets and their positions are:

First, we will check all the options:

1) W-A:

2) T-Y:

3) M-Q:

4) B-F:

Thus, we can say that every option has the same pattern except the letter cluster T-Y.

Hence, the correct answer is 'option 2'.

Q5. Answer: (b) Jahangir

The correct answer is Jahangir.

Key Points

• Nur-ud-Din Muhammad Salim, known by his imperial name Jahangir.

• He was the fourth Mughal Emperor.

• He ruled from 1605 until his death in 1627.

• He was born on 30 August 1569 in Fatehpur Sikri and died on 28 October 1627 in Rajouri.

• He is famous for his 'golden chain of justice.

• A golden chain having 60 bells and weighing several 'maunds' was fastened between the Shahburj of Agra fort and a stone pillar raised on the banks of river Jamuna.

• He was the Mughal ruler of India who gave permission to the British to establish their first factory in Surat.

Additional Information

• Shah Jahan, Mughal emperor from 1628 to 1658, is perhaps best remembered for the grand monuments constructed during his reign, especially the Taj Mahal and the Motī Masjid (Pearl Mosque) in Agra and the Jāmi? Masjid and Red Fort in Delhi.

• Bahadur Shah Zafar was a noted Urdu poet, having written a number of Urdu ghazals. While some part of his opus was lost or destroyed during the Indian Rebellion of 1857, a large collection did survive and was compiled into the Kulliyyat-i-Zafar.

• Aurangzeb is known for being the emperor of India from 1658 to 1707. He was the last of the great Mughal emperors. Under him the Mughal Empire reached its greatest extent, although his policies helped lead to its dissolution.

Q6. Answer: (c) 21^(st)

According to the given information, we have:

Hence, the position of the faulty lamp from the left end is '21st'

Q7. Answer: (c) 2 years

The correct answer is 2 years.

Key Points

• The United Nations Security Council is one of the six principal organs of the United Nations.
• It is charged with ensuring international peace and security.
• And recommending the admission of new UN members to the General Assembly, and approving any changes to the UN Charter.
• Its headquarter is in New York, United States.
• The Security Council is the United Nations' most powerful body, with "primary responsibility for maintaining international peace and security."
• It has two types of members:
• Five powerful countries sit as "permanent members"
• Ten elected members with two-year terms. They are non-permanent members.
• 10 non-permanent members, five of which are elected each year by the General Assembly for a two-year term.
• In 1963, the General Assembly recommended an amendment to the Charter to increase the membership of the Security Council.

Additional Information

• 5 permanent members with veto power:
• China
• France
• Russian Federation
• United Kingdom of Great Britain and Northern Ireland
• United States of America

Q8. Answer: (a) 15 cm

Given:

The two unequal sides of a rectangle are in the ratio of 3: 4.

The perimeter = 42 cm

Concept used:

Perimeter of Rectangle = 2(l + b)

Diagonal of Rectangle = $\sqrt{(l^2 + b^2)}$

Calculations:

Let the length of unequal sides of the rectangle be = 3x and 4x.

According to the question,

Perimeter of Rectangle = 42 cm

=> 2(3x + 4x) = 42

=> 14x = 42

=> x = 3

Length of unequal sides = 9 cm and 12 cm

Now Diagonal of Rectangle

=> $\sqrt{[(9)^2 + (12)^2]}$

=> $\sqrt{(81 + 144)}$

=> D = $\sqrt{225}$ = 15 cm

Therefore The length of the diagonal will be 15 cm.

Q9. Answer: (c) Mumbai

The correct answer is Mumbai.

Key Points

• National Stock Exchange of India Limited is the leading stock exchange of India, located in Mumbai, Maharashtra.
• It is the world’s largest derivatives exchange in 2021 by the number of contracts traded based on the statistics maintained by the Futures Industry Association, a derivatives trade body.
• It is under the ownership of some leading financial institutions, banks, and insurance companies.
• NSE was established in 1992 as the first dematerialized electronic exchange in the country.
• NSE was the first exchange in the country to provide a modern, fully automated screen-based electronic trading system that offered easy trading facilities to investors spread across the length and breadth of the country.
• Ashishkumar Chauhan is the Managing Director and Chief Executive Officer of NSE.
• The Indian stock exchange BSE and NSE have been engulfed in a series of corruption scandals such as the 1992 Indian stock market scam and others.

Additional Information

• BSE Limited, also known as the Bombay Stock Exchange, is an Indian stock exchange located on Dalal Street in Mumbai.

• Established in 1875 by cotton merchant Premchand Roychand, a Jain businessman, it is the oldest stock exchange in Asia, and also the tenth oldest in the world.

• Shri Ashishkumar Chauhan is the MD & CEO of BSE (Bombay Stock Exchange), the first stock exchange in Asia.

• He is one of the founders of India's National Stock Exchange ("NSE") where he worked from 1992 to 2000.

Q10. Answer: (c) Nuclear power generation plants

The correct answer is Nuclear power generation plants.

Key Points

• Most of the hydrogen in normal water is made by the common hydrogen isotope.

• The water with a heavier hydrogen isotope has different chemical properties.

• Deuterium contains protons and neutrons. As compared to the protium atom, the deuterium atom is very heavy.

• Each hydrogen atom is heavier in heavy water.

• Deuterium oxide is the scientific name for heavy water.

• Nuclear power plants are a type of power plant that uses the process of nuclear fission in order to generate electricity.

• They do this by using nuclear reactors in combination with the Rankine cycle, where the heat generated by the reactor converts water into steam, which spins a turbine and a generator.

Additional Information

• The fertilizer industry is made up of companies who represent the entire supply chain from production to distribution to retail, all working together to deliver fertilizer to farmers in a safe, timely, and sustainable manner.

• The pharmaceutical industry discovers, develops, produces, and markets drugs or pharmaceutical drugs for use as medications to be administered to patients (or self-administered), with the aim to cure them, vaccinate them, or alleviate symptoms.

• At hydropower plants, water flows through a pipe, or penstock then pushes against and turns blades in a turbine to spin a generator to produce electricity.

Q11. Answer: (d) It is located in low earth orbit.

The correct answer is It is located in low earth orbit.

Key Points

• The International Space Station is the largest modular space station currently in low Earth orbit.

• It is a multinational collaborative project involving five participating space agencies: NASA, Roscosmos, JAXA, ESA, and CSA.

• The space station is jointly run by the space agencies of Russia, the U.S., Europe, Japan and Canada.

• The first piece was put in orbit in 1998, and the outpost has been continuously inhabited for nearly 22 years.

• It is used to conduct scientific research in zero gravity and test out equipment for future space journeys.

• The mission of the International Space Station is to enable long-term exploration of space and provide benefits to people on Earth.

• With six state-of-the-art laboratories, the Space Station will be the premiere research facility in space, four times larger and more capable than any previous space station.

Additional Information

• The International Space Station was taken into space piece-by-piece and gradually built in orbit using spacewalking astronauts and robotics.

• Most missions used NASA's space shuttle to carry up the heavier pieces, although some individual modules were launched on single-use rockets.

• Several systems are currently used on board the ISS to maintain the spacecraft's atmosphere, which is similar to the Earth's.

Q12. Answer: (c) Bt Cotton

The correct answer is Bt Cotton.

Key Points

• Bt. Cotton is the only GM crop that can be commercially cultivated in India.

• It was first used in India in the year 2002.

• Genetically modified crops are plants used in agriculture, the DNA of which has been modified using genetic engineering methods.

Additional Information

• The Bt Potato is a genetically engineered potato that has genes added so it will produce the insecticide (Bacillus thuringiensis or Bt toxin) in every cell. Two different types of Bt Potato exist: Potato Tuber Moth Resistant Bt Potato. Colorado Potato Beetle

Resistant Bt Potato.

• Bt Brinjal is a transgenic brinjal created by inserting a gene cry1Ac from the soil bacterium Bacillus thuringiensis into Brinjal.

• GM Mustard a genetically modified hybrid variety of the mustard species Brassica juncea. It was developed by Professor Deepak Pental from the University of Delhi,

Q13. Answer: (d) 10%

Given:

Cost Price of article = Rs. 500

Selling Price = Rs. 550

Formula used:

Gain% = [(SP - CP)/CP] × 100

Calculation:

According to the question

Gain% = [(550 - 500)/500] × 100

=> Gain% = (50/500) × 100

=> Gain% = (1/10) × 100 = 10%

Therefore The percentage gain is 10%.

Q14. Answer: (b) 527

By taking the information from the above statements, we get

Thus, for the word FLY, we have:

Hence, the code language is '527' for the given word.

Q15. Answer: (c) In three years 2,00,000 clusters will be formed.

The correct answer is In three years 2,00,000 clusters will be formed.

Key Points

• The Paramparagat Krishi Vikas Yojana (PKVY)– a traditional farming improvement programme.

• It was launched in 2015.

• It is an extended component of Soil Health Management (SHM) under the Centrally Sponsored Scheme (CSS).

• PKVY aims at supporting and promoting organic farming, reducing in dependence on fertilizers and agricultural chemicals.

• Organic food, thus produced will be linked with modern marketing tools and local markets.

Additional Information

• Objectives:

• The objective is to produce agricultural products free from chemicals and pesticidal residues by adopting eco-friendly, low-cost technologies.

• Promote organic farming among rural youth/ farmers/ consumers/ traders.

• Disseminate the latest technologies in organic farming.

• Utilize the services of experts from the public agricultural research system in India.

• Organize a minimum of one cluster demonstration in a village,

Q16. Answer: (a) Venus

The correct answer is Venus.

Key Points

• Venus is the second planet from the Sun and is named after the Roman goddess of love and beauty.

• As the brightest natural object in Earth's night sky after the Moon, Venus can cast shadows and can be visible to the naked eye in broad daylight.

• Venus is a terrestrial planet.

• The terrestrial planets are the 4 inner rocky worlds in the Solar System: Mercury, Venus, Earth, and Mars.

• The atmosphere of Venus is made up mainly of carbon dioxide, and thick clouds of sulfuric acid completely cover the planet.

• It's the hottest planet in our solar system, even though Mercury is closer to the Sun.

• Solar Orbiter found that Venus' magnetic field extends at least 188,000 miles behind the planet — about the distance from Earth to the Moon.

• The planet Venus rotates clockwise. The rotation of Venus on its axis is somewhat unusual.

Additional Information

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• Jupiter is the fifth planet from the Sun and the largest in the Solar System. It is a gas giant with a mass more than two and a half times that of all the other planets in the Solar System combined, but slightly less than one-thousandth the mass of the Sun.

• Saturn is the sixth planet from the Sun and the second-largest in the Solar System, after Jupiter. It is a gas giant with an average radius of about nine and a half times that of Earth.

• Mars is the fourth planet from the Sun and the second-smallest planet in the Solar System, being larger than only Mercury.

Q17. Answer: (a) Mundaka Upanishads

The correct answer is Mundaka Upanishads.

Key Points

• The words Satyameva Jayate from Mundaka Upanishad.

• The saying of the Indian National Emblem is 'Satyamev Jayate' or 'Truth Alone Triumphs.

• It is written in the Devanagari script.

• The word alludes to an antiquated Sanskrit Vedic content, which is inserted inside Atharva Veda.

• It had been embraced as the public aphorism of India on the date of 26 January 1950.

• It is engraved in the Devanagari script at the foundation of the Lion Capital of Ashoka and furthermore frames a basic piece of the Indian public seal.

• The image and the words "Satyameva Jayate" have been engraved on more than one side of all Indian money just as the public records.

Additional Information

• The Puranas are religious texts composed in Sanskrit, orally narrated for centuries before being written down from the 2nd century CE onwards. They are part of the sacred literature of the Hindu faith that also comprises the Vedas, Brahmanas, Aranyakas, Upanishads, and the great epics.

• Bhagavadgita is an episode recorded in the great Sanskrit poem of the Hindus, the Mahabharata. It occupies chapters 23 to 40 of Book VI of the Mahabharata and is composed in the form of a dialogue between Prince Arjuna and Krishna, an avatar (incarnation) of the god Vishnu.

• The Jatakas are a voluminous body of literature native to South Asia which mainly concern the previous births of Gautama Buddha in both human and animal form. According to Peter Skilling, this genre is "one of the oldest classes of Buddhist literature."

Q18. Answer: (b) Bay of Bengal

The correct answer is Bay of Bengal.

Key Points

• Super Cyclonic Storm Amphan was a powerful and catastrophic tropical cyclone that caused widespread damage in Eastern India.

• Specifically in West Bengal and Odisha, and in Bangladesh, in May 2020.

• The cyclone produced sustained winds of 112 km/h (70 mph) and gusts to 190 km/h (120 mph)

• Wind speed along coastal areas was measured up to 150–160 km/h (93–99 mph).

• The causes of the Amphan cyclone included the formation of an area of low pressure over the Bay of Bengal about 1020 km to the southeast of Visakhapatnam.

Additional Information

• The Mediterranean Sea has been the focal point of western civilization. It is an area rich in history and has played critical roles in the development of shipping and trade, as a resource for feeding growing populations.

• The Persian Gulf is located in the Middle East between Iran and the Arabian Peninsula. It is an extension of the Indian Ocean.

• The Arabian Sea is a region of the northern Indian Ocean bounded on the north by Pakistan, Iran and the Gulf of Oman, on the west by the Gulf of Aden.

Q19. Answer: (d) R. K. Narayan

The correct answer is R. K. Narayan.

Key Points

• Rasipuram Krishnaswami Iyer Narayanaswami was an Indian writer.

• He is known for his work set in the fictional South Indian town of Malgudi.

• He was a leading author of early Indian literature in English along with Mulk Raj Anand and Raja Rao.

• In 1980 he was awarded the A.C. Benson Medal by the Royal Society of Literature.

• In 1981 he was made an Honorary Member of the American Academy and Institute of Arts and Letters.

• He was also nominated for the Nobel Prize for Literature multiple times.

• R.K. Narayan died in 2001.

Additional Information

• Girish Karnad was an Indian actor, film director, Kannada writer, playwright and a Jnanpith awardee, who predominantly worked in South Indian cinema and Bollywood.

• Babukodi Venkataramana Karanth was a film and theatre personality from India. Throughout his life he was director, actor and musician of modern Indian theatre both in Kannada as well as Hindi, and one of the pioneers of Kannada and Hindi new wave cinema.

• Udupi Rajagopalacharya Ananthamurthy was an Indian contemporary writer and critic in the Kannada language. He was born in Thirtahalli Taluk and is considered one of the pioneers of the Navya movement.

Q20. Answer: (b) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• Kanha Tiger Reserve, also called Kanha National Park, is one of the tiger reserves of India.

• It is the largest national park of Madhya Pradesh, a state in the heart of India.

• The present-day Kanha area is divided into two sanctuaries, Hallon and Banjar, of 250 and 300 km2 respectively.

• Kanha National Park was created on 1 June 1955 and in 1973 was made the Kanha Tiger Reserve.

• Today it stretches over an area of 940 km² in the two districts Mandla and Balaghat.

Additional Information

• The park has a significant population of the Royal Bengal tiger, Indian leopards, the sloth bear, barasingha, and Indian wild dog.

• The forest depicted in the famous novel by Rudyard Kipling, The Jungle Book is based on jungles including this reserve.

• It is also the first tiger reserve in India to officially introduce a mascot, “Bhoorsingh the Barasingha”.

Q21. Answer: (b) 37

BODMAS Rule

According to the given information,

del = 1^(st)number + (3 x 2^(nd) number) -------- (i)

Given: (4 del 5) del 6

Applying (i), we will get,

= [4 + (3 × 5)] del 6

Using BODMAS Rule, we get,

= [4 + 15] del 6

Solving the bracket, we will get,

= 19 del 6

Again applying (i), we will get,

= 19 + (3 × 6)

Using BODMAS Rule, we get,

= 19 + 18

= 37

Hence, the value of the given expression is '37'.

Q22. Answer: (b) 16Q12

The logic here is:

The first line numbers are all prime numbers.

Thus, the odd term is '16Q12' which does not follow the pattern.

Hence, the correct answer is 'option 2'.

Q23. Answer: (b) United Provinces

The correct answer is the United Province

Key Points

• The province with the maximum representation in the Constituent Assembly of India on that date was United Provinces

• Uttar Pradesh, then known as the United Provinces, was one of the most populous and politically active regions in India.

• Its demographic weight translated into a substantial number of representatives.

• The United Provinces had a rich history of political activism, social reform movements, and intellectual discourse.

• Several influential leaders from Uttar Pradesh played pivotal roles in shaping India’s destiny.

• Notable figures like

• Pandit Jawaharlal Nehru, Sardar Patel, and Dr. Rajendra Prasad were actively involved in the Constituent Assembly proceedings.

Additional Information

• Constituent Assembly of India

• The Constituent Assembly was specifically elected to draft the Indian Constitution.

• It was formed after India gained independence from British colonial rule in 1947.

• The assembly consisted of 299 members, representing various regions, communities, and ideologies.

Q24. Answer: (b) (2n + 1)/3

Given:

Values = 1, 2, 3, 4, ..., n

Frequencies = 1, 2, 3, ..., n

Concept used:

Mean = $(\sum f_i x_i)/(\sum f_i)$

Calculation:

According to the question,

$\sum fixi = (1 \times 1) + (2 \times 2) + (3 \times 3) + ... (n \times n)$

Where, f_i = Frequency, x_i = Observation

=> $\sum fixi = 1^2 + 2^2 + 3^2 + ... n^2$

=> $\sum fixi = ([n(n+1)(2n+1)])/6$

Now for Frequencies

$\sum fi = 1 + 2 + 3 + ... + n$

=> $\sum fi = ([n(n + 1)])/2$

Accordingly,

Mean = $(([n(n+1)(2n+1)])/6)/(([n(n + 1)])/2)$

=> Mean = $(([n(n+1)(2n+1)])/3)/(n(n + 1))$

=> Mean = $(n(n+1)(2n+1))/(3[n(n + 1)])$

=> Mean = (2n+1)/3

Therefore The mean of the values will be (2n + 1)/3.

Q25. Answer: (d) 10%

Given:

Time = 10 years

Amount = 2(Principle)

Concept used:

Simple interest = $(P \times R \times T)/100$

Amount = SI + P

Calculations:

According to the question,

Amount = $P + [(P \times R \times T)/100]$

=> $2P = P + [(P \times R \times 10)/100]$

=> $P = (P \times R \times 10)/100$

=> R = 100/10 = 10%

Therefore The rate is 10%.

Q26. Answer: (c) PPM

The correct answer is PPM.

Key Points

• PPM stands for Paper per minute which is used to measure the printing speed of both inkjet and laser printers.

• The abbreviation is used in marketing to describe printer speed.

• Most printers include a PPM rating for both black and color documents.

• These speed measurements are typically listed in the printer's technical specifications.

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Additional Information

• Cost per mille also called cost per thousand, is a commonly-used measurement in advertising. It is the cost an advertiser pays for one thousand views or impressions of an advertisement.

• LPM is an abbreviation of liters per minute (l/min). When used in the context of a particle counter's flow rate, it is a measurement of the velocity at which air flows into the sample probe.

Q27. Answer: (a) Quicksilver

The correct answer is Quicksilver.

Key Points

• Mercury is a chemical element.

• Its symbol is Hg and the atomic number 80.

• It is also known as quicksilver and was formerly named hydrargyrum from the Greek words.

• Mercury is used in many scientific instruments such as thermometers and barometers.

• Due to its electrical conductivity, it is used to make silent switches, while its vapor form makes it useful in streetlights and fluorescent lamps.

• It is a liquid metal.

Additional Information

• Zinc White (PW4) is a cool, semi-transparent white pigment composed of zinc oxide which has been used in artist paints since the 18th century. It is commonly found in paints labeled as Mixing White and Transparent White.

• Potassium carbonate is the primary component of potash and the more refined pearl ash or salts of tartar.

• White lead is, heavy, white substance, poisonous, insoluble in water, and extensively used as a white pigment and base in paints. It is one of the oldest paint pigments used by humans. Chemically, it is basic lead carbonate, a mixture of lead carbonate and lead hydroxide.

Q28. Answer: (b) [figure]

Given: Ant, Insect, Fox, Mammal

As, we know that Ant is an Insect and Fox is a Mammal.

Since, both ant and fox are not related to each other so it is represented separately.

Thus, the logical Venn diagram is:

Hence, 'option 2' is the correct answer.

Q29. Answer: (a) 16, 15

Logic: 1st figure total side x 4 and 2nd figure total sides x 5

For 1st row:

Here we have total sides = 6. So, we have => 6 × 4 = 24

Here we have total sides = 3. So, we have => 3 × 5 = 15

For 2nd row we have:

Here we have total sides = 5. So, we have => 5 × 4 = 20

Here we have total sides = 4. So, we have => 4 × 5 = 20

Similarly, for the 3rd row, we have:

Here we have total sides = 4. So, we have => 4 × 4 = 16

Here we have total sides = 3. So, we have => 3 × 5 = 15

Thus, the correct answer is:

Hence, the correct answer is 'option 1'.

Q30. Answer: (c) 25%

Given:

Principal = Rs 16,000

Time = 2 years

Difference between CI and SI = Rs 1000

Rate of interest is same for both CI and SI.

Concept Used:

Simple Interest = (P× R× T)/100

Compound Interest = P(1+r/100)^t-P

Calculation:

=> Putting the values in the formula, we get

=> CI – SI = 1000

=> $16000(1+r/100)^2-16000-(16000\times r\times 2)/100=1000$

=> $16000[((100+r)^2)/10000-1-2r/100]=1000$

=> $16000[(10000+r^2+200r-10000-200r)/10000]=1000$

=> $8/5r^2=1000$

=> $r^2=(1000\times 5)/8=125\times 5=625$

=> $r=\sqrt{625}=25\%$

Therefore, the rate of interest per annum is 25%.

Q31. Answer: (a) 137/11%

Given:

Atulit buys an old bicycle for Rs. 4,000

He spends Rs. 400 towards its repairs.

He sells the bicycle for Rs. 5,000

Concept used:

Profit% = [(S.P - C.P)/C.P] × 100

Calculations:

Total cost price = 4000 + 400 = Rs. 4400

According to the question,

P% = [(5000 - 4400)/4400] × 100

=> P% = [600/4400] × 100

=> P% = 0.13636 × 100 = 13.636 or 137/11%

Therefore His percentage gain is 137/11%.

Q32. Answer: (a) 144°

Given:

The angles of a quadrilateral are in the ratio of 1 : 3 : 4 : 7

Concept used:

Sum of all the angles of a quadrilateral is 360°

Calculation:

Let all the angles be = x, 3x, 4x, and 7x

According to the question,

360 = x + 3x + 4x + 7x

=> 360 = 15x

=> x = 360/15 = 24°

Now the difference between the largest and the smallest angle

=> 7x - x

=> 7 × (24) - 24

=> 168 - 24 = 144°

Therefore The difference between the largest and the smallest angle is 144°.

Q33. Answer: (a) Article 18

The correct answer is Article 18.

Key Points

• Article 18 talks about the abolition of titles.

• It says No title, not being a military or academic distinction, shall be conferred by the State.

• No citizen of India shall accept any title from any foreign State.

• Everyone has the right to freedom of thought, conscience, and religion.

• This right includes the freedom to change his religion or belief and freedom.

• Either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

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Additional Information

• Article 25 gives Freedom of conscience and free profession, practice, and propagation of religion.

• Article 23 in The Constitution Of India 1949. 23. Prohibition of traffic in human beings and forced labor.

• Article 22 is one such Fundamental Right that safeguards the rights of individuals who have been arrested and detained for committing an offense.

Q34. Answer: (b) Nagpur

Here, we have the state and its winter capital

Logic → State : Winter Capital

So, for Himachal Pradesh : Dharamshala → Dharamshala is called the winter capital of Himachal Pradesh.

Similarly for Maharashtra : ? → Nagpur is called the winter capital of Maharashtra.

Thus, the missing word is 'Nagpur'.

Hence, the correct answer is 'option 2'.

Q35. Answer: (a) 2 - √3

Given:

(tan 45° - tan 30°)/(1 + tan 45° tan 30°)

Concept used:

tan 30° = 1/√3

tan 45° = 1

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

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

Calculation:

(tan 45° - tan 30°)/(1 + tan 45° tan 30°)

=> ([1 - (1/(√3))])/([1 + 1(1/(√3))])

=> ([(√ 3 - 1)/(√ 3)])/([(√ 3 + 1)/(√ 3)])

=> (√3 - 1)/(√3 + 1) ...[multiplying (√3 - 1) to both numerator and denominator]

=> ([(√3 - 1)(√3 - 1)])/([(√3 - 1)(√3 + 1)])

=> ([$(√3 - 1)^2$])/([$(√3)^2 - (1)^2$])

=> ([3 - 2(√3)1 + 1])/([3 - 1])

=> (4 - 2√3)/2

=> (2(2 - √3))/2 = (2 - √3)

Therefore The value of the given equation is (2 - √3).

Q36. Answer: (b) Carbon dioxide

The correct answer is Carbon dioxide.

Key Points

• The main ingredient in sweetened soft drinks is water; they are about 90 percent carbonated water.

• Carbonated water is water that has been infused with carbon dioxide gas under pressure.

• This produces a bubbly drink that's also known as sparkling water, club soda, soda water, seltzer water, and fizzy water.

• Apart from seltzer water, carbonated waters usually have salt added to improve their taste.

• Carbonated beverage consumption has been linked with diabetes, hypertension, and kidney stones, all risk factors for chronic kidney disease.

Additional Information

• Nitrogen is important to the chemical industry. It is used to make fertilizers, nitric acid, nylon, dyes, and explosives. To make these products, nitrogen must first be reacted with hydrogen to produce ammonia. This is done by the Haber process.

• Hydrogen can be used in fuel cells to generate electricity, or power and heat. Today, hydrogen is most commonly used in petroleum refining and fertilizer production, while transportation and utilities are emerging markets.

• Freon is a non-combustible gas that is used as a refrigerant in air conditioning applications. This freon undergoes an evaporation process over and over again to help produce cool air that can be circulated throughout your AC system

Q37. Answer: (c) Winston Churchill

The correct answer is Winston Churchill.

Key Points

• The Cripps Mission was sent by the British government to India in March 1942 to obtain Indian cooperation for the British war efforts in the 2nd World War.

• It was headed by Sir Richard Stafford Cripps, a labor minister in Winston Churchill's coalition government in Britain.

• Cripps Mission was sent by the British Government in March 1942 to India with the key objective to secure Indian cooperation and support for British War Efforts.

Additional Information

• Clement Richard Attlee, 1st Earl Attlee was a British politician who served as Prime Minister of the United Kingdom from 1945 to 1951 and Leader of the Labour Party from 1935 to 1955.

• James Ramsay MacDonald was a British politician who served as Prime Minister of the United Kingdom, the first who belonged to the Labour Party, leading minority Labour governments for nine months in 1924 and again between 1929 and 1931.

• Stanley Baldwin, 1st Earl Baldwin of Bewdley was a British Conservative Party politician who dominated the government of the United Kingdom between the world wars, serving as Prime.

Q38. Answer: (a) 9/25 or 16/25

Given:

$\sqrt{(x/(1 - x))} + \sqrt{((1 - x)/x)} = 25/12$

Concept Used:

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

Calculation:

=> Let $t = \sqrt{(x/(1-x))}$, so $1/t=\sqrt{((1-x)/x)}$.

=> Putting the values in the equation, we get

=> $t+1/t=25/12$

=> $(t^2+1)/t=25/12$

=> $12t^2-25t+12=0$

=> Splitting the middle term, we get

=> $12t^2-16t-9t+12=0$

=> $4t(3t-4)-3(3t-4)=0$

=> $(4t-3)(3t-4)=0$

=> $t=3/4$ or $4/3$

=> Equating with the value, we get

=> $3/4=\sqrt{(x/(1-x))}$

=> Squaring both sides, we get

=> $x/(1-x)=9/16$

=> $16x=9-9x$

=> $16x + 9x = 9$

=> $x=9/25$

=> Equating with the second value of t, we get

=> $4/3=\sqrt{(x/(1-x))}$

=> $16/9=x/(1-x)$

=> $16-16x=9x$

=> $16x + 9x = 16$

=> $x=16/25$

Therefore, the possible values of x can be 9/25 or 16/25.

Q39. Answer: (a) [figure]

Here, we are given three words: Swimming, Cycling, Exercises

As we know, Swimming (S) and Cycling (C) are comes under Exercises (E).

So, we will check all the options as:

1)

Thus, we have S and C in the circle E.

2)

This is not possible as all are not connected to each other.

3)

This is not possible, as some E are not some S, and some S are not some C.

4)

This is impossible, as C and S are not related to each other but are related to E.

Hence, the correct answer is 'option 1'.

Q40. Answer: (b) 1^(st) January 2015

The correct answer is 1st January 2015.

Key Points

• The NITI Aayog was formed by a resolution.

• It was passed by the Union Cabinet on 1st January 2015.

• By forming the NITI Aayog the Planning Commission Of India was scraped immediately.

• The full form of NITI is National Institution for Transforming India.

• It is the 'Think Tank' of the Government of India

• The Governing Council of NITI has Prime Minister Narendra Modi as its Chairman and also has the Chief Ministers of all states and Lt. Governors of all union territories.

Additional Information

• NITI AAyog

• NITI Aayog has the twin mandate to oversee the adoption and monitoring of the SDGs in the country and promote competitive and cooperative federalism among States and UTs.

• The task at hand for NITI Aayog is not just to periodically collect data on SDGs but to proactively realise the goals and targets.

Q41. Answer: (b) 144

BODMAS Rule:

Given:

Logic = Sides of outer image [(4 + sides of hexagon) + (3 + sides of pentagon) + (2 + sides of rhombus)]

= 6 × [(4 + 6) + (3 + 5) + (2 + 4)]

Applying the BODMAS rule, we will get,

= 6 × [(10) + (8) + (6)]

= 6 × [24]

= 144

Thus, the answer to the given question is 144.

Hence, the correct answer is 'option 2'.

Q42. Answer: (d) National Payments Corporation of India

The correct answer is National Payments Corporation of India.

Key Points

• The NPCI was founded on 2008 for the operation of retail payments in India.

• NPCI exercises this role through its wing IDRBT (Institute for Development of Research in Banking Technology).

• IDRBT created a massive network called National Financial Switch in the year 2004 for linking all the ATMs in India.

• The NPCI provides a variety of services are Rupay: A domestic card scheme, BHIM: Unified payment interface, Check truncation system and Aadhar enabled payment system.

Additional Information

• Indian Bank Association (IBA) is formed in 1946.

• It is a representative body of management of banking in India.

• IBA was formed for the development, coordination, and strengthening of Indian banking, and to assist the member banks in various ways.

• National Securities Depository Limited (NSDL) is a financial organization created to hold securities such as bonds, shares etc. in the form of physical or non-physical certificates i.e. in dematerialized format.

• These securities are held in depository accounts such as funds held in bank accounts.

• NSDL is one of the largest Depositories in the World.

• It was established in August 1996.

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Q43. Answer: (a) GHI : TSR

The alphabets and their corresponding (reverse) are as:

Given: DMO : WNL

First we will check all the options:

1) GHI : TSR

This is true.

2) CFH : XUT

which is not equal to XUT. This is not true.

3) DQG : ELP

which is not equal to ELP. This is not true.

4) ZAT : EGD

which is not equal to EGD. This is not true.

Hence, the correct answer is 'option 1'.

Q44. Answer: (b) 6 km

Given:

Speed of A = 3 km/h

Speed of B = 4 km/h

Time = 6h

Concept used:

Distance = Speed × Time

Calculation:

Distance traveled by A = 3 × 6 = 18 km

Distance traveled by B = 4 × 6 = 24 km

According to the question, after 6 hours

Difference between them = 24 - 18 = 6 km

Therefore The distance between them after 6 h will be 6 km.

Q45. Answer: (b) 336

The logic here is:

Hence, the missing number is '336'.

Q46. Answer: (b) 31

Given:

Numbers less than 10000 are there which are exactly divisible by 21, 35 and 63

Calculations:

LCM (21, 35, 63) = 315

The numbers less than 10,000 which are divisible by 315 i.e. the integral part when 10,000 is divided by 315 is 31.

Therefore 31 numbers are divisible by (21, 35 and 63).

Q47. Answer: (b) 5 : 12

Given:

The selling price of an article is 3 times the discount offered

The percentage of the discount is equal to the percentage profit

Concept used:

Discount = MP − SP

D% = [(MP - SP)/MP] × 100

P% = [(SP - CP)/CP] × 100

Calculations:

SP = 3 × discount offered

=> S.P = 3(MP − SP)

=> S.P = 3M.P − 3S.P

=> 4S.P = 3 M.P

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=> M.P = 4SP/3

According to the question,

D% = P%

=> [(MP - SP)/MP] × 100 = [(SP - CP)/CP] × 100

=> [(4SP/3 - SP)/(4SP3)] × 100 = [(SP - CP)/CP] × 100

=> [(4SP - 3SP)/3 ÷ (4SP/3)] × 100 = [(SP - CP)/CP] × 100

=> 1/4 = (SP/CP) - 1

=> SP/CP = 1/4 + 1

=> SP = (5/4)CP

MP = 4/3 SP =(4/3)(5/4)CP = 5/3CP

Now Ratio of discount to C.P

D/CP = (MP - SP)/CP

=> D/CP = (5/3CP - 5/4CP)/CP

=> D/CP = 5CP(1/3 - 1/4)/CP

=> D/CP = 5(4 - 3)/12 = 5/12

=> D : CP = 5 : 12

Therefore The ratio of the discount offered to the cost price is 5 : 12.

