RRB NTPC CBT-I Official Paper (Held On: 30 Dec 2020 Shift 2) (Previous Year Paper)

RRB NTPC • 2020 • 100 questions • 90 minutes • Answer key and solutions

Take this paper as a timed mock test

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

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

Q1. Triangle ABC is an isosceles triangle in which angle C = 90°. If AC = 8 cm, find AB.

(a) 6 cm
(b) 8√2 cm
(c) 10 cm
(d) 8 cm

Q2. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?)

5	4	141
6	2	220
7	3	?

(a) 284
(b) 296
(c) 352
(d) 328

Q3. Pointing to a woman, Supriya said, “This woman is the daughter of the only child of my grandmother.” How is the woman related to Supriya?

(a) Sister-in-law
(b) Mother
(c) Sister
(d) Grandmother

Q4. When was Swachh Bharat Mission launched?

(a) 15 August 2014
(b) 2 October 2014
(c) 2 October 2015
(d) 15 August 2015

Q5. The average salary of the entire staff in an office is Rs. 3,560 per month. The average salary of the officers is Rs. 5,400 per month and that of the non-officers is Rs. 2,600 per month. If the number of officers is 12, find the number of non-officers in the office.

(a) 23
(b) 22
(c) 24
(d) 25

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Q6. The sum of two numbers is 5 times their difference. If the smaller number is 24, find the larger number.

(a) 30
(b) 32
(c) 36
(d) 48

Q7. Around which year did the construction of Taj Mahal Complex begin

(a) 1632 AD
(b) 1641 AD
(c) 1621 AD
(d) 1651 AD

Q8. Radha walks a distance of 9 m towards the South-East. