RRB NTPC CBT-I Official Paper (Held On: 23 July 2021 Shift 1) (Previous Year Paper)

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

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Q1. Ganesh walks 5 m to the south and turns to the east. He again walks for 5 m, turns to his left and stops after walking 10 m. He turns to his left again, walks 5 m and stops. How far is Ganesh from his starting point?

(a) 5 √2 m
(b) 20 m
(c) 5 m
(d) 10 m

Q2. If θ is an acute angle and cotθ = 12/35, what is the value of secθ?

(a) 35/37
(b) 37/12
(c) 35/12
(d) 37/35

Q3. The rulers Pulakeshin I and Pulakeshin II were related to which of the following dynasties?

(a) Chola dynasty
(b) Magadha dynasty
(c) Kushan dynasty
(d) Chalukya dynasty

Q4. The river Mahananda is a tributary of:

(a) the Damodar river
(b) the Ganga river
(c) the Satluj river
(d) the Yamuna river

Q5. A sum of money when invested for 7.2 years gives Rs. 5,768 as the amount on maturity. If the simple rate of interest was 2% per annum more than what it was, the amount on maturity would have been Rs. 6,272. The original sum invested was:

(a) Rs. 3,750
(b) Rs. 3,500
(c) Rs. 4,000
(d) Rs. 3,250

Q6. The Reserve Bank of India was set up in the year _____.

(a) 1947
(b) 1951
(c) 1935
(d) 1960

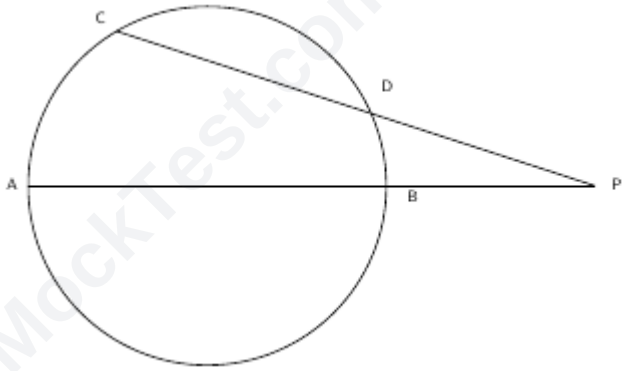
Q7. The hypotenuse of a right isosceles triangle is $34\sqrt{2}$ cm. Find the area of the triangle.

(a) 867 cm^2
(b) 616 cm2
(c) 1156 cm2
(d) 578 cm2

Q8. The first textile mill in India was established at Fort Gloster near in 1818.

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

Q9. In the given circle, diameter AB is extended to meet chord CD extended at P. If the lengths of the line segments AP, CD and DP are 18 cm, 3 cm and 9 cm, respectively, what is the length of the radius of the circle?



(a) 6 cm
(b) 9 cm
(c) 3 cm
(d) 12 cm

Q10. Which of the following acids does our stomach produce that helps in digestion?

(a) Nitric acid
(b) Perchloric acid
(c) Sulphuric acid
(d) Hydrochloric acid

Q11. Shillong is situated in which of the following hills?

(a) Khasi Hills
(b) Mikir Hills
(c) Naga Hills
(d) Garo Hills

Q12. The world's largest camel fair is held each October at _____ in Rajasthan.

(a) Gogamedi
(b) Ramdevra
(c) Pushkar
(d) Bhinmal

Q13. A man purchases a machine for Rs. 2,450 and sells it at a gain of 10%. What is the selling price of the machine?

(a) Rs. 2,596
(b) Rs. 2,965
(c) Rs. 2,569
(d) Rs. 2,695

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Q14. 'Project Elephant' was launched by the Government of India in the year _____.

(a) 1992
(b) 1990
(c) 1986
(d) 1972

Q15. In Microsoft Word 2016, what happens when we press the keyboard shortcut 'Ctrl + E'?

(a) A pop-up prompts you to open a new file
(b) Selected text is centre aligned
(c) Selected text is made bold
(d) Selected text is cut

Q16. The Governor of Maharashtra as of March 2021 is:

(a) Bandaru Dattatreya
(b) Arif Mohammad Khan
(c) Bhagat Singh Koshiyari
(d) Kalraj Mishra

Q17. Select the fraction from among the given options that can replace the question mark (?) in the following series.

1/25,1/49,1/81, ?

(a) 1/169
(b) 1/100
(c) 1/64
(d) 1/121

Q18. The ratio of two numbers is 3 : 7 and their HCF is 3. Their LCM is:

(a) 3
(b) 7
(c) 36
(d) 63

Q19. Select the number from among the given options that can replace the question mark (?) in the following series.

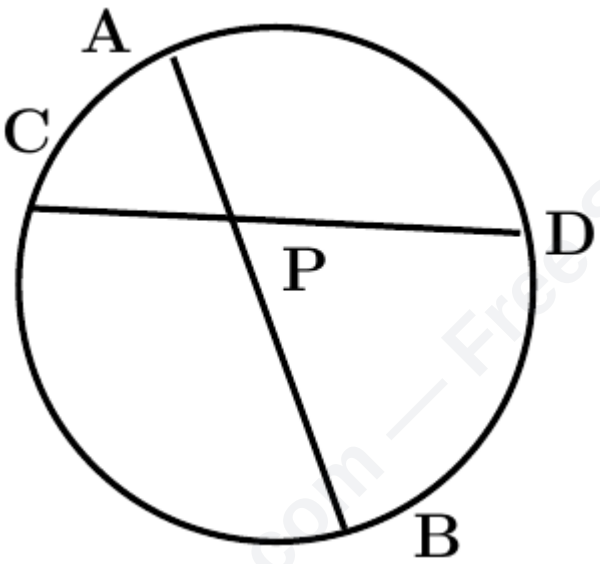
11, 9, 15, 13, 19, ?

(a) 25
(b) 21
(c) 17
(d) 7

Q20. In the given circle, chords AB and CD intersect internally at P. If CP = 3 cm and DP = 8 cm, and the numerical values of the lengths of AP and BP are both natural numbers, then which of the following options CANNOT be the length of AB ?

(Diagram is not to scale)

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(a) 20 cm
(b) 25 cm
(c) 10 cm
(d) 14 cm

Q21. 'NavIC' is another name for:
(a) a scheme by the Central Government for fisherman development
(b) the independent regional navigation satellite system developed by India
(c) a training programme for Indian maritime pilots
(d) the polar satellite launch vehicle of India

Q22. If $4x - 3y = 9$ and $x = 6$, then what is the value of y?
(a) 3
(b) 4
(c) 6
(d) 5

Q23. Who among the following was the Chairman of the Indigo Commission?
(a) Thomas Raleigh
(b) JH Whiteley
(c) WS Seton-Kar
(d) John Sargeant

Q24. Which of the following facts about BIS is INCORRECT?
(a) BIS was established in the year 2010.
(b) BIS has its headquarters at New Delhi.
(c) BIS has five regional offices.
(d) BIS stands for Bureau of Indian Standards.

Q25. A train travelling at a speed of 69 km/h passes an electric pole in 8 seconds and a platform in 32 seconds. What is the length of the platform?
(a) 460 m
(b) 500m
(c) 540 m
(d) 480 m

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Q26. The Kedarnath temple is located in the _____ district of Uttarakhand.

(a) Haridwar
(b) Uttarkashi
(c) Rudraprayag
(d) Tehri Garhwal

Q27. In which of the following Articles of the Constitution of India is it written that 'India, that is Bharat, shall be a Union of States'?

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

Q28. 6/11 of the people present in a hall are sitting in 9/14 of the chairs available, and the rest are standing. If there are 30 empty chairs, how many people in the hall are standing?

(a) 40
(b) 35
(c) 45
(d) 30

Q29. Three of the following four terms are alike in some manner and thus form a group. Identify the term that DOES NOT belong to that group.

(a) A2C
(b) B4F
(c) D8L
(d) C6J

Q30. The _____ is the longest section of the Golden Quadrilateral super highway.

(a) Delhi-Kolkata section
(b) Kolkata-Chennai section
(c) Mumbai-Delhi section
(d) Chennai-Mumbai section

Q31. 243 ÷ 3 ÷ 3 ÷ 3 ÷ 3 is equal to:

(a) 3
(b) 243
(c) 9
(d) 27

Q32. What is the LCM of 6/25, 4/45 and 3/35 ?

(a) 1/5
(b) 12/210
(c) 12/5
(d) 210/12

Q33. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.
MANZ, OAPZ, QARZ, ?

(a) PAQZ
(b) RASZ
(c) NAOZ
(d) SATZ

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Q34. Hyderabad is known as a 'HITEC City'. What is the full form of 'HITEC'?

(a) Hyderabad Information Technology and Educational Consultancy
(b) Hyderabad Information Technology and Engineering Corporation
(c) Hyderabad Information Technology and Engineering Consultancy
(d) Hyderabad International Technology and Engineering Consultancy

Q35. How much does one have to subtract from 8/5 to obtain 5/8 ?

(a) 31/40
(b) 39/64
(c) 25/64
(d) 39/40

Q36. If 'S' denotes '×', 'B' denotes '-', 'R' denotes '+' and 'V' denotes '÷', then what will be the value of the following expression?

30 V 2 R 3 S 6 B 5

(a) 28
(b) 18
(c) 29
(d) 31

Q37. Which of the following countries do the cricketers Mark Wood, Jonny Bairstow and Stuart Broad hail from?

(a) England
(b) New Zealand
(c) Australia
(d) South Africa

Q38. If the average of 6 positive integers is 55 and the difference between the largest and the smallest of these 6 numbers is 24, what is the maximum value possible for the largest of these 6 integers?

(a) 72
(b) 78
(c) 75
(d) 81

Q39. Of the four given equations, the first three are solved on the basis of a certain system, where the function of → remains the same. Find the correct answer for the unsolved fourth equation on the same basis.

I. 9 → 6 = 28
II. 7 → 4 = 15
III. 3 → 8 = 13
IV. 3 → 6 = ?

(a) 15
(b) 8
(c) 10
(d) 2

Q40. If (1 - cosP) (1 + cosP) = 3/4 and P is an acute angle, then find the value of secP.

(a) (√2)/7
(b) 2
(c) (√7)/2
(d) 1/2

Q41. 'Dumhal' is a dance form practiced in the _____ region.

(a) Mewat
(b) Kashmir
(c) Mewar

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(d) Saurashtra

Q42. A person incurs a 15% loss by selling an article for Rs. 170. At what price should the article be sold to earn a 10% profit?

(a) Rs. 220
(b) Rs. 120
(c) Rs. 200
(d) Rs. 420

Q43. The Indian nuclear test site, Pokhran is situated in the _____ district of Rajasthan.

(a) Bikaner
(b) Jodhpur
(c) Barmer
(d) Jaisalmer

Q44. Identify the option that arranges the chronology of Mughal emperors in the correct order.

(a) Jahangir - Shah Jahan - Akbar - Aurangzeb
(b) Akbar - Shah Jahan - Jahangir - Aurangzeb
(c) Akbar - Jahangir - Shah Jahan - Aurangzeb
(d) Akbar - Aurangzeb - Shah Jahan - Jahangir

Q45. Anil is twice as efficient as Balu, and together, they can complete a task in 12 days. In how many days can Anil alone complete the task?

(a) 7
(b) 18
(c) 25
(d) 15

Q46. What is the scientific name of India's national bird, the Indian peacock?

(a) Nelumbo Nucifera Gaertn
(b) Pavo Cristatus
(c) Prosopis Cineraria
(d) Strigiformes

Q47. What is the HCF of 81, 91, 101 and 111?

(a) 13
(b) 3
(c) 1
(d) 7

Q48. World Tuberculosis (TB) Day is observed on _____ every year.

(a) 24 September
(b) 24 January
(c) 24 April
(d) 24 March

Q49. How many factors does the number 12288 have?

(a) 22
(b) 26
(c) 24
(d) 28

Q50. In the context of area, which of the following is the smallest Union Territory of India?

(a) Chandigarh
(b) Andaman and Nicobar Islands
(c) Lakshadweep

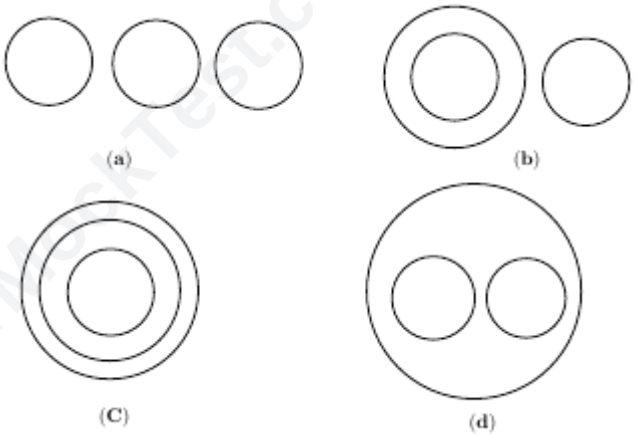
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(d) Puducherry

Q51. 'P @ Q' means 'P is the sister of Q'.
'P # Q' means 'P is the father of Q'.
'P $ Q' means 'P is the wife of Q'.
'P % Q' means 'P is the son of Q'.
If 'A % B # C @ D $ E', then how is D related to B?

(a) Sister
(b) Wife
(c) Daughter-in-law
(d) Daughter

Q52. Which of the following Venn diagrams represents the given statements?
All engineers are professionals.
No professional is a doctor.



(a) a
(b) c
(c) b
(d) d

Q53. Which of the following devices/interfaces did Douglas Engelbart invent?

(a) Computer mouse
(b) Floppy disk
(c) USB port
(d) Compact disc

Q54. The first English factory of Bengal was set up on the banks of the river _____ in 1651.

(a) Son
(b) Damodar
(c) Hugli
(d) Swarnrekha

Q55. Find the compound interest on Rs. 5,000 at a rate of 6% per annum for 3 years, compounded annually (correct to the nearest integer).

(a) Rs. 956
(b) Rs. 955
(c) Rs. 618
(d) Rs. 900

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Q56. FILE is written as DKJG in a certain language. How will RAIL be written as in that language?

(a) PCGN
(b) PBAM
(c) PDAM
(d) PBAN

Q57. The radius of a sphere, 'r', is equal to the radius of the base of a right circular cylinder. The total volume of these two solids = $7/3\pi r^3$. If 'h' is the height of the cylinder, find h/r.

(a) 2
(b) 1
(c) 1.5
(d) 3

Q58. Which of the following animals is NOT an example of Mollusca?

(a) Unio
(b) Scolopendra
(c) Octopus
(d) Snail

Q59. The largest holes in the ozone layer have been observed in 2020 over which of the following continents?

(a) Europe
(b) Asia
(c) Antarctica
(d) North America

Q60. 14 men can complete a task in 9 days and 16 women can complete the same task in 7 days. In how many days can 6 men and 8 women complete the task?

(a) 9
(b) 8.4
(c) 9.6
(d) 7.2

Q61. What is the sum of the cubes of the first four natural numbers?

(a) 100
(b) 96
(c) 84
(d) 1000

Q62. Select the option that is related to the third term in the same way as the second term is related to the first term.

Hospital : Patient :: College : ?

(a) Student
(b) School
(c) Doctor
(d) Study

Q63. The _____ was constituted in 1995 with the responsibility of creating, upgrading, maintaining and managing civil aviation infrastructure both, on the ground and in the air space of India.

(a) Airport Authority of India
(b) National Airport Authority of India
(c) Aviation Authority of India
(d) International Airport Authority of India

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Q64. 331 × 226 = 74806. What is the value of 3.31 × 0.226?

(a) 74.806
(b) 7.4806
(c) 0.74806
(d) 0.074806

Q65. People in the age group of _____ are eligible for the 'Pradhan Mantri Suraksha Bima Yojana' ('PMSBY') scheme.

(a) 21 to 65 years
(b) 15 to 60 years
(c) 18 to 70 years
(d) 14 to 59 years

Q66. If 3/5 of a bottle is filled, what is the ratio of the filled part to the empty part of the bottle?

(a) 5 : 3
(b) 3 : 2
(c) 2 : 3
(d) 3 : 5

Q67. Radha and Vatsal invested Rs. 36,000 and Rs. 42,000, respectively, in a business. Radha, being an active partner, got Rs. 637.50 extra every month for running the business. In 3 years, if Radha received a total of Rs. 31,500, then what was the profit earned by Vatsal during this period?

(a) Rs. 9,975
(b) Rs. 10,795
(c) Rs. 36,750
(d) Rs. 8,550

Q68. Which of the following countries is NOT a permanent member of the United Nations Security Council (UNSC)?

(a) France
(b) China
(c) Russia
(d) Japan

Q69. The book 'Systema Naturae' was written by Swedish botanist _____.

(a) Carl Linnaeus
(b) Goran Rothman
(c) Anders Dahl
(d) Carl Peter Thunberg

Q70. The Silent Valley National Park is a beautiful representation of the last remaining rainforest of _____.

(a) Sikkim
(b) Meghalaya
(c) Kerala
(d) Manipur

Q71. Who among the following viceroys announced the vague offer of 'Dominion Status' for India in 1929?

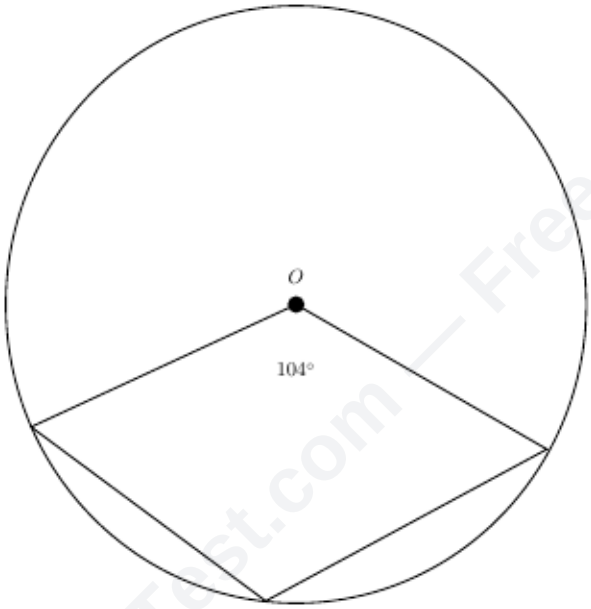
(a) Lord Cornwallis
(b) Lord Irwin
(c) Lord Canning
(d) Lord Ripon

Q72. Which of the following latitudes is the most distant from India?

(a) South Pole (90^?S)
(b) North Pole (90^?N)
(c) Arctic Circle (66^?30'N)
(d) Tropic of Capricorn (23^?30'S)

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Q73. In the given circle with centre O, the obtuse angle at the centre measures 104^?. In the quadrilateral drawn inside the circle, what is the measure of the angle opposite to angle O? [Figure is not drawn to scale.]



(a) 152^?
(b) 128?
(c) 124?
(d) 132?

Q74. 24 students are sitting in a row. F is 17^(th) from the right end and R is 19^(th)from the left end. How many students are between F and R?

(a) 11
(b) 10
(c) 3
(d) 9

Q75. Which of the following days is observed as World Blood Donor Day?

(a) 10 June
(b) 14 June
(c) 12 June
(d) 16 June

Q76. _____ is the process of making a thick oxide layer on aluminium.

(a) Coating
(b) Sheeting
(c) Anodising
(d) Shielding

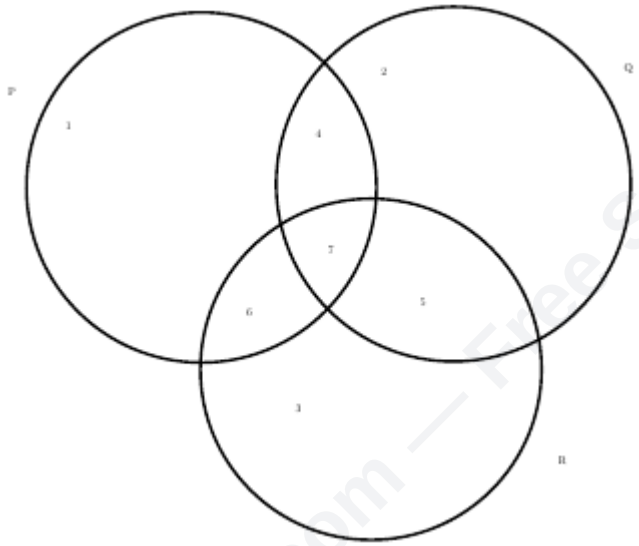
Q77. What is the value of 101^3?

(a) 1030201
(b) 1020201
(c) 1030301
(d) 1020301

Q78. Study the given diagram and answer the question that follows. The numbers in the diagram represent the number of persons in that particular category.

P represents Indian, Q represents urban and R represents doctors.

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What is the total number of Indian doctors?

(a) 13
(b) 10
(c) 6
(d) 7

Q79. The value of a desktop computer depreciates at the rate of 20% every year. It was purchased 3 years ago. If its present value is Rs. 12,288, what was its purchase price 3 years ago?

(a) Rs. 23,750
(b) Rs. 24,000
(c) Rs. 24,250
(d) Rs. 24,750

Q80. Which two numbers should be interchanged to make the following equation correct?

29 - 19 + 25 × 87 ÷ 44 = 100

(a) 44 and 87
(b) 87 and 29
(c) 19 and 25
(d) 29 and 44

Q81. Who among the following was awarded the Nobel Prize in Literature in the year 2020?

(a) Reinhard Genzel
(b) Andrea Ghez
(c) Roger Penrose
(d) Louise Gluck

Q82. Joseph R Biden Jr. took oath as the _____ President of the United States in January 2021.

(a) 46^(th)
(b) 48th
(c) 44th
(d) 50th

Q83. Select the option that is related to the third number in the same way as the second number is related to the first number.

555 : 125 : : 777 : ?

(a) 448
(b) 347
(c) 392
(d) 343

Q84. The smallest fraction that each of 5/14, 6/7 and 10/21 will divide exactly is:

(a) 60/7
(b) 50/67
(c) 30/147
(d) 30/7

Q85. Match the following political parties with their respective founding years.

Political Parties	Founding Years
A) Indian National Congress	1. 1980
B) Bharatiya Janata Party	2. 1964
C) Bahujan Samaj Party	3. 1885
D) Bhartiya Communist Party	4. 1984

(a) A-3, B-1, C-2, D-4
(b) A-3, B-4, C-1, D-2
(c) A-1, B-3, C-4, D-2
(d) A-3, B-1, C-4, D-2

Q86. Study the given table and answer the question that follows.

Rate of Employment (in percentage) at Various Levels across Years				
Year	Primary level	Secondary level	Higher level	Total
1995	15	12	15	42
2000	20	18	20	58
2005	25	20	10	55
2010	30	25	15	70

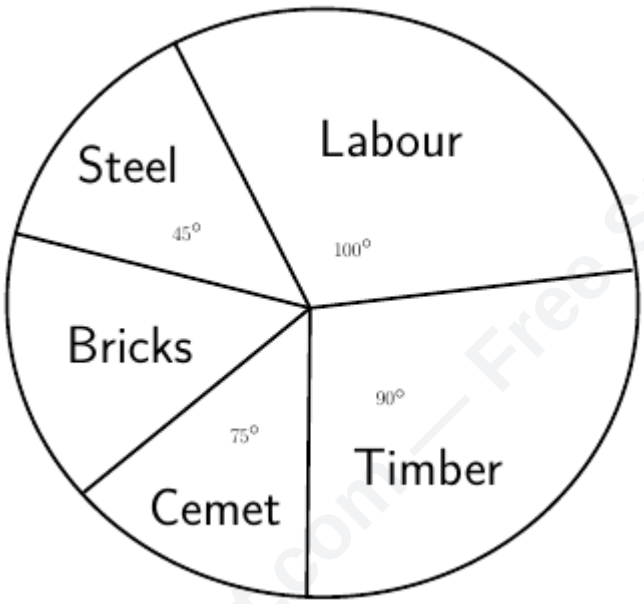
Which of the following statements about the rate of employment figures provided in the table is TRUE?

(a) Rate of employment at secondary level increased by 20% between 2005 and 2010.
(b) Rate of employment at secondary level increased by 10% between 2000 and 2005.
(c) Rate of employment at higher level increased by 25% between 1995 and 2000.
(d) Rate of employment at secondary level increased by 50% between 1995 and 2000.

Q87. Study the given pie chart and answer the question that follows.

The given pie chart represents the total expenditure of Rs. 54,000 on different items in constructing a flat in a town.

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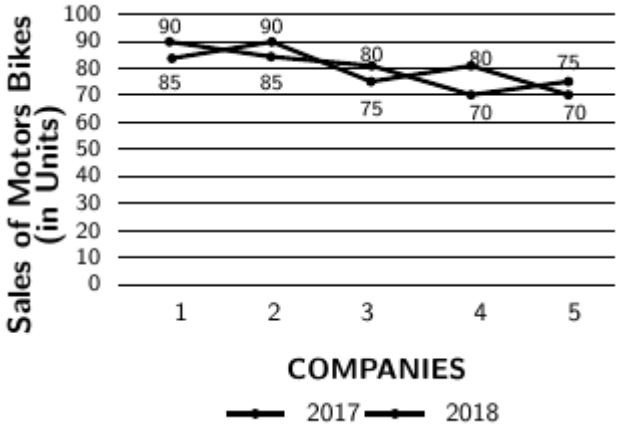


The approximate percentage of the total expenditure on steel and cement is:

(a) 18%
(b) 33%
(c) 60%
(d) 25%

Q88. Study the given line graph and answer the question that follows.

The line graph shows the sales (in units) of motor bikes of five companies, 1, 2, 3, 4 and 5 over the years 2017 and 2018.



Which of the following statements regarding the sales represented in the graph is NOT true?

(a) Total sales for both years across all companies are 800 motor bikes.
(b) The total sales of all the companies in 2018 are higher than that in 2017.
(c) For both the years together, the average sales of Company 4 are lower than that of Company 3.
(d) For both the years together, company 5 has the lowest total sales among all companies.

Q89. Read the given information and answer the question that follows.

In a certain month, a woman spent her monthly salary on different items as given in the following table.

Item	Clothing	House rent	Food	Education	Miscellaneous
Amount spent (in Rs.)	800	3600	1600	600	1200

What is the ratio of the expenses on food to that on house rent?

(a) 2 : 3

(b) 9 : 4
(c) 4 : 9
(d) 3 : 2

Q90. Select the number from among the given options that can replace the question mark (?) in the following series.

174, 230, ?, 366, 446

(a) 256
(b) 294
(c) 361
(d) 284

Q91. AIRPORT is written as AROTIPR in a certain code language. How will ANALOGY be written as in that language?

(a) AAONLYG
(b) AAOYNLG
(c) AAONYLG
(d) ANAYOLG

Q92. 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.

Statements:

All animals are birds.

Some animals are clocks.

Conclusions:

A. All birds are animals.

B. Some clocks are animals.

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

Q93. In a tournament, a win fetches two points; a draw, one point; and a loss, no points. Fischer, who played 20 matches, had exactly three draws, at least one loss and at least one win. What could be his maximum and minimum scores possible, respectively?

(a) 25 and 15
(b) 40 and 0
(c) 33 and 8
(d) 35 and 5

Q94. M starts from her home, walks 300 m south, turns right and walks 800 m, turns right and walks 450 m, turns right and walks 250 m, turns left and walks 150 m and then turns right and walks 550 m. How much distance and in which direction should she walk back to reach her home by the shortest route?

(a) 250 m westwards
(b) 300 m southwards
(c) 250 m eastwards
(d) 300 m northwards

Q95. Select the option in which the words share the same relationship as that shared by the given pair of words

Coal : Fuel

(a) Hen : Egg
(b) Mammal : Cow
(c) Ant : Insect
(d) Zoo : Animal

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Q96. Select the letter-pair from among the given options that can replace the question mark (?) in the following series.

FU, GT, HS, ?

(a) IR
(b) LO
(c) KP
(d) JQ

Q97. If A is the wife of B, C is the father of B and D, D is the brother of E, and E is the only daughter of M, then how is M related to A?

(a) Husband's sister
(b) Husband's mother
(c) Father
(d) Maternal uncle

Q98. Study the given pattern carefully and select the number from the given options that can replace the question mark (?) in it.



(a) 6
(b) 3
(c) 9
(d) 4

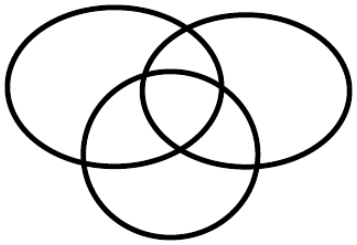
Q99. Which of the following Venn diagrams represents the given statements?

Some scientists are professors.

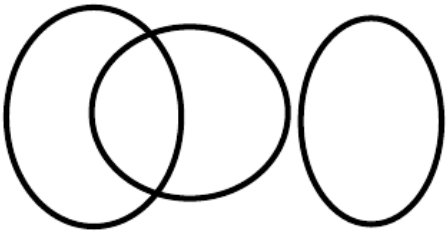
All scientists are employees.

All professors are employees.

(a)

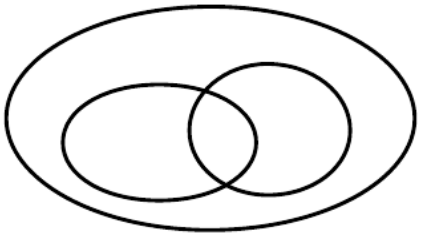


(b)

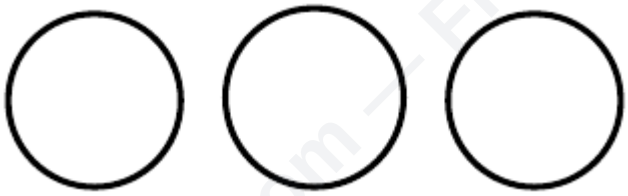


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(c)



(d)



Q100. Three of the following four words are alike in some manner and thus form a group. Identify the word that DOES NOT belong to that group.

(a) Squats
(b) Running
(c) Push-ups
(d) Cooking

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 5 m

According to the given information:
Ganesh walks 5 m south.
He turns east and walks 5 m.
He turns left (to face north) and walks 10 m.
He turns left again (to face west) and walks 5 m, then stops.
Distance between starting and ending point = 10 - 5 = 5m
So, Ganesh is 5 m from his starting point.
Hence, the correct answer is "5m".

Q2. Answer: (b) 37/12

Given:

cotθ = 12/35

θ is an acute angle.

We need to find the value of secθ.

Solution:

Step 1: Recall the relationship between cotθ and tanθ

We know:

cotθ = 1/tanθ

Thus:

tanθ = 35/12

Step 2: Use the identity involving tanθ

From the Pythagorean identity:

$1 + \tan^2\theta = \sec^2\theta$

Substitute tanθ = 35/12:

$\tan^2\theta = (35/12)^2 = 1225/144$

$1 + \tan^2\theta = 1 + 1225/144$

1 = 144/144

$1 + \tan^2\theta = 144/144 + 1225/144 = 1369/144$

$\sec^2\theta = 1369/144$

Step 3: Find secθ

$\sec\theta = \sqrt{(\sec^2\theta)} = \sqrt{(1369/144)}$

$\sec\theta = \sqrt{1369} / \sqrt{144} = 37/12$

The value of secθ is 37/12.

Q3. Answer: (d) Chalukya dynasty

The correct answer is Chalukya dynasty.

Key Points

• The rulers Pulakeshin I and Pulakeshin II were both part of the Chalukya dynasty

• They ruled large parts of southern and central India from the 6th to the 12th century CE.

• He is particularly known for his military prowess and his successful campaigns against the Pallavas, another powerful dynasty that ruled parts of southern India at the time.

• His reign is considered a golden age for the Chalukya dynasty, as he expanded its territories, patronized the arts and sciences, and established a stable and prosperous kingdom.

• Some of the notable achievements of Pulakeshin II's reign include the construction of the impressive rock-cut temples at Badami and Aihole, which are still considered masterpieces of Indian architecture.

Additional Information

• Chola Dynasty

• The founder of Chola Dynasty - Vijayalaya

• Vijayalaya captured Tanjore in 850 AD.

• The greatest Chola ruler was Rajaraja (985-1014 AD) and Rajendra I (1014-1044 AD).

• Rajaraja built Brihadeshwara temple / Rajarajeshwara temple (attributed to Shiva) at Tanjore.

• Rajendra I conquered Orissa, Bengal, Burma, and Andaman and Nicobar Islands. The Chola dynasty was as its zenith during his reign.

• Rajendra I defeated the Pala king Mahipala and took the title of Gangaikondachola and built a city called Gangaikondacholapuram.

• King Rajasimha built the Kailashnath temple at Kancheepuram.

• Parantak I built Koranganatha temple at Srini wasanllur.

• Rajaraja II built the Airawteshwar temple at Darasuram.

• Kullotung III built the Kampahreshwar temple at Tribhuvan.

• The last ruler of the Chola dynasty was Rajendra III.

• Land revenue and trade tax were the main sources of income.

• The Chola empire divided into Mandalams (Province) and these were divided into Valanadu (Comissionary), Nadu (District), and Kurram (a group of villages)

• Magadha dynasty

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• The Magadha dynasty refers to a historical region and several dynasties that ruled the region of Magadha, which was located in present-day Bihar, India.

• It was one of the most important and powerful regions in ancient India and played a significant role in the political and cultural developments of the Indian subcontinent.

• The region of Magadha was a center of Buddhism and Jainism, and it produced some of the most famous rulers in Indian history.

• Kushan dynasty

• The first Kushana dynasty was founded by Kujula Kadphises.

• Vima Kadphises issued gold coins in India.

• Kanishka founded the second Kushana dynasty.

• Their capitals were at Peshawar and Mathura.

• The most famous Kushana ruler was Kanishka, he was also known as 'Second Ashoka'.

• He started an era in 78 AD which is now known as the Saka Era and is used by the Government of India.

• Kanishka was a great patron of Mahayana Buddhism.

• During his reign, the 4th Buddhist Council was held in Kundalavana, Kashmir where the doctrines of the Mahayana form of Buddhism were finalized.

• The last great Kushana ruler was Vasudeva I.

• The Kushanas were the first rulers in India to issue gold coins on a wide scale.

Q4. Answer: (b) the Ganga river

The correct answer is the Ganga river

Key Points

• The Mahananda River is a tributary of the Ganges River

• The Mahananda is a trans-boundary river that flows through the Indian states of Bihar and West Bengal, and then into Bangladesh.

• It is the easternmost tributary of the Ganges River, joining it on the left bank

• Other tributaries of the Ganges River include:

• Yamuna, Ramganga, Ghaghra, Gandak, Kosi, and Sone.

Additional Information

• The Damodar river

• The Damodar river originates in Palamau hills in Jharkhand, rising with its many tributaries, notably the Bokaro and Konar.

• It follows a generally eastward course for 592 km through West Bengal to join the Hooghly river southwest of Kolkata. Hence it is known as the sorrow of Bengal.

• The Damodar valley along the Bihar–West Bengal border includes India's most important coal- and mica-mining fields such as Raniganj, Jharia, Giridih etc.

• The Damodar Valley Corporation, which began work in 1948, constructed four multipurpose dams to form a series of reservoirs—Tilaiya, Maithon, Konar, and Panchet Hill.

• It also constructed the Durgapur dam and a navigation canal linking the coalfields with the Hugli-Kolkata industrial complex.

• The Satluj river

• Sutlej River is the southernmost tributary of Indus.

• Sutlej is the longest tributary of Indus in India.

• It enters India through Shipkila pass.

• Indira Gandhi canal is situated in the Sutlej river.

• Sutlej is the only tributary of Indus which originates from Tibet.

• The Bhakrananka dam is constructed across the Sutlej river.

• Sutlej is the river known as Hesidros to the ancient Greeks.

• The Yamuna river

• The Yamuna River is the largest tributary of the Ganga River.

• It originates from the Yamunotri glacier, at the Bandarpoonch peak in Uttarakhand.

• The main tributaries joining the river include the Sin, Hindon, Betwa Ken, and Chambal.

• The Tons is the largest tributary of the Yamuna

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Q5. Answer: (b) Rs. 3,500

Given:

Investment time: t = 7.2 years.

Original maturity amount: A1 = Rs. 5,768.

New maturity amount: A2 = Rs. 6,272 (with 2% more interest rate).

We need to find the original principal P.

Solution:

Step 1: Use the formula for the maturity amount in simple interest

The formula is:

$A = P \times (1 + r \times t)$

where:

A = maturity amount.

P = principal.

r = rate of interest (in decimal).

t = time in years.

Step 2: Write equations for the two cases

For the original case:

$5,768 = P \times (1 + r \times 7.2)$ ... (1)

For the case with 2% more interest:

$6,272 = P \times (1 + (r + 0.02) \times 7.2)$ ... (2)

Step 3: Simplify both equations

From equation (1):

$1 + 7.2r = 5,768 / P$ ... (3)

From equation (2):

$1 + 7.2r + 0.144 = 6,272 / P$

$1 + 7.2r = (6,272 / P) - 0.144$ ... (4)

Step 4: Equate equations (3) and (4)

$5,768 / P = (6,272 / P) - 0.144$

$5,768 = 6,272 - 0.144P$

$0.144P = 6,272 - 5,768$

$0.144P = 504$

$P = 504 / 0.144$

$P = 3,500$

The original principal is Rs. 3,500.

Q6. Answer: (c) 1935

The correct answer is 1935.

Key Points

• RBI was founded on 1 April 1935, in Kolkata.

• HQ in Mumbai.

• Present Governor is Sanjay Malhotra.

• The RBI is responsible for implementing monetary and credit policies, issuing currency notes, being a banker to the government, a regulator of the banking system, manager of foreign exchange, and regulator of payment & settlement systems while continuously working towards the development of Indian financial markets.

• RBI is not a Commercial Bank.

• RBI was nationalized on 1st January 1949.

Additional Information

• The First Governor of RBI was Sir Osborne Smith (1935 – 1937).

• The First Indian Governor of RBI was CD Deshmukh (1943 – 1949).

• The only Prime Minister who was the Governor of RBI was Manmohan Singh (1982 – 1985).

• The First women deputy Governor of RBI was KJ Udeshi.

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Q7. Answer: (d) 578 cm2

Given:

Hypotenuse of a right isosceles triangle = 34√2 cm

Formula Used:

Area of a right isosceles triangle = 1/2 × a²

where a is the length of each leg.

Calculation:

In a right isosceles triangle, the legs are equal, and the hypotenuse (h) is related to the leg (a) by the formula:

h = a√2

Given hypotenuse (h) = 34√2 cm

=> 34√2 = a√2

=> a = 34 cm

Now, Area = 1/2 × a²

=> Area = 1/2 × 34²

=> Area = 1/2 × 1156

=> Area = 578 cm²

The area of the triangle is 578 cm².

Q8. Answer: (d) Calcutta

The correct answer is Calcutta

Key Points

• The first textile mill in India was established at Fort Gloster near Kolkata in 1818.

• However, it was a commercial failure and closed down after some time.

• The first successful mechanized textile mill was established in Mumbai in 1854

• Small cotton mills first appeared in Britain in the 1740s.

Additional Information

• The textile industry in India:

• The second cotton mill in India was established in 1854 in Mumbai by KGN Daber.

• It was named Bombay Spinning and Weaving Company.

• The first mill in Ahmedabad was started in 1861.

• The textile industry in India faced challenges such as competing with cheap textiles imported from Britain.

• The First World War was a major period of development for the cotton factory production in India.

• During this time, textile imports from Britain declined and Indian factories were required to produce cloth for military supplies

Q9. Answer: (a) 6 cm

Given:

AP = 18 cm, CD = 3 cm, DP = 9 cm.

AB is the diameter of the circle, extended to meet the extended chord CD at point P.

We need to find the radius of the circle.

Solution:

Step 1: Apply the power of a point theorem

Using the power of a point theorem, for point P outside the circle:

AP × PB = CP × PD

Here:

AP = 18 cm

PB = AP - AB, where AB is the diameter = 2r (r is the radius).

CP = CD + DP = 3 + 9 = 12 cm

PD = 9 cm

Step 2: Substitute values into the formula

AP × PB = CP × PD

18 × (18 - 2r) = 12 × 9

18 × (18 - 2r) = 108

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Step 3: Simplify the equation

Expand the left-hand side:

324 - 36r = 108

Simplify:

324 - 108 = 36r

216 = 36r

r = 216 / 36

r = 6

The radius of the circle is 6 cm.

Q10. Answer: (d) Hydrochloric acid

The correct answer is Hydrochloric acid.

Key Points

• The hydrochloric acid in the gastric juice breaks down the food and the digestive enzymes split up the proteins.

• The acidic gastric juice also kills bacteria.

• It also eliminates bacteria and viruses in the stomach, protecting your body from infection.

• Low levels of hydrochloric acid can have a profound impact on the body's ability to properly digest and absorb nutrients.

Additional Information

• Nitric Acid is a strong acid with the chemical formula HNO3.

• It is also known as the spirit of niter and aqua fortis.

• Acetic acid is also known as ethanoic acid, ethylic acid, vinegar acid, and methane carboxylic acid; it has the chemical formula of CH3COOH.

• Sulfuric acid or sulphuric acid, known in antiquity as oil of vitriol, is a mineral acid composed of the elements sulfur, oxygen, and hydrogen, with the molecular formula H2SO4.

Q11. Answer: (a) Khasi Hills

The correct answer is Khasi Hills

Key Points

• "Shillong city" is the capital of the state of Meghalaya and it is situated on the "Khasi hill".

• The highest peak of the Khasi ranges is 'Lum Shillong' which is 1968 meters high.

• The region is known for its scenic beauty and is sometimes called the "Scotland of the East".

• The Khasi Hills are part of a detached block of the Deccan plateau, with summits ranging from 4,000 to 6,000 feet in elevation.

• The Khasi Hills are drained by tributaries of the Brahmaputra and Surma rivers.

Additional Information

• The Naga Hills are located on the border of India and Myanmar which is located in the state of Nagaland, India.

• The Shillong plateau consists of Garo, Khasi, and Jaintia hills, all of which are located in the state of Meghalaya.

• Emergence of Meghalaya as an Autonomous State on 2nd April 1970.

• Full-fledged State on 21st January 1972.

• Mikir and Rengma hills are located in the state of Assam under the Shillong plateau.

Q12. Answer: (c) Pushkar

The correct answer is Pushkar

Key Points

Pushkar Fair:

• Pushkar fair is one of India's biggest cattle (camel) fair.

• Pushkar fair is also known as Pushkar Camel Fair or locally Kartik Fair.

• It is an annual fair that is also known as Kartik Mela or Pushkar ka Mela.

• It is held in the Pushkar city of Ajmer district of Rajasthan.

• The Pushkar fair is one of the largest camel, horse, and cattle fairs in India.

• Apart from the cattle trade, it is an important pilgrimage for Hindus to Pushkar Lake.

• Cultural events and competitions at this fair include Matka bust, longest moustache, contest, bridal contest, camel race, and others.

Thus, the Pushkar Fair is held at Ajmer.

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Additional Information

Other important fairs of India:

Fair	City
Sonepur Mela	Sonepur Bihar
Hemis Gompa fair	Ladakh
Kolayat Fair/Kapil Muni fair	Bikaner Rajasthan
Chandrabhaga Mela	Bhubaneswar Orissa
Gangasagar Mela	Bay of Bengal, West Bengal.

Q13. Answer: (d) Rs. 2,695

Given:

Cost Price (CP) = Rs. 2,450

Gain = 10%

Formula Used:

Selling Price (SP) = CP + (CP × Gain%)

Calculation:

Gain% = 10%

Gain = CP × (Gain% / 100)

Gain = Rs. 2,450 × (10 / 100)

Gain = Rs. 2,450 × 0.1

Gain = Rs. 245

Selling Price (SP) = CP + Gain

=> SP = Rs. 2,450 + Rs. 245

=> SP = Rs. 2,695

The selling price of the machine is Rs. 2,695.

Q14. Answer: (a) 1992

The correct answer is 1992.

Key Points

• Project Elephant was launched in February 1992 to assist states having free-ranging populations of wild elephants to ensure the long-term survival of identified viable populations of elephants in their natural habitats.

• Project Elephant was initiated as a Centrally Sponsored Scheme (CSS) by the Ministry of Environment, Forest and Climate Change of the Government of India.

• The project is being implemented in sixteen states.

• Andhra Pradesh, Arunachal Pradesh, Assam, Jharkhand, Karnataka, Kerala, Meghalaya, Nagaland, Odisha, Tamil Nadu Uttaranchal and West Bengal.

Additional Information

• Elephant population

• The first exclusive exercise for enumeration of wild elephants in the elephant reserves was conducted in 2005.

• This exercise also sought to experiment with two sampling methods, viz. Block sampling and Line transect-dung Count.

• As of the last elephant count in 2017, the population of wild elephants in the country has increased to 29,964 as compared to 27,669-27,719 in 2007.As of 2017, the estimated wild population in India account for nearly three-fourths of the extant population.

• There are about 138 identified elephant corridors in India with the majority of the elephant population in India is restricted to four general areas.[

Q15. Answer: (b) Selected text is centre aligned

The correct answer is that the Selected text is centre-aligned

Key Points

• In Microsoft Word 2016, pressing the keyboard shortcut Ctrl + E centers the selected text or line on the page

• This is a quick way to center text without having to navigate to the alignment options in the toolbar.

• The shortcut centers the text or paragraph on the page, creating balanced whitespace on both the left and right sides.

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• It does not alter other formatting properties such as bold, italics, font size, or color.

Additional Information

• Other shortcuts

Action	Shortcut Key
Justifies the paragraph	Ctrl + J
Aligns the paragraph to the left	Ctrl + L
Aligns the paragraph to the right	Ctrl + R
Undoes an action	Ctrl + Z
Redoes an undone action	Ctrl + Y
Makes text bold	Ctrl + B
Inserts a comment	Alt + R, C
Turns change tracking on or off	Ctrl + Shift + E
Closes the Reviewing Pane	Alt + Shift + C
Selects Spelling & Grammar	Alt + R, S

Q16. Answer: (c) Bhagat Singh Koshiyari

The correct answer is Bhagat Singh Koshiyari

Key Points

• The Governor of Maharashtra as of March 2021 is Bhagat Singh Koshiyari.

• Bhagat Singh Koshiyari assumed office as the Governor of Maharashtra on September 5, 2019, succeeding C. Vidyasagar Rao.

• Before serving as Governor, he held several important positions, including being the Chief Minister of Uttarakhand from 2001 to 2002 and a Member of Parliament in the Rajya Sabha and Lok Sabha.

• He is a seasoned politician from the Bharatiya Janata Party (BJP) and has also been involved in social and educational work, including journalism, prior to his political career.

Additional Information

• Bandaru Dattatreya:

• Former Union minister Bandaru Dattatreya was sworn as the 18th governor of Haryana.

• Dattatreya was administered the oath of office by Punjab and Haryana High Court Chief Justice Ravi Shanker Jha at a simple function at the Raj Bhavan here.

• Dattatreya (74) was governor of Himachal Pradesh before being moved to Haryana in a recent reshuffle.

• He succeeds Satyadeo Narain Arya, who has been moved to Tripura.

• A four-term MP, Dattatreya was first elected to the Lok Sabha in 1991. Born on June 12, 1947, in Hyderabad, he holds a BSc degree from Osmania University. Hence, Option 1 is correct.

• He was the minister of state for labour and employment in the NDA government headed by Narendra Modi in 2014 and was also part of the Atal Bihari Vajpayee cabinet earlier.

• He was appointed as the Governor of Himachal Pradesh in 2019.

• Arif Mohammad Khan

• Arif Mohammad Khan assumed charge as Kerala Governor on 6 September 2019.

• Mr Khan, succeeds P. Sathasivam, the former Chief Justice of the Supreme Court.

• Chief Justice of Kerala High Court administered the oath of office Mr Khan, who takes over as the 22nd Governor of Kerala.

• Mr Khan was elected to the Uttar Pradesh Assembly at the age of 26.

• Sh. Kalraj Mishra

• He assumed office of Governor of Rajasthan on 9 September 2019. He took office from Sh. Kalyan Singh.

• He is also the former Governor of Himachal Pradesh.

• He had been a member of Rajya Sabha and a MLA from Lucknow East assembly constituency.

• He had also been the President of Uttar Pradesh state unit of the BJP.

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Q17. Answer: (d) 1/121

The logic followed here is:

Hence, the correct answer is " 1/121 ".

Q18. Answer: (d) 63

Given:

The ratio of two numbers = 3 : 7

The HCF = 3

Formula Used:

LCM × HCF = Product of the numbers

Calculation:

Let the two numbers be 3x and 7x.

HCF = 3

So, x = 3

The two numbers are 3 × 3 = 9 and 7 × 3 = 21

Product of the numbers = 9 × 21

Product of the numbers = 189

LCM × HCF = 189

LCM × 3 = 189

LCM = 189 / 3

LCM = 63

The LCM is 63.

Q19. Answer: (c) 17

The logic followed here is:

Hence, the correct answer is "17".

Q20. Answer: (a) 20 cm

Given:

Chords AB and CD intersect at point P inside the circle.

CP = 3 cm, BP = 8 cm.

AP and PB are natural numbers.

We need to determine which of the given options cannot be the length of AB.

Solution:

According to the chord intersection theorem:

AP × PB = CP × PD

AP × PB = 3 × 8 = 24 ... (1)

The total length of AB is:

AB = AP + PB

Option 1: AB = 20 cm

If AB = AP + PB = 20

AP × PB = 24

No possible natural number values will follow above two conditions.

Option 2: AB = 25 cm

If AB = AP + PB = 25

AP × PB = 24

AP = 24 PB = 1 follow both above conditions hence 25 is possible.

Option 3: AB = 10 cm

If AB = AP + PB = 10

AP × PB = 24

AP = 6 PB = 4 follow both above conditions hence 10 is possible.

Option 4: AB = 14 cm

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If AB = AP + PB = 14

AP × PB = 24

AP = 12 PB = 2 follow both above conditions hence 14 is possible.

The length of AB that cannot be achieved is 20 cm.

Q21. Answer: (b) the independent regional navigation satellite system developed by India

The correct answer is the independent regional navigation satellite system developed by India

Key Points

• The system is being developed by the Indian Space Research Organization (ISRO).

• In April 2016, with the last launch of the constellation's satellite, IRNSS was renamed Navigation Indian Constellation (NAVIC)

• IRNSS is an independent and autonomous regional navigation system aiming a service area of about 1500 kilometers around India.

• The system will be under complete Indian control, with the space segment, ground segment and user receivers all being built in India.

• The NavIC is currently operating via seven satellites also known as the constellation of seven stars.

• The ISRO is also planning to expand the constellation from 7 to 11 satellites.

• This way we can monitor our navigation system more accurately and precisely.

Additional Information

• Countries with their own Navigation Satellite System

• Some countries provide navigation systems on a global scale, while others provide navigation on a regional scale.

• The United States Global Positioning System (GPS) – This is the most used GPS system in the world, operational since 1978.

• It has a constellation of 32 satellites.

• Russian GLONASS – Provides global coverage.

• It has a total of 26 satellites.

• European Union Galileo – Became operational in 2016, with a constellation of 30 satellites.

• Chinese BeiDou – Currently it provides regional coverage of the Asia- Pacific region, plans to provide global coverage by 2020.

• It has a total of 35 satellites.

• Japanese Quasi-Zenith Satellite System (QZSS) – It is a regional satellite system covering Japan and the Asia-Oceania region.

• It has a total of 4 satellites, with 7 planned.

• India (IRNSS-NAVIC) – Constellation of 8 Satellites.

Q22. Answer: (d) 5

Given:

Equation: 4x - 3y = 9

x = 6

Formula Used:

Substitute the value of x into the equation to find y.

Calculation:

Substitute x = 6 into the equation 4x - 3y = 9

4(6) - 3y = 9

=> 24 - 3y = 9

=> 24 - 9 = 3y

=> 15 = 3y

=> y = 15 / 3

=> y = 5

The value of y is 5.

Q23. Answer: (c) WS Seton-Kar

The correct answer is WS Seton-Kar

Key Points

• W.S. Seton-Kar was the chairman of the Indigo Commission,

• It was established in 1860 to investigate the problems with indigo cultivation in Bengal

• The commission found that the planters were exploiting the farmers and that the farmers were not paid proper wages.

• The commission also suggested ways to improve the conditions of the farmers, including:
• Short-term contracts
• The ryot and planter negotiating the land for indigo cultivation
• The factories paying for the transportation of indigo

Additional Information

• The Indigo Commission was made up of five members:
• W.S. Seton-Kar: The chairman
• R. Temple: Represented the British government
• Rev. J. Sale: Represented the Christian missionaries
• W. F. Ferguson: Represented the European planters
• Chandramohan Chatterjee: Represented the Zamindars
• The government issued a notification in November 1860 that the ryots could not be forced to grow indigo.
• However, indigo cultivation was almost wiped out from Bengal by the end of 1860 because the planters were already closing down their factories.

Q24. Answer: (a) BIS was established in the year 2010.

The correct answer is BIS was established in the year 2010

Key Points

• BIS was established on 1 April 1987, under the Bureau of Indian Standards Act, 1986.
• It replaced the Indian Standards Institution (ISI), which was established in 1947 not in the year 2010.
• BIS has its headquarters in New Delhi.
• BIS operates through five regional offices located in Kolkata, Chennai, Mumbai, Chandigarh, and Delhi.
• BIS stands for Bureau of Indian Standards.

Additional Information

• BIS is responsible for the harmonious development of the activities of standardization, marking, and quality certification of goods and for matters connected therewith or incidental thereto.
• The activities of BIS can be broadly grouped under the following heads:
• Standards formulation
• International activities
• Product Certification
• Hallmarking
• Laboratory services
• Training services - National Institute of Training for Standardisation
• Consumer Affairs and Publicity

Q25. Answer: (a) 460 m

Given:

Speed of the train = 69 km/h

Time to pass the electric pole = 8 seconds

Time to pass the platform = 32 seconds

Formula Used:

Length of the train (L) = Speed × Time

Length of the platform (P) = Total length - Length of the train

Calculation:

Speed of the train in m/s = 69 km/h × (1000/3600)

Speed of the train in m/s = 19.167 m/s

Length of the train (L) = Speed × Time

=> L = 19.167 × 8

=> L = 153.336 meters

Total length when passing the platform = Speed × Time

=> Total length = 19.167 × 32

=> Total length = 613.344 meters

Length of the platform (P) = Total length - Length of the train

=> P = 613.344 - 153.336

=> P = 460 meters

The correct answer is option 1 (460 meters).

Q26. Answer: (c) Rudraprayag

The correct answer is Rudraprayag

Key Points

• Kedarnath Temple

• The temple is located at Kedarnath Town of Rudraprayag District of Uttarakhand near Mandakini River.

• This temple is dedicated to Lord Shiva and is one of the four major sites in India's Chota Char Dham pilgrimage of the Northern Himalayas.

• The head priest of the Kedarnath Temple belongs to the Veerashaiva Community from Karnataka.

• This temple was the worst affected area during the 2013 flash floods in Uttarakhand.

Additional Information

• Kedarnath Tragedy

• The flash floods triggered by very heavy rainfall and cloudburst in Uttarakhand on 16-17 June 2013, affected 12 out of the 13 districts in Uttarakhand.

• The 4 districts that were worst affected were Rudraprayag, Chamoli, Uttarkashi, and Pithoragarh.

• The banks of the Chorabari lake in Kedarnath collapsed due to a cloudburst that had resulted in a major flash flood causing widespread destruction in Uttarakhand and led to heavy losses to infrastructure, agricultural lands, human and animal lives.

• Kedarnath Tragedy Reasons:

• The overflow of the Mandakini River.

• Cloudburst and Heavy Rain in Kedarnath.

• The overflow of Chorabari Lake.

Q27. Answer: (a) Article 1

The correct answer is Article 1.

Key Points

• Article 1 of the Constitution of India defines the name and the territory of India.

• Article 1 in the Constitution states that India, that is Bharat, shall be a Union of States.

• The territory of India shall consist of: The territories of the states, The Union territories, and Any territory that may be acquired in the future.

• The names of the States and the Unions have been described in the First Schedule. This schedule also holds that there are four Categories of State and territories – Part A, Part B, Part C, and Part D.

• Part A – includes the nine provinces which were under British India

• Part B – princely states consisted of this category

• Part C – centrally administered five states

• Part D – Andaman and Nicobar Islands

Additional Information

Article 2	**• It states that the parliament may, by law, admit new states into the Union of India or establish new states on terms and conditions it deems fit. - For example, the addition of the State of Sikkim by the 35th (1974) and 36th (1975) constitutional amendments.**
Article 3	• Article 3 empowers the parliament to form a new state by separation of a part of the territory of an established state or to unite two or more states or parts of states or by uniting any territory to a part of any state. - This article provides that areas of any state can reduced or increased and alter the boundaries or change the name of a state. - Even though the state boundaries are subject to change, their area cannot be acquired by a foreign state.

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Article 4	• This article specifies that the laws provided in articles 2 and 3, admission/establishment of new states and alteration of names, areas, and boundaries, etc. of established states, are not to be considered amendments of the Constitution under article 368. - It means these can be passed without resorting to any special procedure and by a simple majority.

Q28. Answer: (c) 45

Given:

Fraction of people sitting in the hall = 6/11

Fraction of chairs occupied = (9/14)

Number of empty chairs = 30

Formula Used:

Total chairs = Number of occupied chairs + Number of empty chairs

Total people in the hall = Number of sitting people + Number of standing people

Calculation:

Let the total number of chairs be C and the total number of people be P.

Number of occupied chairs = (9/14)C

From the given, we know:

C - (9/14)C = 30

=> (5/14)C = 30

=> C = 30 × (14/5)

=> C = 84

Number of occupied chairs = (9/14) × 84

=> Number of occupied chairs = 54

Total people (P) = 11/11

People sitting = (6/11)P

(6/11)P = 54

=> P = 54 × 11/6

=> P = 99

Number of standing people = Total people - Number of sitting people

Number of standing people = 99 - 54

Number of standing people = 45

The number of people standing in the hall is 45.

Q29. Answer: (d) C6J

The logic follows here is:

Option 1) A2C → A + 2 = C

Option 2) B4F → B + 4 = F

Option 3) D8L → D + 8 = L

Option 4) C6J → C + 6 = I ≠ J.

So, 'C6J' is odd among them.

Hence, the correct answer is "Option 4".

Q30. Answer: (b) Kolkata-Chennai section

The correct answer is the Kolkata-Chennai section

Key Points

• The longest section of the Golden Quadrilateral super highway is the Kolkata-Chennai corridor.

• The Golden Quadrilateral is a highway project in India that connects the four major cities of Delhi, Kolkata, Chennai, and Mumbai.

• The total length of the Golden Quadrilateral is 5,846 kilometres, and 1,232 kilometres of it run through Tamil Nadu.

• The Golden Quadrilateral was planned in 1999, launched in 2001, and completed in 2012.

• It is the largest highway project in India and the fifth-longest in the world.

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Additional Information

It is the largest highway project in India and the fifth-longest in the world with 5846 kilometers.

Segment	Length	Date of Completion
Delhi-Kolkata	1453 km	31st August 2011
Chennai-Mumbai	1290 km	31st August 2011
Kolkata-Chennai	1684 km	31st May 2013
Mumbai-Delhi	1419 km	31st August 2011

Q31. Answer: (a) 3

Given:

243 ÷ 3 ÷ 3 ÷ 3 ÷ 3

Formula Used:

Sequential division

Calculation:

243 ÷ 3 = 81

81 ÷ 3 = 27

27 ÷ 3 = 9

9 ÷ 3 = 3

=> 243 ÷ 3 ÷ 3 ÷ 3 ÷ 3 = 3

The correct answer is option 1.

Q32. Answer: (c) 12/5

Given:

6/25, 4/45, 3/35

Formula Used:

LCM of fractions = (LCM of Numerators)/(HCF of Denominators)

Calculation:

LCM of Numerators (6, 4, 3):

Prime factorization:

6 = 2 × 3

4 = 2^2

3 = 3

LCM = $2^2 \times 3 = 4 \times 3 = 12$

HCF of Denominators (25, 45, 35):

Prime factorization:

25 = 5^2

45 = $3^2 \times 5$

35 = 5 × 7

Common factor = 5

HCF = 5

LCM of fractions:

LCM = 12/5

Therefore The correct answer is option 3.

Q33. Answer: (d) SATZ

The logic followed here is:

Hence, the correct answer is "SATZ".

Q34. Answer: (c) Hyderabad Information Technology and Engineering Consultancy

The Correct Answer is Hyderabad Information Technology and Engineering Consultancy

Key Points

• The full form of HITEC CITY is Hyderabad Information and Technology Engineering Consultancy City.

• HITEC City is an Indian information technology, engineering, health informatics, and bioinformatics, business district located in Hyderabad, Telangana, India.

• HITEC City also known as Cyberabad is one of the premier commercial hubs in Hyderabad offering plenty of job opportunities for professionals.

• The hi-tech city in Hyderabad is the result of the IT revolution that India witnessed with the development of Bangalore as a prominent IT hub.

• The Andhra Pradesh government realized the importance of the need for better infrastructure so that the government can attract investments from varied companies.

• As a result, the government decided to start a project, thus, inviting private investments.

• The commencement of the project was done initially by L&T ECC and was named L&T INFOCITY.

Additional Information

City	Sobriquet
Kanpur	Leather City of the World Manchester of The East
Nagpur	Orange City
Hyderabad	City of Pearls Hi-Tech City City of Nizams
Pune	Oxford of the East Queen of Deccan

Q35. Answer: (d) 39/40

Given:

Value = 8/5

Result = 5/8

Formula Used:

Value - x = Result

Calculation:

Let x be the number to be subtracted.

8/5 - x = 5/8

=> 8/5 - 5/8 = x

=> (64 - 25)/40 = x

=> 39/40 = x

The correct answer is option 4.

Q36. Answer: (a) 28

Given: 30 V 2 R 3 S 6 B 5

Decoding the given information:

Symbol	S	B	R	V
Means	×	•	•	÷

Now replacing the sign from left to right using BODMAS Rule, we get:

=> 30 ÷ 2 + 3 × 6 - 5

= 15 + 3 × 6 - 5

=> 15 + 18 - 5

=> 33 - 5

= 28

Hence, the correct answer is "Option 1".

Q37. Answer: (a) England

The correct answer is England

Key Points

• Mark Wood, Jonny Bairstow, and Stuart Broad are all from England.

• Mark Wood

• He is a bowler from Durham who bowled at speeds of up to 96.5 mph during a match

• Jonny Bairstow

• He is a wicketkeeper-batter from Yorkshire who returned to the England team after recovering from a broken leg and dislocated ankle

• Stuart Broad

• He is a seamer who took two crucial wickets in a match against Australia

Additional Information

• Major Domestic competitions in India include:

• the Ranji Trophy.

• the Duleep Trophy.

• the Vijay Hazare Trophy.

• the Deodhar Trophy.

• the Irani Trophy.

• the NKP Salve Challenger Trophy.

• Major International Trophies of India with other Nations are:

• ICC World Cup.

• ICC Champions Trophy.

• ICC T20 World Cup.

• Border-Gavaskar Trophy.

• Asia Cup.

• Natwest Series.

• Indian Premier League.

Q38. Answer: (c) 75

Given:

The average of 6 positive integers = 55

The difference between the largest and the smallest of these 6 numbers = 24

Formula Used:

Sum of 6 integers = Average × Number of integers

Calculation:

Sum of 6 integers = 55 × 6

Sum of 6 integers = 330

Let the smallest integer be x.

Let the largest integer be x + 24.

To maximize the largest integer, the other integers should be as small as possible.

Smallest integer = x

Other integers (assuming all other four integers are very close to x): x, x, x, x

Sum of these integers = x + x + x + x + x + (x + 24)

Sum of these integers = 6x + 24

Given sum of integers = 330

6x + 24 = 330

=> 6x = 330 - 24

=> 6x = 306

=> x = 306 / 6

=> x = 51

Largest integer = x + 24

Largest integer = 51 + 24

Largest integer = 75

The maximum value possible for the largest of these 6 integers is 75.

Q39. Answer: (c) 10

The logic followed here is: [(1st number × 2nd number) + 2] / 2 = Number.

I. 9 → 6 = 28 → 9 × 6 + 2 = 56 / 2 = 28

II. 7 → 4 = 15 → 7 × 4 + 2 = 30 / 2 = 15

III. 3 → 8 = 13 → 3 × 8 + 2 = 26 / 2 = 13

IV. 3 → 6 = ? → 3 × 6 + 2 = 20 / 2 = 10

Hence, the correct answer is "10".

Q40. Answer: (b) 2

Given:

(1 - cos P)(1 + cos P) = 3/4

P is an acute angle, and we need to find the value of sec P.

Solution:

Step 1: Simplify the given equation

Using the identity (1 - cos P)(1 + cos P) = 1 - cos² P:

1 - cos² P = 3/4

Step 2: Relate to sin² P

We know that 1 - cos² P = sin² P. Substituting this:

sin² P = 3/4

Step 3: Find cos² P

Using the Pythagorean identity sin² P + cos² P = 1:

3/4 + cos² P = 1

cos² P = 1 - 3/4 = 1/4

cos P = √(1/4) = 1/2 (since P is acute, cos P > 0).

Step 4: Find sec P

sec P = 1 / cos P

sec P = 1 / (1/2) = 2

The value of sec P is 2.

Q41. Answer: (b) Kashmir

The correct answer is Kashmir

Key Points

• The Watal clan performs the dumhal dance in the Indian province of Jammu & Kashmir.

• This dance can only be performed by the women of the Watal on particular days and in designated places.

• This dance style is well known for its vibrant costumes and lovely embellishments, which primarily consist of excellent "bead work."

• A "conical cap" made of beads and ornamental shells is also part of the clothing for this dance style.

Additional Information

• Other Dances of Jammu and Kashmir

Dance Form	Description/Features
Rauf	A traditional folk dance performed by women, especially during Eid and other festive occasions.
Hikat	A spinning dance performed in pairs, symbolizing unity and coordination.
Mandjas	A dance associated with harvest season, reflecting the joy and gratitude of the farmers.
Kud	A ceremonial dance performed in honor of local deities, often during night-long gatherings.
Dandi Nach	A stick dance performed with rhythmic movements, accompanied by traditional music.

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Damali	A blend of music and dance, often performed in groups to celebrate cultural and social occasions.

Q42. Answer: (a) Rs. 220

Given:

A person incurs a 15% loss by selling an article for Rs. 170.

Formula Used:

Cost Price (CP) = Selling Price (SP) / (1 - Loss%)

Selling Price for 10% Profit (SP) = Cost Price × (1 + Profit%)

Calculation:

Loss% = 15%

Selling Price (SP) = Rs. 170

Cost Price (CP) = Rs. 170 / (1 - 0.15)

=> CP = Rs. 170 / 0.85

=> CP = Rs. 200

Profit% = 10%

Selling Price for 10% Profit (SP) = Rs. 200 × (1 + 0.10)

=> SP = Rs. 200 × 1.10

=> SP = Rs. 220

The correct answer is option 1.

Q43. Answer: (d) Jaisalmer

The correct answer is Jaisalmer.

Key Points

• Pokhran

• Pokhran is located in Jaisalmer.

• Pokhran is a village and a municipality located in the Jaisalmer district of the Indian state of Rajasthan.

• It is a remote location in the Thar Desert region.

• It served as the test site for India's first underground nuclear weapon, ballistic missiles.

Additional Information

• Pokhran-I

• On May 18, 1974, India detonated its first nuclear device in Pokhran, codenamed "Smiling Buddha".

• This was officially called a "peaceful nuclear explosion" (PNE), but it was a display of India's nuclear technology.

• Pokhran-II

• In May 1998, India conducted a series of five nuclear weapon tests at Pokhran, codenamed "Operation Shakti".

• This was India's second attempt at a nuclear test and was successful.

• India's first underground nuclear weapon

• Smiling Buddha (MEA designation: Pokhran-I) was the assigned code name of India's first successful nuclear bomb test on 18 May 1974.

• The test was conducted under the supervision of Raja Ramanna, who was then the director of India's premier nuclear research institute Bhabha Atomic Research Centre (BARC).

• The test was named 'Smiling Buddha' because it was conducted on Buddha Purnima that year.

Q44. Answer: (c) Akbar - Jahangir - Shah Jahan - Aurangzeb

The correct answer is Akbar - Jahangir - Shah Jahan - Aurangzeb

Key Points

• The correct chronological order of the Mughal emperors is:

• Akbar → Jahangir → Shah Jahan → Aurangzeb

• Akbar, also known as Akbar the Great, was the third Mughal emperor.

• Jahangir, Akbar's son, succeeded him.

• Shah Jahan, Jahangir's son, became emperor after him.

• Aurangzeb, Shah Jahan's son, took the throne by defeating his brothers.

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Additional Information

Emperor	Significant Events	Legacy
Babur(1526–1530	Established Mughal rule in India after the First Battle of Panipat (1526).	Founder of the Mughal dynasty; remembered for his autobiography Baburnama.
Humayun(1530–1540 & 1555–1556)	Lost the empire to Sher Shah Suri; regained it with Persian assistance.	Re-established Mughal rule briefly; his tomb is a UNESCO World Heritage Site.
Akbar(1556–1605)	Expanded the empire; established the Mansabdari system and Din-i-Ilahi (a syncretic religious movement).	Known as "Akbar the Great" for his administrative, military, and cultural achievements.
Jahangir(1605–1627)	Faced rebellions; consolidated the empire; allowed British East India Company to trade in India.	Remembered for his love of nature and art, as seen in the Jahangirnama.
Shah Jahan(1628–1658)	Oversaw the golden age of Mughal architecture; witnessed the Deccan Wars and financial strain due to constructions.	Renowned for his architectural contributions; imprisoned by his son Aurangzeb in his later years.
Aurangzeb(1658–1707)	Expanded the empire to its largest territorial extent; imposed Jizya tax and strict Islamic laws.	His policies and prolonged wars led to the decline of the Mughal Empire after his death.

Q45. Answer: (b) 18

Given:

Anil is twice as efficient as Balu.

Anil and Balu together can complete the task in 12 days.

Formula Used:

Work done by Anil and Balu together in 1 day = 1/12

Efficiency ratio: Anil : Balu = 2 : 1

Calculation:

Let Balu's 1 day work = x.

Then Anil's 1 day work = 2x.

Combined 1 day work of Anil and Balu = 2x + x = 3x.

Given, 3x = 1/12

=> x = 1/36

Balu's 1 day work = 1/36

Anil's 1 day work = 2 × 1/36 = 1/18

Thus, Anil alone can complete the task in 18 days.

The correct answer is option 2.

Q46. Answer: (b) Pavo Cristatus

The correct answer is Pavo Criistatus

Key Points

• India's national bird is the peacock.

• The Peacock was recognized as India's National Bird in 1963.

• Pavo cristatus is the scientific name of the peacock.

• It belongs to the order Galliformes of the Phasianidae family.

• Pavo is a ground-living, heavy-bodied, terrestrial feeder, and polygamous bird.

• It is a colorful bird about the size of a swan, with a fan-shaped feathered crest, a white spot under each eye, and a long, thin neck.

• The omnivorous peacocks can be easily found in low-elevation meadows, woods, and close-by human areas.

• These are important to the ecosystems as they are seed dispersers and predators.

Additional Information

• The scientific name is the standardized naming of living organisms such that a particular organism is known by the same name all over the world.

• The scientific names ensure that each organism has only one name.

• These also ensure that such a name has not been used for any other known organism.

• Each scientific name has two components- the generic epithet and the specific epithet. Thus it is also called binomial nomenclature.

Q47. Answer: (c) 1

Given:

Numbers are 81, 91, 101, and 111.

Formula Used:

HCF (Highest Common Factor) is the greatest number that divides all the given numbers exactly.

Calculation:

Prime Factorization of 81 = 3^4

Prime Factorization of 91 = 7 × 13

Prime Factorization of 101 = 101 (Since 101 is a prime number)

Prime Factorization of 111 = 3 × 37

Common factors among 81, 91, 101, and 111 = 1

=> HCF = 1

The correct answer is option 3.

Q48. Answer: (d) 24 March

The correct answer is 24 March

Key Points

• World TB Day is celebrated every year on 24 March annually to commemorate the date when Dr. Robert Koch announced his discovery of Mycobacterium tuberculosis, the bacillus that causes TB in 1882.

• This Day is observed to educate people about TB, its impact around the world.The theme of World TB Day 2022 - 'Invest to End TB. Save Lives.'

• TB is a preventable and curable disease, but it still claims the lives of 4,100 people each day.

• The emergence of drug-resistant TB is a major health threat.

Additional Information

Date	Notable Event
24 September	World Maritime Day (observed on the last Thursday of September but sometimes falls on 24th).
24 January	National Girl Child Day (India) - Celebrating the rights and achievements of the girl child.
24 April	Panchayati Raj Day (India) - Commemorates the Constitutional amendment for decentralized governance.

Q49. Answer: (b) 26

Given:

Number = 12288

Formula Used:

To find the number of factors of a given number, express the number as a product of prime factors: n = p1^(e1) × p2^(e2) × p3^(e3) × … × p_k^(e_k).

The total number of factors is given by: (e1 + 1) × (e2 + 1) × (e3 + 1) × … × (e_k + 1).

Calculation:

First, we find the prime factorization of 12288:

12288 is even, so we keep dividing by 2:

12288 ÷ 2 = 6144

6144 ÷ 2 = 3072

3072 ÷ 2 = 1536

1536 ÷ 2 = 768

768 ÷ 2 = 384

384 ÷ 2 = 192
192 ÷ 2 = 96
96 ÷ 2 = 48
48 ÷ 2 = 24
24 ÷ 2 = 12
12 ÷ 2 = 6
6 ÷ 2 = 3
3 is a prime number.
So, the prime factorization of 12288 is:
$12288 = 2^{12} \times 3^{1}$
Using the formula for the number of factors:
Number of factors = (12 + 1) × (1 + 1)
=> Number of factors = 13 × 2
=> Number of factors = 26
The correct answer is option 2.

Q50. Answer: (c) Lakshadweep

The correct answer is Lakshadweep.
Key Points
• The Lakshadweep is the smallest union territory of India and its total surface area is just 32 km2.
• Lakshadweep is an archipelago of 36 islands in the Arabian sea, located 200 to 440 km off of the mainland's southwestern coast.
• In Malayalam, Lakshadweep means "One lakh islands".
• Malayalam is the official as well as the widely spoken native language in the territory.
• Kavaratti is the capital of the Union Territory Lakshadweep in India.
Additional Information
• In terms of area, Rajasthan is the largest state of India.
• In terms of area, Goa is the smallest state of India.
• Kachchh (Gujarat) is the largest district in India.
• Mahe (Pondicherry) is the smallest district in India.

Q51. Answer: (d) Daughter

Family Chart:
Decoding the Symbols:

Symbol	@	#	$	%
Meaning	Sister	Father	Wife	Son

Given: A % B # C @ D $ E
It means: A is the son of B, B is the father of C, C is the sister of D, D is the wife of E.
S, D is the daughter of B.
Hence, the correct answer is "Daughter".

Q52. Answer: (c) b

According to the given information:
All engineers are professionals.
No professional is a doctor.
The best possible Venn diagram is as follow:
Hence, the correct answer is "b".

Q53. Answer: (a) Computer mouse

The correct answer is Computer Mouse
Key Points
• Douglas Engelbart invented the computer Mouse.
• A computer mouse is a pointing device used to control/operate a computer.

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• A mouse tracks the 2-D movement on the surface it is kept/used and correspondingly moves the pointer on the monitor.
• Engelbart has also founded a separate field, human–computer interaction (HCI).
• A human using the mouse to interact with a computer would come under the ambit of HCI.

Additional Information

• Floppy disk
• The floppy disk is a thin, flexible magnetic disk sealed in a carrier made of square plastic.
• The floppy disk drive (FDD) was invented at IBM in 1967 by Alan Shugart.
• Types of Floppy disk:
• 8-inch floppy
• 5.25-inch floppy (mini floppy)
• 3.5-inch floppy
• Compact Disk(CD-R):
• CD-R Stands for Compact Disc – Recordable and it is a digital optical disc storage format.
• A CD-R disc is a compact disc that can be written once and read arbitrarily many times. Hence, Option 4 is correct.
• The word "recordable" is used because CD-Rs are often used to record audio, which can be played back by most CD players.
• However, many other kinds of data can also be written to a CD-R, so the discs are also referred to as "writable CDs."
• The data burned onto a CD-R disc is permanent, meaning it can not be altered or erased like the data on a hard drive.
• USB port
• USB stands for Universal Serial Bus.
• It is the most common type of computer port used in today's computers.
• It is a common interface that enables the communication between devices and a host controller such as a personal computer (PC).
• It connects peripheral devices such as digital cameras, mice, keyboards, printers, scanners, media devices, external hard drives and flash drives.
• USB was co-invented by Ajay Bhatt.

Q54. Answer: (c) Hugli

The correct answer is Hugli

Key Points

• In 1651, the first English factory was set up on the banks of river Hugli in Bengal.
• The East India Company convinced merchants to settle near the factory.
• By 1696, the company began building a fort around the Hugli settlement.
• The Hugli River was lined with many ports and factories and played a key role in trade and commerce during the colonial period.

Additional Information

• English East India Company:
• The East India Company first arrived via sea route at Surat in the year 1608 for the purpose of establishing trade with India.
• The Battle of Plassey was a decisive victory of the British East India Company over the Nawab of Bengal Siraj-Ud-Daulah and his French allies on 23 June 1757.
• The battle consolidated the Company's presence in Bengal, which later expanded to cover much of India over the next hundred years.
• Fort William was built in 1696 by East India Company by John Goldsborough at Calcutta.

Q55. Answer: (b) Rs. 955

Given:

Principal (P) = Rs. 5,000

Rate (R) = 6% per annum

Time (T) = 3 years

Formula Used:

Compound Interest (CI) = P(1 + R/100)^T - P

Calculation:

CI = 5000(1 + 6/100)³ - 5000

CI = 5000(1 + 0.06)³ - 5000

CI = 5000(1.06)³ - 5000

CI = 5000 × 1.191016 - 5000
CI = 5955.08 - 5000
CI = 955.08
The compound interest is Rs. 955 (nearest integer).

Q56. Answer: (a) PCGN

The logic followed here is:
FILE is written as DKJG
Similarly, RAIL will be written as:
Hence, the correct answer is "PCGN".

Q57. Answer: (b) 1

Given:
Radius of the sphere = r
Radius of the base of the cylinder = r
Total volume of the sphere and cylinder = 7/3π r³
Height of the cylinder = h
Formula Used:
Volume of the sphere = 4/3π r³
Volume of the cylinder = π r² h
Total volume = Volume of sphere + Volume of cylinder
Calculation:
Total volume = 4/3π r³ + π r² h
Total volume = 7/3π r³
=> 4/3π r³ + π r² h = 7/3π r³
=> 4/3 r³ + r² h = 7/3 r³
=> 4/3 r³ + r² h = 7/3 r³
=> 4/3 r³ + r² h = 7/3 r³
=> 4/3 r³ + r² h = 7/3 r³
=> 4/3 r³ + r² h = 7/3 r³
=> 4/3 r³ + r² h = 7/3 r³
=> r² h = 3/3 r³
=> r² h = r³
=> h = r
=> h/r = 1
The correct answer is option 2.

Q58. Answer: (b) Scolopendra

The correct answer is Scolopendra
Key Points
• Scolopendra is not an example of a mollusk.
• Mollusks are soft-bodied invertebrates with hard shells that protect their soft bodies.
• Scolopendra is a large tropical centipede.
• The class of Scolopendra is Chilopoda
Additional Information
• Mollusca is the second-largest animal phylum.
• They are terrestrial or aquatic.
• They exhibit an organ-system level of organization.
• They are bilaterally symmetrical, triploblastic, coelomate animals.
• They have an open circulatory system and kidney-like organs for excretion.
• The anterior head region has sensory tentacles.
• The mouth contains a file-like rasping organ for feeding, called a radula.
• They are usually dioecious and oviparous with indirect development.

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• The body is covered by a calcareous shell and is unsegmented with a distinct head, muscular foot, and visceral hump.

• A soft and spongy layer of skin forms a mantle over the visceral hump.

• Examples are an octopus, snails, and mussels.

Unio:

Q59. Answer: (c) Antarctica

The correct answer is Antarctica

Key Points

• The largest ozone holes in 2020 were observed over Antarctica

• The 2020 ozone hole was one of the largest and deepest ever recorded, peaking at 24.8 million square kilometers on September 20, 2020.

• It covered most of the Antarctic continent.

• It was also the longest-lasting ozone hole since monitoring began 40 years ago.

Additional Information

• Ozone Hole

• It refers to a region in the stratosphere where the concentration of ozone becomes extremely low in certain months.

• Ozone (chemically, a molecule of three oxygen atoms) is found mainly in the upper atmosphere, an area called the stratosphere, between 10 and 50 km from the earth's surface.

• Ozone absorbs the harmful UltraViolet (UV) radiations from the sun eliminating a big threat to life forms on earth.

• UV rays can cause skin cancer and other diseases and deformities in plants and animals.

• The ozone holes most commonly refer to the depletion over Antarctica, forming each year in September, October, and November, due to a set of special meteorological and chemical conditions that arise at the South Pole, and can reach sizes of around 20 to 25 million sq km.

• Some common pollutants are Chlorofluorocarbons, Hydrochlorofluorocarbons, Carbon tetrachloride, Methyl chloroform, Methyl chloroform, Halons, Methyl bromide.

• Another pollutant we have added to the upper atmosphere that affects ozone is nitrogen oxides from airplane exhaust

Q60. Answer: (b) 8.4

Given:

14 men can complete a task in 9 days.

16 women can complete the same task in 7 days.

Formula Used:

Work done by 1 man in 1 day = Total work / (Number of men × Number of days)

Work done by 1 woman in 1 day = Total work / (Number of women × Number of days)

Work done by 6 men and 8 women in 1 day = 6 × (Work done by 1 man in 1 day) + 8 × (Work done by 1 woman in 1 day)

Total days to complete the task = Total work / (Work done by 6 men and 8 women in 1 day)

Calculation:

Let's assume the total work is 1 unit.

Work done by 1 man in 1 day = 1 / (14 × 9)

Work done by 1 man in 1 day = 1 / 126

Work done by 1 woman in 1 day = 1 / (16 × 7)

Work done by 1 woman in 1 day = 1 / 112

Work done by 6 men in 1 day = 6 × (1 / 126)

Work done by 6 men in 1 day = 6 / 126

Work done by 6 men in 1 day = 1 / 21

Work done by 8 women in 1 day = 8 × (1 / 112)

Work done by 8 women in 1 day = 8 / 112

Work done by 8 women in 1 day = 1 / 14

Work done by 6 men and 8 women in 1 day = (1 / 21) + (1 / 14)

Let's find the common denominator:

Work done by 6 men and 8 women in 1 day = (2 / 42) + (3 / 42)

Work done by 6 men and 8 women in 1 day = 5 / 42

Total days to complete the task = 1 / (5 / 42)

Total days to complete the task = 42 / 5

Total days to complete the task = 8.4

The number of days 6 men and 8 women can complete the task is 8.4 days.

Q61. Answer: (a) 100

Given:

We need to find the sum of the cubes of the first four natural numbers.

Formula Used:

Sum of cubes of first n natural numbers = $((n(n+1))/2)^2$

Calculation:

Here, n = 4

Sum of cubes of first 4 natural numbers = $((4(4+1))/2)^2$

=> $((4\times5)/2)^2$

=> $(20/2)^2$

=> 10^2

=> 100

The sum of the cubes of the first four natural numbers is 100.

Q62. Answer: (a) Student

The logic followed here is:

Logic: Entity and its associated person.

Hospital : Patient → Hospital is a place where Patients are treated.

Similarly,

College : Student → College is a place where Students study.

Hence, the correct answer is "Student".

Q63. Answer: (a) Airport Authority of India

The correct answer is the Airport Authority of India

Key Points

• The Airports Authority of India (AAI) was constituted by an Act of Parliament

• It came into being on 1st April 1995 by merging erstwhile National Airports Authority and International Airports Authority of India.

• The consolidation created a singular organization with the mandate to develop, enhance, maintain, and oversee civil aviation infrastructure both on the ground and in airspace throughout the country.

• AAI oversees a total of 137 airports, comprising 24 International airports (including 3 Civil Enclaves), 10 Customs Airports (with 4 Civil Enclaves), and 103 Domestic airports (including 23 Civil Enclaves).

• Additionally, AAI is responsible for providing air navigation services across an extensive 2.8 million square nautical miles of airspace.

Additional Information

• Function of the Airports Authority of India(AAI)

• The functions of AAI are as follows:

• International and domestic airports and civil enclaves are designed, built, operated, and maintained.

• Control and management of Indian airspace beyond the country’s geographical bounds, as recognized by ICAO.

• Passenger terminal construction, modification, and management

• Cargo terminal development and management at international and domestic airports.

• Passenger amenities and information systems are provided at airport passenger terminals.

• Expansion and reinforcement of the operational area, including runways, aprons, and taxiways, among other things.

• Visual assistance is provided.

• Provision of communication and navigation aids such as ILS, DVOR, DME, Radar, etc.

Q64. Answer: (c) 0.74806

Given:

331 × 226 = 74806

Formula Used:

To find the value of 3.31 × 0.226, we can scale down the given multiplication result by adjusting the decimal places.

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Calculation:

331 × 226 = 74806

3.31 is 100 times smaller than 331

0.226 is 1000 times smaller than 226

Therefore, 3.31 × 0.226 = 74806 / (100 × 1000)

=> 3.31 × 0.226 = 74806 / 100000

=> 3.31 × 0.226 = 0.74806

The correct answer is option 3.

Q65. Answer: (c) 18 to 70 years

The correct answer is 18 to 70 years.

Key Points

• The Scheme is available to people in the age group 18 to 70 years with a bank account who give their consent to join / enable auto-debit on or before 31st May for the coverage period 1st June to 31st May on an annual renewal basis.

• Aadhar would be the primary KYC for the bank account.