Q48. Answer: (b) Russia

The Corrrect Answer is Russsia.

Key Points

• The 2018 FIFA World Cup is scheduled to take place in Russia from 14 June to 15 July 2018.

• It was awarded the hosting rights in 2010.

• This will be the first World Cup held in Europe since 2006.

• The tournament will involve 32 national teams; 31 teams determined through qualifying competitions and the automatically qualified host team.

• A total of 64 matches will be played across 12 venues located in 11 cities.

Q49. Answer: (b) Michael Phelps

The correct answer is Michael Phelps.

Key Points

• Michael Fred Phelps II is an American former competitive swimmer.

• He is the most successful and most decorated Olympian of all time with a total of 28 medals.

• Phelps also holds the all-time records for Olympic gold medals, Olympic gold medals in individual events, and Olympic medals in individual events.

• He was born on 30 June 1985 in Baltimore, Maryland, United States.

Additional Information

• Mark Andrew Spitz is an American former competitive swimmer and nine-time Olympic champion. He was the most successful athlete at the 1972 Summer Olympics in Munich, winning seven gold medals, all in world record time.

• Kathleen Genevieve Ledecky is an American competitive swimmer. She has won six Olympic individual gold medals and 14 world championship individual gold medals, the most in history for a female swimmer.

• Ryan Steven Lochte is an American professional swimmer and 12-time Olympic medalist. Along with Natalie Coughlin, Dara Torres, and Jenny Thompson, he is the second-most decorated swimmer in Olympic history measured by total number of medals, behind only Michael Phelps.

Q50. Answer: (d) It is a fresh water lake

The correct answer is It is a fresh water lake.

Key Points

• The Great Rann of Kutch is a salt marsh in the Thar Desert in the Kutch District of Gujarat, India.

• It is about 7500 km² in the area and is reputed to be one of the largest salt deserts in the world.

• This area has been inhabited by the Kutchi people.

• The Rann of Kachchh is famous for its white salty desert sand and is reputed to be the largest salt desert in the world.

• 'Rann' means desert in Hindi which in turn is derived from the Sanskrit word 'Irina' which also means desert

• Great Rann of Kutch has not a fresh water lake.

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Additional Information

• The low-lying mudflats of the White Rann fill with water during the wet season (June-September) and then dry out over the rest of the year.

• By December, once evaporation has done its work, the saline crust hardens to form the signature luminous white color.

Q51. Answer: (b) C > A < E

Given: A < B < C > D < E > A

So, from this we can say that, A < B < C and C > D or D < C

Also, we have E > A or A < E

First we will check all the options:

1) A < D < B

=> A < B and D < C.

This is not correct because we can not establish the relation between B and D.

2) C > A < E

=> A < B < C, this means A < C or C > A

And, A < E is also true.

This is correct.

3) B > A > E

=> A < B this means B > A

Also, E > A and not A > E

This is not correct.

4) E > C > D

=> E > A and C > D

This is not correct because we can not establish the relation between C and E.

Hence, the correct answer is 'option 2'.

Q52. Answer: (b) 5,625

Given:

60% of 40% of 32% of an amount is Rs. 432.

Calculations:

Let the amount be 'x'

According to the question,

60% of 40% of 32% of x = Rs. 432

=> [(60/100) × (40/100) × (32/100)]x = 432

=> [0.60 × 0.40 × 0.32] × x = 432

=> 0.0768 × x = 432

=> x = 432/0.0768 = Rs. 5625

Therefore The amount is Rs. 5625.

Q53. Answer: (c) Sarnath

The correct answer is Sarnath.

Key Points

• The Lion Capital of Ashoka is the capital, or head, of a column, erected by the Mauryan emperor Ashoka in Sarnath, India, c. 250 BCE.

• Its crowning features are four life-sized lions set back to back on a drum-shaped abacus.

• The national emblem is an adaptation of the Lion Capital, originally found atop the Ashoka Column at Sarnath.

• The capital has four Asiatic lions—symbolizing power, courage, pride, and confidence—seated.

• Ashoka the Great, was an Indian emperor of the Maurya Empire, son of Bindusara.

• He ruled almost the entire Indian subcontinent from c. 268 to 232 BCE.

• Ashoka promoted the spread of Buddhism across ancient Asia

Additional Information

• The capital had five components:

• The shaft (now broken into many parts)

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• A lotus base bell.
• A drum on the base bell with 4 animals proceeding clockwise (abacus)
• Figures of 4 lions.
• The crowning part, a large wheel (this is also broken and displayed at the museum)

Q54. Answer: (d) 252 s

Given:

A, B and C begin together to move around a circular stadium and they completed their revolution in 42 s, 63 s and 84 s respectively

Calculations:

According to the question,

They will meet together at starting point after,

LCM of (42, 63, 84) seconds.

=> 84 = 2 × 2 × 3 × 7

=> 42 = 2 × 3 × 7

=> 63 = 3 × 3 × 7

LCM = 2 × 2 × 3 × 3 × 7 = 252 seconds

Therefore They will meet together at starting point after 252 sec.

Q55. Answer: (b) 3

Given:

$x + y + z = 0$

Concept Used:

If $x + y + z = 0$, then $x^3 + y^3 + z^3 = 3xyz$

Calculation:

=> We have to find, $(x^2)/yz + (y^2)/zx + (z^2)/xy$

=> Multiplying each of the term by x/x,y/y,z/z respectively, we get

=> $(x^3)/xyz + (y^3)/yzx + (z^3)/zxy$

=> $(x^3+y^3+z^3)/xyz=3xyz/xyz=3$

Therefore, the required value of $(x^2)/yz + (y^2)/zx + (z^2)/xy$ is 3

Q56. Answer: (b) 36

Logic: Number of corners of outer figure × Number of figure in inner figure × number inside the figure = Final Answer

4*4*3=48

3*4*5=60

3*3*4=36

So, we have

=> 4 × 4 × 3 = 48

And,

=> 4 × 3 × 5 = 12

Similarly we have, each time the answer has 4 less than the previous one.

=> 3 × 3 × 4 = 36

Hence, the correct answer is '36'

Q57. Answer: (b) Rice-wheat-coarse cereals-pulses

The correct option is Rice-wheat-coarse cereals-pulses.

Key Points

• India ranks second worldwide in farm outputs.
• Agriculture sector contributed 17–18% to country's GDP in 2018.
• India is the second-largest producer of wheat and rice in the world.
• West Bengal is the largest producer of rice in India.
• Uttar Pradesh is the state with maximum production of wheat.

Additional Information

• China is the largest producer of Rice in the world.
• Largest producer of Wheat is China with 29% of the total production in the world.
• Cuba is known as the 'Sugar Bowl of the world'.
• Darjeeling tea, Mysore betel leaf, Odisha rasgulla and Kashmir saffron are some of the products which are given GI tags in India.

Q58. Answer: (b) 1

Given:
√225/14 × √196/22 × √484/15
Calculation:
√225/14 × √196/22 × √484/15
=> (15/14) × (14/22) × (22/15)
=> (15/22) × (22/15) = 1
Therefore The value of the given expression is 1.

Q59. Answer: (a) Mark

The correct option is Mark.
Key Points
• OMR stands for Optical Mark Recognition.
• The first mark sense scanner was the IBM 805 Test Scoring Machine.
• The first successful optical mark-sense scanner was developed by Everett Franklin Lindquist.
• Some applications of OMR are:
• Data compilation
• Consumer surveys
• Lotteries and voting
• Geocoding etc.
Additional Information
• OCR is the electronic or mechanical conversion of images of typed, handwritten or printed text into machine-encoded text.
• Facial Recognition system is a technology capable of matching a human face from a digital image or a video frame against a database of faces.
• Gesture recognition is a topic in computer science and language technology with the goal of interpreting human gestures via mathematical algorithms.
• Pattern recognition is the automated recognition of patterns and regularities in data.

Q60. Answer: (b) (x+4)/x

Given:
(1 + 1/x)(1 + 1/(x + 1))(1 + 1/(x + 2))(1 + 1/(x + 3)) = ?
Calculation:
=> (1 + 1/x)(1 + 1/(x + 1))(1 + 1/(x + 2))(1 + 1/(x + 3))
=> [(x + 1)/x] × [((x + 1) + 1)/(x + 1)] × [((x + 2) + 1)/(x + 2)] × [((x + 3) + 1)/(x + 3)]
=> [(x + 1)/x] × [(x + 2)/(x + 1)] × [(x + 3)/(x + 2)] × [(x + 4)/(x + 3)]
=> [(x + 2)/x] × [(x + 3)/(x + 2)] × [(x + 4)/(x + 3)]
=> [(x + 3)/x] × [(x + 4)/(x + 3)] = (x + 4)/x
Therefore The value of the given equation is (x + 4)/x.

Q61. Answer: (a) Yohei Sasakawa

The correct option is Yohei Sasakawa.
Key Points
• He is the chairman of The Nippon Foundation, the World Health Organization Goodwill Ambassador for Leprosy Elimination.
• He is Japan's Ambassador for the Human Rights of People Affected by leprosy.
• He was awarded 2017 Gandhi Peace Prize for his contributions towards leprosy eradication in India.
• He launched the "Seabed 2030", an initiative to map the world's ocean floor by the year 2030.
• He also won 2006 International Gandhi Award.
Additional Information

• Jane Addams
• Laura Jane Addams was born on September 6, 1860 and died on May 21, 1935.
• She was an American settlement activist, reformer, social worker, sociologist, public administrator and author.
• In 1931, she became the first American woman to be awarded the Nobel Peace Prize.
• Harriet Tubman
• Harriet Tubman was an American abolitionist and social activist lived from March, 1822 to March, 1913.
• She was also known as 'Minty' or 'Moses'.
• She is known for 'freeing enslaved people' from slavery.
• Nelson Mandela
• Nelson Rolihlahla Mandela (18 July 1918 – 5 December 2013) was a South African anti-apartheid activist.
• He was the 1st President of South Africa from 1994 to 1999.
• He is also known as the "Gandhi of South Africa".

Q62. Answer: (c) Himachal Pradesh

The correct option is Himachal Pradesh.

Key Points

• According to the census of 2011 Himachal Pradesh is the least urbanized state of India.
• Only 10.03% of total population lives in urban areas.
• It is followed by Bihar with 11.29% of total population living in cities.
• Tamil Nadu continues to be the most urbanized state with 48.4% of the population living in urban areas.
• Mumbai is the most urbanized city of India followed by Delhi.

Additional Information

• Bihar is the most densely populated state whereas Arunachal Pradesh is the least.
• Kerala is having the highest literacy rate, on the other hand Bihar has the lowest.
• Kerala has the highest sex ratio in India and Haryana has the lowest.
• Goa has the highest per capita income among 33 Indian states and union territories.
• Uttar Pradesh is the most populated state of India.

Q63. Answer: (c) 1/2:1/3:1/5

Given:

The speed of three trains are in the ratio of 2 : 3 : 5

Concept used:

Time is inversely proportional to the speed = T prop. to 1/S

Calculations:

According to the question,

Time taken by the first train (T1) = 1/2

Time taken by the second train (T2) = 1/3

Time taken by the third train (T3) = 1/5

The ratio of Time taken by trains = T1 : T2 : T3 = 1/2:1/3:1/5

he amount of time taken by these trains to travel the same distance is in the ratio of 1/2:1/3:1/5.

Q64. Answer: (d) Scanner

The correct option is Scanner.

Key Points

• An Output Device reproduces or displays the results of that processing.
• Printer, Speaker and Monitor are the examples of output devices.
• An input device sends information to a computer system for processing.
• Keyboard, Mouse and Scanner are the examples of Input devices.
• CPU is known as the 'Brain of the Computer'.

Additional Information

• The US's Frontier system is now the fastest supercomputer in the world.
• India's first supercomputer, PARAM 8000, was set up in 1990.
• Seymour Cray is universally known as the father of supercomputing.

• Charles Babbage is considered as the 'Father of Computers'.

• The first mechanical computer, The Babbage Difference Engine, was designed by Charles Babbage in 1822.

Q65. Answer: (d) Kargil

The Correct answer is Kargil.

Key Points

• The Karakoram Pass straddles the boundary between India and China and is located about 100 kilometers west of the China-Pakistan-India tripoint.

• The Karakoram Pass is a hill pass in the middle of India and China, lying in the Karakoram Mountain Range.

• It is the tallest pass on the very old caravan path in the midst of Leh in Ladakh and Yarkand in the Tarim Valley.

• The name Karakoram was used in the early 20th century, for example by Kenneth Mason, for the range now known as the Baltoro Muztagh.

Additional Information

• Some of the Important Mountain Passes India are:

• Zoji La.

• Bara- Lacha Pass.

• Mana Pass.

• Shipki La.

• Jelep La.

Q66. Answer: (b) T105

The alphabets and their positions are:

The logic here is:

Thus, the term 'T105' does not follow the pattern.

Hence, the odd one is 'option 2'.

Q67. Answer: (b) Nagaland

The Correct answer is Nagaland.

Key Points

• The Hornbill Festival is celebrated every year between December 1 to 10 in Nagaland.

• This festival showcases the rich cultural heritage and tradition of the Nagas on one platform at Naga Heritage Village Kisama under Kohima District.

• The Hornbill Festival is held at Kisma located near Kohima. Kisma is a heritage city specifically constructed to showcase the indigenous tribal culture of Nagaland.

• To encourage inter-tribal interaction and to promote the cultural heritage of Nagaland, the Government of Nagaland organizes the Hornbill Festival.

Additional Information

• Famous Festival Of NorthEast India:

• Bihu Event, Assam.

• Hornbill Festival, Nagaland.

• Wangala Festival, Meghalaya.

• Ziro Festival of Music, Arunachal Pradesh.

• Myoko Festival, Arunachal Pradesh.

• Lossong in Sikk.im.

• Moatsu Mong, Nagaland.

Q68. Answer: (d) 1

Given:

$(1 + \tan A)(1 + \tan B) = 2$

Concept used:

$\tan(A + B) = (\tan A + \tan B)/(1 - (\tan A)(\tan B))$

Calculation:

According to the question,

$(1 + \tan A)(1 + \tan B) = 2$

=> 1 + tanA + tanB + tanAtanB = 2

=> tanA + tanB = 1 − tanAtanB

=> [(tanA + tanB)/(1 − tanAtanB)] = 1

=> tan(A + B) = 1

Therefore The value of tan(A + B) = 1.

Q69. Answer: (b) 5

Given:

√(10 + √(221 + √(12 + √16)))

Calculation:

√(10 + √(221 + √(12 + √16)))

=> √(10 + √(221 + √(12 +4)))

=> √(10 + √(221 + √16))

=> √(10 + √(221 + 4))

=> √(10 + √225)

=> √(10 + 15)

=> √25 = 5

Therefore The value of √(10 + √(221 + √(12 + √16))) is 5.

Q70. Answer: (b) 84

Given:

103 - [144 ÷ (12 × 12) + 5 + 12 ÷ (6 - 2) + 10]

Concept used:

Calculation:

103 - [(144 ÷ (12 × 12)) + 5 + (12 ÷ (6 - 2)) + 10]

=> 103 - [(144 ÷ 144) + 5 + (12 ÷ 4) + 10]

=> 103 - [1 + 5 + 3 + 10]

=> 103 - 19 = 84

Therefore The value of the following expression is 84.

Q71. Answer: (c) 5

Given:

$((5.4)^3 - 0.064)/((5.4)^2 + 2.16 + 0.16)$

Concept used:

$(x^3 - y^3) = (x - y)(x^2 + xy + y^2)$

Calculation:

$((5.4)^3 - 0.064)/((5.4)^2 + 2.16 + 0.16)$

$=> ([(5.4)^3- (0.4)(0.4)(0.4)])/([(5.4)^2 + 2.16 + (0.4)(0.4)])$

$=> ([(5.4)^3 - (0.4)^3])/([(5.4)^2 + 2.16 + (0.4)^2])$

$=> ((5.4 - 0.4)[(5.4)^2 + 2.16 + (0.4)^2])/([(5.4)^2 + 2.16 + (0.4)^2])$

=> 5.4 - 0.4 = 5

Therefore The value of the given equation is 5.

Q72. Answer: (b) C

Given:

Four persons A, B, C and D completed a task in 2/3 h, 3/4 h, 4/5 h and 1/5 h respectively.

Calculation:

According to the question,

=> Time taken by A = 2/3 = 0.66h

=> Time taken by B = 3/4 = 0.75h

=> Time taken by C = 4/5 = 0.8h

=> Time taken by D = 1/5 = 0.2h

Therefore C took the highest amount of time to complete the task.