• The risk coverage under the scheme is Rs. 2 lakh for accidental death and full disability and Rs. 1 lakh for partial disability.

• The premium of Rs. 20 per annum is to be deducted from the account holder's bank account through 'auto-debit' facility in one installment.

• The scheme is being offered by Public Sector General Insurance Companies or any other General Insurance Company who are willing to offer the product on similar terms with necessary approvals and tie up with banks for this purpose.

Additional Information

• Pradhan Mantri Suraksha Bima Yojana (PMSBY)

• Pradhan Mantri Suraksha Bima Yojana is a government-backed accident insurance scheme in India.

• It was originally mentioned in the 2015 Budget speech by Finance Minister Late Arun Jaitley in February 2015.

• It was formally launched by the Prime Minister Narendra Modi on 8 May in Kolkata.

Q66. Answer: (b) 3 : 2

Given:

If 3/5 of a bottle is filled, the empty part of the bottle is 2/5

Formula Used:

Ratio of filled part to empty part = Filled part / Empty part

Calculation:

Filled part = 3/5

Empty part = 2/5

Ratio of filled part to empty part = (3/5)/(2/5)

=> Ratio = 3/2

The ratio of the filled part to the empty part of the bottle is 3:2.

Q67. Answer: (a) Rs. 9,975

Shortcut Trick

Ratio of investment Radha : Vatsal = 36,000 : 42,000 = 6 : 7.

Extra amount for active partner Radha = 637.50 × 36 months = Rs. 22,950.

Radha's profit share from investment = 31,500 − 22,950 = Rs. 8,550.

Since 6 units = Rs. 8,550, then 1 unit = 8,550 ÷ 6 = Rs. 1,425.

Vatsal's profit (7 units) = 7 × 1,425 = Rs. 9,975.

Therefore The correct answer is Rs. 9,975.

Alternate Method

Given → Radha's Investment = Rs. 36,000, Vatsal's Investment = Rs. 42,000, Salary = Rs. 637.50/month, Time = 3 years (36 months).

Formulas: Profit Ratio = (C1 × T1) : (C2 × T2) | Total Radha = Salary + Profit Share.

=> Total Salary for Radha = 637.50 × 36 = Rs. 22,950.

=> Share of profit for Radha = 31,500 − 22,950 = Rs. 8,550.

=> Ratio of profits = 36,000 : 42,000 = 6 : 7.

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=> Vatsal's profit = (8,550 ÷ 6) × 7 = 1,425 × 7 = Rs. 9,975.

Therefore The correct answer is Rs. 9,975.

Additional Information

Partnership Basics

Profit is distributed in the ratio of the product of Capital and Time. If time is same, profit ratio equals capital ratio.

Active vs Sleeping Partner

An active partner manages the business and may receive a salary or commission before the remaining profit is divided.

Q68. Answer: (d) Japan

The correct answer is Japan

Key Points

• Japan is not a permanent member of the United Nations Security Council (UNSC)

• The five permanent members of the UNSC are China, France, Russia, the United Kingdom, and the United States.

• The other 10 members are non-permanent and are elected by the General Assembly for two-year terms.

• These members are based on geographical representation.

• The UNSC is one of the main organs of the United Nations.

• Each member has one vote

Additional Information

• United Nations Security Council:

• The United Nations Security Council (UNSC) is one of the six executive organs of the United Nations (UN), charged with the purpose of ensuring international peace and security, recommending the admission of new UN members to the General Assembly, and approving any changes to the UN Charter.

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

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

• It was formed on 24 October 1945.

• It consists of 5 Permanent Members and 10 Non Permanent Members.

• The current Secretary-General of the United Nations is Antonio Guterres.

Q69. Answer: (a) Carl Linnaeus

The correct answer is Carl Linnaeus

Key Points

• Systema Naturae was written by Swedish botanist, zoologist, and physician Carolus Linnaeus (1707–1778).

• The book was published in Latin in 1735.

• Systema Naturae is a major work of Linnaeus that introduced the Linnaean taxonomy and classified living things into three kingdoms: mineral, vegetable, and animal.

• The book lists around 10,000 species of organisms, including about plants and 4,400 animals.

• Linnaeus was the first scientist to identify humans as animals.

• He also introduced a man in the class of quadrupeds.

Additional Information

• Books by others

Author	Book	Descrption
Carl Peter Thunberg	Flora Japonica (1784)	A detailed study of the plant species found in Japan, based on Thunberg's travels and observations.
Göran Rothman	Botaniska Anteckningar	A collection of botanical notes and research, showcasing Rothman's contributions to Linnaean botany.
Anders Dahl	Observationes Botanicae (1784)	A botanical treatise documenting Dahl's plant observations, contributing to the classification of species.

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Q70. Answer: (c) Kerala

The correct answer is Kerala.

Key Points

• Silent Valley National Park is a beautiful representation of the last remaining rainforest of Kerala.

• Silent Valley was declared as National Park in 1984 and formally inaugurated in the year 1985.

• In 1914, Silent Valley forests were declared as Reserved Forest. Till 1921, Silent Valley was part of the South Malabar Forest Division with headquarters at Nilambur.

• In 1921, it came under the control of the Palakkad Forest Division and managed so until 1988.

• 41 mammals, 211 birds, 49 reptiles, 47 amphibians, 12 fishes, 164 butterflies, and 400 species of moths are found here.

• This park harbors a viable population of Lion-tailed macaques which also is the flagship species of the Park.

• It is at the heart of Nilgiri Biosphere Reserve and consists of areas of South Western Ghats rain forests and tropical wet evergreen jungle.

• River Kunthi passes through it.

• Flora: Humid wet Evergreen Rain Forests. The major plants of the park are Teak, Amla, Semal, Rosewood along bamboo.

• Fauna: Silent Valley Park is known for many highly endangered species such as lion-tailed macaque, tiger, gaur, leopard, wild boar, panther, Indian Civet, and Sambhar.

Additional Information

• States and their National Parks

State	Number of Parks	Name of National Park	Established Year	Area (km^2)
Sikkim	1	Khangchendzonga National Park	1977	1784
Meghalaya	2	Nokrek Ridge National Park	1986	47.48
Balphakram National Park	1985	220		
Manipur	1	Keibul-Lamjao National Park	1977	40

Q71. Answer: (b) Lord Irwin

The correct answer is Lord Irwin.

Key Points

• Lord Irwin announced a vague offer of ‘Dominion status’ for India in 1929.

• The Gandhi–Irwin Pact was a political agreement signed by Mahatma Gandhi and Lord Irwin, Viceroy of India, on 5 March 1931 before the Second Round Table Conference in London.

• Before this, Lord Irwin, the Viceroy, had announced in October 1929 a vague offer of 'dominion status' for British-occupied India in an unspecified future and a Round Table Conference to discuss a future constitution.

• The Second Round Table Conference was held from September to December 1931 in London.

• This movement marked the end of the Civil Disobedience Movement in India.

• The arrest of Abdul Ghaffar Khan in April 1930 and Mahatma Gandhi in May 1930 resulted in protests in Peshawar and Sholapur respectively.

• "The two leaders" — As Sarojini Naidu described Gandhi and Lord Irwin—had eight meetings that totaled 24 hours.

• Gandhi was impressed by Irwin's sincerity.

• The terms of the "Gandhi-Irwin Pact" fell manifestly short of those Gandhi prescribed as the minimum for a truce.

Additional Information

• Lord Cornwallis

• Charles Cornwallis, 1st Marquess Cornwallis was appointed Governor-General of Fort William (Bengal) and Commander-in-Chief of British India on September 12, 1786.

• Warren Hastings established the civil service during the British Raj, while Charles Cornwallis restructured, modernised, and rationalised it.

• As a result, Charles Cornwallis is renowned as the "Father of Indian Civil Service."

• Cornwallis divided the Indian Civil Service into two categories: covenanted and uncovenanted.

• He took part in the negotiations that led to the Treaty of Amiens in 1802.

• Cornwallis was reappointed as Governor-General of India by King George III, but he died on October 5, 1805, at the age of 67, not long after his arrival. He is buried on the banks of the Ganges River in India.

• Lord Canning

• In 1856, Lord Canning succeeded Lord Dalhousie as Governor-General of India.

• From 1856 to 1862, Lord Canning was the Governor General of India.

• During his reign, the Government of India Act of 1858 was passed, establishing the post of Viceroy, which was to be held by the same person who held the position of Governor-General of India.

• As a result, Lord Canning also served as India's first Viceroy.

• The Revolt of 1857 began when Lord Canning was just in his second year as Governor-General of India. As a result, he had to deal with it and make every attempt to conquer it.

• Lord Ripon

• Lord Ripon is known in India as the father of local self-government.

• He is known as the father of local self-government because he passed a resolution of local self-government which laid the democratic forms of municipal governance in India in 1882.

• The Municipal Institutions that had grown up in the country since the British Crown occupied India developed his local self-government scheme.

• He was the viceroy and Governor-General of India

Q72. Answer: (a) South Pole (90^?S)

The correct answer is the South Pole (90?S)

Key Points

• India's approximate latitudinal extent is between 8°4'N (southernmost point in the Andaman and Nicobar Islands) and 37°6'N (northernmost point in Jammu and Kashmir).

• South Pole (90°S) is the farthest latitude from India

• It is because it lies in the Southern Hemisphere, while India is entirely in the Northern Hemisphere.

• India spans both tropical and subtropical regions, as it lies to the north of the Equator and stretches up into temperate zones.

Additional Information

• North Pole (90°N) is closer to India as the northernmost point of India is at 37°6'N.

• Arctic Circle (66°30'N) is closer to India than the North Pole.

• Tropic of Capricorn (23°30'S) is in the Southern Hemisphere, but it's closer to the equator than the South Pole, making it less distant from India compared to the South Pole.

• There are 17 countries(Including Taiwan) through which the tropic of cancer passes.

• The tropic of cancer is the only latitude passed through India.

• The tropic of cancer passes through 8 Indian states.

• The 8 Indian states through which tropic of cancer passes through are:

1. Gujarat.
2. Rajasthan.
3. Madhya Pradesh.
4. Chhatisgarh.
5. Jharkhand.
6. West Bengal.
7. Tripura.
8. Mizoram.

-

Q73. Answer: (b) 128?

Given:

Angle at the center, angle O = 104°

The quadrilateral is inscribed in the circle.

Formula used:

The angle subtended by an arc is twice the angle subtended by it on the circumference in the alternate segment.

Sum of opposite angles of a cyclic quadrilateral = 180°

Calculation:

angle AOC = 2angle ADC

=> 104° = 2 angle ADC

=> angle ADC = 104/2 = 52°

The opposite angles of a cyclic quadrilateral are supplementary and ABCD is a cyclic quadrilateral.

Thus, angle ADC + angle ABC = 180°

=> 52° + angle ABC = 180°

=> angle ABC = (180° - 52°) = 128°

The angle opposite to angle O = angle ABC = 128°.

Q74. Answer: (b) 10

The logic followed here is:

Position of F from the right = 17th

Position of R from the left = 19th

Total number of students = 24

Position of F from the left = Total number of students - Position of F from the right + 1

= 24 - 17 + 1

= 8

So, the number of students between F and R = Position of R from the left - Position of F from the left - 1

= 19 - 8 - 1

= 10

Hence, the correct answer is "Option 2".

Q75. Answer: (b) 14 June

The correct answer is 14th June

Key Points

• World Blood Donor Day is observed every year on 14th June

• The World Health Organization (WHO) introduced World Blood Donor Day in 2004.

• The day is celebrated with the aim to raise awareness of the need for safe blood and blood products and to thank blood donors for their life-saving gifts of blood.

• The theme for this year’s World Blood Donor Day is “Safe blood saves lives” with the slogan “Give blood and make the world a healthier place”.

Additional Information

• By donating blood, you are not only saving someone else's life but also keeping your health right.

• There have been many pieces of research that have revealed that by donating blood, you remain physically and mentally healthy.

• On June 14, Nobel prize winner and scientist Karl Landsteiner were born.

• He has got the credit for finding the ABO blood group system.

• World Blood Donor Day is celebrated on the birthday of Karl Landsteiner, who discovered various blood groups.

• Before Carl detected blood groups, blood transfusions used to happen without knowing the various blood groups.

• This discovery made Karl Landsteiner win the Nobel Prize in the year 1930.

Q76. Answer: (c) Anodising

The correct answer is Anodising.

Key Points

• Anodising is the process of forming a thick oxide layer of aluminium.

• The process is called anodizing because the part to be treated forms the anode electrode of an electrolytic cell.

• This aluminium oxide coat makes it resistant to further corrosion.

• It is also useful in architectural finishing.

Additional Information

• Coating

• A material applied to a surface to protect it or enhance its appearance.

• Coatings can be made from a variety of materials, including aluminium, copper, and nickel.

• The formulation of a coating depends on its intended function and desired aesthetics.

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• Sheeting

• A material that can be used for a variety of purposes, including shielding:

• EMI shielding sheets: These sheets can be used to protect electronic devices from electromagnetic fields.

• Lead vinyl sheeting: This type of sheeting is vinyl-covered, but the edges are exposed. It's recommended to wear gloves and enclose the sheeting in a polybag when handling it.

• Vinyl-coated radiation shielding material: This material is made to order based on the options selected.

• Shielding

• A process that involves using a coating or other material to protect a surface from external fields or to prevent cathodic protection from reaching a metal surface

• EMI shielding: This process involves using a coating to protect electronic devices from electromagnetic fields.

• Cathodic protection shielding: This process involves using a coating to prevent cathodic protection from reaching a metal surface.

• Shielding behaviour can cause pipeline failures and expensive replacement programs.

Q77. Answer: (c) 1030301

Given:

The value to be calculated is 101^3

Formula Used:

$a^3 = a \times a \times a$

Calculation:

$\Rightarrow 101^3$

$\Rightarrow 101 \times 101 \times 101$

$\Rightarrow (101 \times 101) \times 101$

$\Rightarrow 10201 \times 101$

$\Rightarrow 10201 \times 101 = 1030301$

The value of 101^3 is 1030301.

Q78. Answer: (a) 13

According to the given information:

The shaded part represents the total number of Indian doctors.

So, the total number of Indian doctors = 6 + 7 = 13

Hence, the correct answer is "13".

Q79. Answer: (b) Rs. 24,000

Given:

Present value of the desktop computer = Rs. 12,288

Depreciation rate = 20% per year

Time = 3 years

Formula Used:

Present Value = Purchase Price × (1 - Depreciation Rate)^(Time)

Calculation:

Let the purchase price 3 years ago be P.

According to the formula,

$12,288 = P \times (1 - 0.20)^3$

$12,288 = P \times (0.80)^3$

$12,288 = P \times 0.512$

$\Rightarrow P = 12,288 / 0.512$

$\Rightarrow P = 24,000$

The purchase price 3 years ago was Rs. 24,000.

Q80. Answer: (d) 29 and 44

Given equation: 29 - 19 + 25 × 87 ÷ 44 = 100

Option 1) 44 and 87

Two numbers need to be interchanged then:

=> 29 - 19 + 25 × 44 ÷ 87 = 100

=> 29 - 19 + 25 × 0.5 = 100

=> 29 - 19 + 12.5 = 100

=> 41.5 - 19 = 100

=> 22.5 = 100

Option 2) 87 and 29

Two numbers need to be interchanged then:

=> 87 - 19 + 25 × 29 ÷ 44 = 100

=> 87 - 19 + 25 × 0.65 = 100

=> 87 - 19 + 16.25 = 100

=> 103.25 - 19 = 100

=> 84.25 = 100

Option 3) 19 and 25

Two numbers need to be interchanged then:

=> 29 - 25 + 19 × 87 ÷ 44 = 100

=> 29 - 25 + 19 × 1.97 = 100

=> 29 - 25 + 37.43 = 100

=> 66.43 - 25 = 100

=> 41.43 = 100

Option 4) 29 and 44

Two numbers need to be interchanged then:

=> 44 - 19 + 25 × 87 ÷ 29 = 100

=> 44 - 19 + 25 × 3 = 100

=> 44 - 19 + 75 = 100

=> 119 - 19 = 100

=> 100 = 100

Hence, the correct answer is "29 and 44".

Q81. Answer: (d) Louise Gluck

The correct answer is Louise Glick.

Key Points

• The Nobel Prize in Literature for 2020 is awarded to the American poet Louise Glück “for her unmistakable poetic voice that with austere beauty makes individual existence universal”.

• Louise Glück was born in 1943 in New York and lives in Cambridge, Massachusetts. Apart from her writing, she is a professor of English at Yale University, New Haven, Connecticut.

• Her collections "The Triumph of Achilles" (1985) and "Ararat" (1990) address "almost brutally straightforward images of painful family relations."

• She has received several prestigious awards, the Pulitzer Prize in 1993 for her collection "The Wild Iris" and the National Book Award for her latest collection, "Faithful and Virtuous Night", in 2014.

• She is the fourth woman to win the Nobel Literature Prize in the past decade — after Olga Tokarczuk, Svetlana Alexievich and Alice Munro.

Additional Information

• The Nobel Peace Prizes have been awarded since 1901 and was not awarded on 19 occasions including 1914-1916, 1918, 1939-1943 among some other years.

• The prestigious award comes with a gold medal and prize money of 10 million Swedish kronor (more than $1.1 million), courtesy of a bequest left 124 years ago by the prize’s creator, Swedish inventor Alfred Nobel.

• Nobel Prize Awarding Institution and Committee

• Literature: Swedish Academy

• Physics and Chemistry: The Royal Swedish Academy of Sciences

• Economic: The Royal Swedish Academy of Sciences

• Medicine: Karolinska Institute

• Peace: A five-member committee elected by Norway's Parliament (Stortinget).

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Q82. Answer: (a) 46^(th)

The correct answer is 46th

Key Points

• Joseph R. Biden Jr. was inaugurated as the 46th President of the United States on January 20, 2021.

• He was elected in the 2020 U.S. presidential election.

• Kamala Harris, his running mate, was sworn in as the 49th Vice President, making history as the first female, first Black, and first South Asian Vice President of the United States.

• At 78, Biden became the oldest person to assume the presidency in U.S. history.

Additional Information

• United States

Aspect	Details
Capital	Washington, D.C.
Currency	United States Dollar (USD)
Highest Mountain	Denali (formerly Mount McKinley), 20,310 feet (6,190 meters)
Major Lakes	• Lake Superior (largest by surface area)
• Lake Michigan (entirely in the U.S.)	
• Lake Huron	
• Lake Erie	
• Lake Ontario	
• Great Salt Lake (not part of Great Lakes, located in Utah)	
Area	3.8 million square miles (9.8 million square kilometers)
Population	Approx. 334 million (as of 2023)
Official Language	English (no official language at the federal level)
Government	Federal republic with 3 branches: Executive, Legislative, Judicial
States	50 states
Flag	13 stripes (representing the 13 original colonies), 50 stars (states)
National Anthem	"The Star-Spangled Banner"
National Animal	American Bison
National Bird	Bald Eagle

Q83. Answer: (d) 343

The logic followed here is:

Logic: The product of the digits of the first number equals the second number.

Now,

For 555 : 125

=> The product of the digits of 555 is 5 × 5 × 5 = 125.

Similarly, for 777 : ?

=> The product of the digits of 777 is 7 × 7 × 7 = 343.

Hence, the correct answer is "Option 4".

Q84. Answer: (d) 30/7

Given:

5/14, 6/7, 10/21

Formula Used:

Smallest fraction each given fraction divides exactly is the Least Common Multiple (LCM) of the numerators divided by the Greatest Common Divisor (GCD) of the denominators.

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Calculation:

Numerators: 5, 6, 10

Denominators: 14, 7, 21

LCM of 5, 6, and 10:

Prime factors of 5 = 5

Prime factors of 6 = 2 × 3

Prime factors of 10 = 2 × 5

LCM = 2 × 3 × 5 = 30

GCD of 14, 7, and 21:

Prime factors of 14 = 2 × 7

Prime factors of 7 = 7

Prime factors of 21 = 3 × 7

GCD = 7

Smallest fraction = LCM / GCD

Smallest fraction = 30/7

The smallest fraction that each of above will divide exactly is 30/7.

The correct answer is option 4.

Q85. Answer: (d) A-3, B-1, C-4, D-2

The correct answer is A-3,B-1,C-4,D-2

• A) Indian National Congress – (3) Founded in 1885

• B) Bharatiya Janata Party – (1)Founded in 1980

• C) Bahujan Samaj Party –(4) Founded in 1984

• D) Bhartiya Communist Party – (2) Founded in 1964

• Indian National Congress (INC)

• It was Founded in 1885: The Indian National Congress was established by Allan Octavian Hume in 1885.

• It played a central role in the Indian independence movement.

• Bharatiya Janata Party (BJP)

• It was Founded in 1980: The Bharatiya Janata Party was founded in 1980, following the dissolution of the Janata Party.

• It is the successor of the Bharatiya Janata Party (BJP), with a strong ideological base in Hindu nationalism.

• Bahujan Samaj Party (BSP)

• It was Founded in 1984: The Bahujan Samaj Party was founded by Kanshi Ram in 1984, with the goal of representing the Bahujans, or the marginalized communities, including Dalits, OBCs, and tribals.

• Bhartiya Communist Party (BCP)

• It was Founded in 1964: The Bharatiya Communist Party is the Indian wing of the communist movement and was founded in 1964 after a split from the Communist Party of India (CPI), primarily due to ideological differences.

Q86. Answer: (d) Rate of employment at secondary level increased by 50% between 1995 and 2000.

Given:

Rate of employment at Secondary Level:

1995 = 12%

2000 = 18%

2005 = 20%

2010 = 25%

Rate of employment at Higher Level:

1995 = 15%

2000 = 20%

Formula used:

Percentage increase = ((Final Value - Initial Value) / Initial Value) × 100

Calculation:

1. For Secondary Level (2005 to 2010):

=> Percentage increase = ((25 - 20) / 20) × 100

=> Percentage increase = (5 / 20) × 100

=> Percentage increase = 25%

2. For Secondary Level (2000 to 2005):

=> Percentage increase = ((20 - 18) / 18) × 100

=> Percentage increase = (2 / 18) × 100

=> Percentage increase ≈ 11.11%

3. For Higher Level (1995 to 2000):

=> Percentage increase = ((20 - 15) / 15) × 100

=> Percentage increase = (5 / 15) × 100

=> Percentage increase ≈ 33.33%

4. For Secondary Level (1995 to 2000):

=> Percentage increase = ((18 - 12) / 12) × 100

=> Percentage increase = (6 / 12) × 100

=> Percentage increase = 50%

Therefore The correct statement is: Rate of employment at secondary level increased by 50% between 1995 and 2000.

Q87. Answer: (b) 33%

Given:

Total expenditure = Rs. 54,000

Steel angle = 45°

Cement angle = 75°

Total angle of the pie chart = 360°

Formula used:

Percentage of expenditure = (Angle of the sector / Total angle) × 100

Calculation:

For Steel:

=> Percentage = (45 / 360) × 100

=> Percentage = 12.5%

For Cement:

=> Percentage = (75 / 360) × 100

=> Percentage = 20.83%

Total percentage for Steel and Cement:

=> Total Percentage = 12.5 + 20.83

=> Total Percentage = 33.33% ≈ 33%

Therefore The approximate percentage of the total expenditure on steel and cement is 33%.

Q88. Answer: (b) The total sales of all the companies in 2018 are higher than that in 2017.

Given:

Sales data for companies in 2017 and 2018 (in units):

Company 1: 85 (2017), 90 (2018)

Company 2: 90 (2017), 85 (2018)

Company 3: 75 (2017), 80 (2018)

Company 4: 80 (2017), 70 (2018)

Company 5: 70 (2017), 75 (2018)

Formula used:

Total sales for a year = Sum of sales across all companies for that year

Average sales = Total sales of a company / Number of years

Calculation:

1. Total sales for 2017:

=> 85 + 90 + 75 + 80 + 70 = 400

2. Total sales for 2018:

=> 90 + 85 + 80 + 70 + 75 = 400

3. Combined total sales for both years:

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=> 400 + 400 = 800

4. Average sales for Company 4:

=> (80 + 70) / 2 = 75

5. Average sales for Company 3:

=> (75 + 80) / 2 = 77.5

6. Total sales for Company 5:

=> 70 + 75 = 145

Analysis:

1. Total sales for both years across all companies are 800 motorbikes (True).

2. Total sales of all companies in 2018 (400) are not higher than that in 2017 (400).

3. Average sales of Company 4 (75) are lower than that of Company 3 (77.5).

4. For both years together, Company 5 has the lowest total sales (145) among all companies.

Therefore The statement that is NOT true is: The total sales of all the companies in 2018 are higher than that in 2017.

Q89. Answer: (c) 4 : 9

Given:

Expense on Food = Rs. 1600

Expense on House Rent = Rs. 3600

Formula used:

Ratio = Expense on Food : Expense on House Rent

Calculation:

=> Ratio = 1600 : 3600

=> Ratio = 16 : 36

=> Ratio = 4 : 9

Therefore The ratio of the expenses on food to that on house rent is 4 : 9.

Q90. Answer: (b) 294

The logic followed here is:

Hence, the correct answer is "294".

Q91. Answer: (b) AAOYNLG

The logic followed here is:

AIRPORT is written as AROTIPR

Similarly, ANALOGY will be written as:

Hence, the correct answer is "AAOYNLG".

Q92. Answer: (c) Only conclusion B follows.

Statements:

All animals are birds.

Some animals are clocks.

The least possible Venn diagram is as follows:

Conclusions:

A. All birds are animals. - False (because All animals are birds given. So, it can be possible but not definite)

B. Some clocks are animals. - True (because Some animals are clocks. So, Some clocks are animals too)

Hence, the correct answer is "Only conclusion B follows."

Q93. Answer: (d) 35 and 5

Given:

Number of matches played by Fischer = 20

Number of draws = 3

Points for a win = 2

Points for a draw = 1

Points for a loss = 0

At least one win and at least one loss.

Formula Used:
Total Points = (Number of Wins × 2) + (Number of Draws × 1) + (Number of Losses × 0)
Total Matches = Number of Wins + Number of Draws + Number of Losses
Calculation:
Let W be the number of wins, D be the number of draws, and L be the number of losses.
Total Matches: W + D + L = 20
Given D = 3, so W + 3 + L = 20
=> W + L = 17
Maximum Score:
To maximize the score, Fischer should win as many matches as possible.
Minimum L = 1 (at least one loss)
So, W = 17 - 1 = 16
Total Points = (16 × 2) + (3 × 1) + (1 × 0)
Total Points = 32 + 3 + 0
Total Points = 35
Minimum Score:
To minimize the score, Fischer should lose as many matches as possible.
Minimum W = 1 (at least one win)
So, L = 17 - 1 = 16
Total Points = (1 × 2) + (3 × 1) + (16 × 0)
Total Points = 2 + 3 + 0
Total Points = 5
The maximum and minimum scores possible are 35 and 5, respectively.

Q94. Answer: (b) 300 m southwards

Given:
M starts from her home, walks 300 m south,
turns right and walks 800 m,
turns right and walks 450 m,
turns right and walks 250 m,
turns left and walks 150 m and then turns right and walks 550 m.
Distance between starting and ending points = 450 + 150 - 300 = 300 m
So, she should walk back to reach her home by the shortest route is 300 m southwards.
Hence, the correct answer is "300 m southwards".

Q95. Answer: (c) Ant : Insect

The logic followed here is:
Logic: Item and its classification.
Here,
Coal : Fuel → Coal is a type of Fuel.
Similarly,
Ant : Insect → Ant is a type of Insect.
Hence, the correct answer is "Option 3".

Q96. Answer: (a) IR

The logic followed here is:
Hence, the correct answer is "IR".

Q97. Answer: (b) Husband's mother

Family Chart:
Given: A is the wife of B, C is the father of B and D, D is the brother of E, and E is the only daughter of M.
So, M is the "Husband's mother" of A.
Hence, the correct answer is "Husband's mother".

Q98. Answer: (c) 9

The logic followed here is:

Figure 1: $2^2 + 6^2 = 22 + 18 \Rightarrow 40 = 40$

Figure 2: $52 + 22 = 17 + 12 \Rightarrow 29 = 29$

Figure 3: $?2 + 32 = 65 + 25$

$\Rightarrow ?2 + 9 = 90$

$\Rightarrow ?2 = 90 - 9 = 81$

$\Rightarrow ? = 9$

Hence, the correct answer is "9".

Q99. Answer: (c) [figure]

Given statements:

Some scientists are professors.

All scientists are employees.

All professors are employees.

The least possible Venn diagram is as follows:

Hence, the correct answer is "Option 3".

Q100. Answer: (d) Cooking

The logic followed here is:

Squats	Exercise
Running	Exercise
Push-ups	Exercise
Cooking	Not an Exercise

Squats, Running, Push-ups all are types of Exercises,

Whereas,

Cooking is not an Exercise.

Hence, the correct answer is "Cooking".

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