Q73. Answer: (d) 2.73

Given:

√0.04 + √1.44 + √1.69 + √0.0009

Calculation:

√0.04 + √1.44 + √1.69 + √0.0009

=> 0.2 + 1.2 + 1.3 + 0.03 = 2.73

Therefore The value of the given equation is 2.73.

Q74. Answer: (a) Bombay

The correct answer is Bombay.

Key Points

• The party's foundation in December 1885, Womesh Chandra Bonnerjee became its first president.

• From 1885 to 1933, the presidency had a term of one year only.

• It was held on the initiative of retired civil service officer Allan Octavian Hume.

• In December 1884, after a Theosophical convention in Madras, Sir Allan Octavian Hume presided over a private meeting with 17 men.

Additional Information

• | 1st Session | Bombay | Dec. 28-30, 1885 | Womesh Chandra |

2nd Session	Calcutta	Dec. 27-30, 1886	Shri Dadabhai Naoroji
3rd Session	Madras	Dec. 27-30, 1887	Badruddin Tyabji

Q75. Answer: (a) Mountains and building blocks can act as obstacles to GPS signals.

The Correct Answer is Mountains and building blocks can act as obstacles to GPS signals.

Key Points

• GPS

• The Global Positioning System, originally Navstar GPS, is a satellite-based radio navigation system owned by the United States government and operated by the United States Space Force.

• It is one of the global navigation satellite systems (GNSS) that provides geolocation and time information to a GPS receiver anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. Obstacles such as mountains and buildings block the relatively weak GPS signals.

• It is a satellite navigation system, used to determine the ground position of an object.

• It is based on a network of satellites orbiting above the Earth.

• It is based on the system of triangulation.

• It is a U.S.-owned utility that provides users with positioning, navigation, and timing (PNT) services.

• It is a network of 24 satellites that provides service to civilian and military users.

• GPS receivers provide location in terms of latitude, longitude, and altitude.

• The civilian service is freely available to all users on a continuous, worldwide basis.

• The military service is available to U.S. and allied armed forces as well as approved Government agencies.

• GPS is based on time and the known position of GPS-specialized satellites i.e distance-based technology.

• GPS faces the problem of drifting due to continuous changes in the position of satellites, and weak signals due to thick clouds and tall buildings.

• GPS has a voice system to guide the user.

Important Points

1. China uses BeiDou as a Navigation System.

2. India uses NavIC as a Navigation System

3. GLONASS, or "Global Navigation Satellite System", is used by Russia.

Additional Information

• Uses and Applications of GPS:

• There are five major uses of a GPS system. The applications that use GPS make use of any of these or a combination of all the five uses.

• Location - To determine positions.

• Navigation - To transfer from one place to another.

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• Tracking - Monitoring movements of persons or objects.

• Mapping - Creating maps for generic as well as specific purposes.

• Timing - Accurately measuring time measurements.

• Some of the major applications of GPS are as follows:

• Emergency Systems - Fire alarms, smoke alarms, natural disaster early warning systems, etc.

• Entertainment - Games like Pokemon Go, PubG, and Free Fire use GPS to use locations.

• Household surveys - To create maps, plot charts and analyze area-specific, region specific or location specific population demographic trends.

• Micro-irrigation - To understand the needs of different variety of crops and their water needs.

• Air Traffic Controlling - Extremely important. Without ATC signal approval, no aircraft can take off or land on air stations.

• Marine Navigation System - Indian govt. recently designed the GEMINI system that makes the use of GAGAN, a GPS system for various purposes like - alerting fishermen about the marine accidents, probable fishing grounds, etc.

• Mining - For finding the exact geographical location for exploring and mining.

Q76. Answer: (b) Australia

The correct answer is Australia

Key Points

• The Great Barrier Reef, off the coast of Queensland, Australia, is the world's largest coral reef.

• Covering only about one percent of the ocean floor, reefs are home to an estimated 25 percent of the world's marine species, from fish to sponges.

• Nearly all of the world’s coral reefs, particularly the largest reefs, are located in the tropics.

Additional Information

• A coral reef is a submerged oceanic structure made of many different polyps.

• Polyps are small marine invertebrates that are unable to move.

• These sessile or immobile creatures cluster with other corals to form colonies and bind themselves together to form a reef by secreting calcium carbonate.

• This hard substance is also found in many rocks and minerals.

Q77. Answer: (b) Mean = Median = Mode

Given:

The empirical relationship between mean, median and mode

Calculations:

If a frequency distribution graph has a symmetrical frequency curve, then the mean, median, and mode will be equal.

Therefore The empirical relationship between mean, median, and mode is Mean = Median = Mode.

Q78. Answer: (a) Vishnu Gupta

Correct answer is Vishnu Gupta.

Key Points

• Chanakya (Vishnu Gupta) was the teacher of Chandragupta Maurya.

• It was Chanakya who took Chandragupta Maurya to the University of Taxila.

• He is credited with the arrangment of the first pan-Indian empire.

• Chanakya played a main role in supporting Chandragupta bring down the strong Nanda dynasty at Pataliputra, in the Magadha region.

• Additional Information

• Kalhana was the writer of Rajatarangini (River of Kings), an account of the history of Kashmir.

• Vishnu Sharma was the writer of this anthropomorphic political treatise known as Panchatantra.

• Skandgupta was a Gupta Emperor of India.

Q79. Answer: (d) Washington DC

Correct answer is Washington DC.

Key Points

• The World Bank and the IMF are both based in Washington, D.C., and work together.

• The World Bank was produced at the 1944 Bretton Woods Conference, together with the International Monetary Fund (IMF).

• The president of the World Bank is generally an American.

• The Secretary of the Treasury work as the U.S. Governor to the IMF, and the U.S.

Additional Information

• Geneva is the foundation for some of the world's largest organizations, like the World Health Organization, the World Trade Organization, the International Committee of the Red Cross, the World Bank and, of course, the United Nations.

• Vienna is the at most city in the European Union which, for more than 40 years, has hosted one of the 4 headquarters of the United Nations at the Vienna International Centre (VIC).

• New York is the world's largest and most familiar international organization.

Q80. Answer: (a) Husband

The symbols used are:

According to the given information, the family tree we get is:

Hence, E is husband of A.

Q81. Answer: (b) World Bank Group

Correct answer is World Bank Group.

Key Points

• 'ease of doing business index' was published by the World Bank Group every year from 2003 to 2019 and focused to calculate the costs to firms of business regulations in 190 countries.

• The World Bank Group works with developing countries to reduce poverty and increase shared prosperity.

• The main motive of both the World Bank and IMF were to help European and Asian countries needing financing to fund post-war reconstruction efforts.

• Both the World Bank and IMF outlasted the collective international monetary structure which was central to the Bretton Woods Agreement.

• Additional Information

• The IMF's main aim is to ensure the stability of the international monetary system.

• The World Economic Forum is the International Organization for Public-Private Cooperation.

• Harvard Business School is one of the largest business schools in the world, and this comes with a number of chances.

Q82. Answer: (d) Vitamin A

Correct answer is Vitamin A.

Key Points

• Vitamin A deficiency may cause color blindness.

• Vitamin A insufficiency can result from inadequate intake, fat malabsorption, or liver disorders.

• Attentiveness of preformed vitamin A are highest in liver, fish, eggs, and dairy products

• Vitamin A, protects Eyes From Night Blindness and Age-Related Decline.

• Vitamin A,supports a healthy immune system.

• Additional Information

• Vitamin K supports to make various proteins that are needed for blood clotting and the building of bones.

• Vitamin C, also called as ascorbic acid, is important for the growth, development and repair of all body tissues.

• Body require calcium to build and maintain strong bones.

Q83. Answer: (d) 3

Given:

$x^3 + 1/(x^3) = 18$

Concept Used:

$a^3 + b^3 = (a + b)^3 – 3ab(a + b)$

Calculation:

=> Using the formula, we get

=> $x^3+1/(x^3)=(x+1/x)^3-3\times x\times 1/x\ (x+1/x)$

=> $18=(x+1/x)^3-3(x+1/x)$

=> Let $x+1/x=u$, we get

=> $18 = u^3 – 3u$

=> $u^3 – 3u – 18 = 0$

=> Factors of –18 = + 1, – 1, + 2, – 2, + 3, – 3, + 6, – 6, + 9, – 9, + 18, – 18

=> Let u = + 1, then 1 – 3 – 18 not= 0

=> Let u = + 2, then 8 – 6 – 18 not= 0

=> Let u = + 3, then 27 – 9 – 18 = 0

=> So, u = 3

Therefore, the value of x + 1/x is 3

Q84. Answer: (d) Kabir

Correct answer is Kabir.

Key Points

• This specific genre of poetry experienced by Kabir and other Bhakti poets is known as 'ulatbaasi', or upside-down verse.

• Kabir's ulatbansis, literally sense upside-down language in the tradition of Nath pantha and Buddhist ultibani, belong to the category of absurd poetry.

• Saint Kabir's poems are known as Dohas.

• Dohas are explained as poetry composed in the form of Matrika metre.

• Additional Information

• Surdas three crucial creation of work were the Sahitya-Lahiri, Sur-Sagar and the Sur-Saravali.

• Sant tukaram maharaj was famous Saint in Maharashtra in 17th century.

• Guru Nanak was the originator of Sikhism, be one of youngest religions.

Q85. Answer: (a) 24

Given:

A, B, and C can complete a work in 36, 54, and 72 days respectively.

A, B, and C started the task together,

A left 8 days before the completion of the work.

B left 12 days before the completion of the work.

Formula used:

Work = Time × Efficiency

Calculation:

The efficiency of A = 1/36

The efficiency of B = 1/54

The efficiency of C = 1/72

Suppose work is completed in d days.

Work done by A = (d - 8)/36

Work done by B = (d-12)/54

Work done by C = d/72

Total work done by A, B and C = (d - 8)/36 + (d - 12)/54 + d/72

=> (6d - 48 + 4d - 48 + 3d)/216 = 1

=> 13d = 216 + 96

=> d = 312/13 = 24 days

Therefore The number of days for which C worked is 24.

Q86. Answer: (b) 50%

From the given figure:

We can see that square represents B,

Production of B in 2017 = 4000

Production of B in 2018 = 6000

Percentage increase from 2017 to 2018 = (6000 - 4000)/4000× 100= 2000/4000× 100=50%

So, their was an increase of 2000 which is 50% of 4000.

Hence the correct answer is option 2)

Q87. Answer: (a) 108°

Given:

The following pie chart shows the percentage-wise distribution of the number of people of various occupations from different

states of India.

Calculation:

According to the question,

30% of total pie chart are engineers

=> 30% of 360° = Engineers

=> Engineers = 30% × 360°

=> Engineers = 0.30 × 360° = 108°

Therefore The angle at the center of the pie chart for the Engineer segment is 108°.

Q88. Answer: (c) Only B1

Given:

The bar graph shows the total number of wireless keyboards (in thousands) produced by five different branches of a company, B1, B2, B3, B4 and B5, in 2015 and 2016.

Calculation:

According to the question,

Branch/Year	2015	2016
B5	26	20
B4	34	36
B3	20	28
B2	25	40
B1	36	30

B1 (2015) = B4 (2016)

Therefore The number of wireless keyboards produced by branch B4 in 2016 is equal to that produced by the B1 branch in 2015.

Q89. Answer: (c) 7 : 6

Given:

The bar graph shows the sales of inverters from five different shops, A, B, C, D, and E in the years 2017 and 2018.

Calculation:

According to the question,

Sales of A for both the years = 85 + 90 = 175

Sales of D for both the years = 70 + 80 = 150

The ratio of the total sales of shop A for both years to that of shop D for both years = 175/150 = 7/6 = 7 : 6

Therefore The ratio of the total sales of shop A for both the years to that of shop D for both years is 7 : 6.

Q90. Answer: (a) Hut

Here, we need to check the relationship and the pattern is:

First, we will check all the options:

1) Hut: A place where human lives.

2) Burrow: A place where rabbit lives.

3) Cobweb: A place where spiders live.

4) Den: A place where a lion lives.

Thus, we can see that all the given words are places where animals are living except the word 'Hut'.

Hence, the odd one is 'Hut'.

Q91. Answer: (b) Only Davy's mother makes lip-smacking pancakes.

According to the given information, we have:

1) All the pancakes made by Davy's mother are lip-smacking.

2) Some pancakes made by Jones's father are also lip-smacking.

Here, we can say that Jones had believed in Davy and so what ever said by him is correct. So according to him the pancakes made by his mother are lip-smacking. And also, some pancakes are made by Jone's father too and they are also lip-smacking.

Thus, Jones believed in Davy's statement and assumed that every pancake made by Davy's mother is lip-smacking.

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Hence, the correct answer is 'option 2'.

Q92. Answer: (d) 10

The logic here is:

Logic: 2^(nd) number x (3^(rd) number ÷ 2) = 1^(st) number

= 8 × (9/2) = 8 × (4.5) = 36

And,

= 7 × (6/2) = 7 × (3) = 21

Similarly,

= 5 × (4/2) = 5 × (2) = 10

Thus, the missing number is '10'.

Hence, the correct answer is 'option 4'.

Q93. Answer: (c) XWVT

The alphabets and their positions are:

First we will check the options:

1) NMLK:

2) FEDC:

3) XWVT:

4) SRQP:

Thus, we see that all follow the same pattern except 'XWT'.

Hence, the odd one out is 'option 3'.

Q94. Answer: (a) 2

BODMAS RULE:

Given: ([{(20 × 18) - (6/2)} + (5 - 2)])/1

According to the given information, we have,

Given	Replace
•	division (÷)
•	addition (+)
×	subtraction (-)
÷	multiplication (×)

Substituting this, we will get,

= [{(20 - 18) + (6×2)} ÷ (5 + 2)] ×1

Using BODMAS rule we will solve the brackets, we will get,

= [{(2) + (12)} ÷ (7)] × 1

Opening the brackets, we will get,

= [(2 + 12) ÷ 7] × 1

Solving the brackets again, we will get,

= [14 ÷ 7] × 1

= 2 × 1

= 2

Hence, the final answer is '2'.

Q95. Answer: (b) 13

The logic follows here is:

Missing number = [Multiplication of numbers in row] - [Multiplication of numbers in column]

Given:

For, the 1^(st) figure, we have:

= [9 × 7] - [5 × 3] = 63 - 15 = 48

For the 2^(nd) figure, we have:

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= [9 × 6] - [7 × 3] = 54 - 21 = 33

Similarly, for the 3^(rd) figure, we have:

= [8 × 6] - [7 × 5] = 48 - 35 = 13

Hence, the missing number is '13'.

Q96. Answer: (c) Neither assumption I nor II is implicit.

Given: X did not solve the equation on the blackboard with chalk.

According to the given statement, we can say that the equation was not solved on the blackboard with chalk by X. This means the 2nd assumption is not implicit. Also, they have not mentioned that X has solved on paper. So, assumption I is not implicit.

Let us check all the options:

1) Only assumption II is implicit: As we are given the equation is solved on paper and so 2nd assumption is implicit. This is not true.

2) Both assumptions I and II are implicit: As in the 1st assumption the equation is solved on paper and in 2ns one it is solved on the blackboard. This is not true.

3) Neither assumption I nor II is implicit: From 1st assumption, is not implicit as we have not mentioned where X has solved. Also, in 2nd assumption it is given that X solved on blackboard. Thus, both are not implicit.

4) Only I is implicit: From given statement we can say that 1st assumption is implicit. But along with 2nd assumption. This is not true.

Thus, ' neither assumption I nor II ' is implicit.

Hence, the correct answer is 'option 3'.

Q97. Answer: (d) ALARM

The alphabet and their positions as:

The logic here is:

For, UNSURE is written as ELGEHU

Similarly, for ALARM it is written as YNYHM

Thus, the word ALARM is written as YNYHM.

Hence, the correct answer is 'option 4'.

Q98. Answer: (a) Son's Son's Son

The symbol of the family tree is:

According to the given information, the family tree will be:

Thus, D is 'Son's Son's Son' of A.

Hence, the correct answer is 'option 1'.

Q99. Answer: (c) 6

According to the given statements, we have

Hence, digit '6' is used for 'mango'.

Q100. Answer: (a) Only conclusion I follows.

According to the statements, we have the Venn diagram:

Statement 1:

Statement 2:

Thus, by combining the statements, we will get,

Next, we will check the conclusions:

I. Even the balls that do not bounce, vibrate: Since all balls vibrate, some balls will vibrate. This is true.

II. The balls that do not bounce do not necessarily vibrate: All balls vibrate because balls are the subset of vibrate, so whether the ball bounces or does not bounce, the ball will vibrate. This is not true.

Thus, only 'conclusion I' is true.

Hence, the correct answer is 'option 1'.

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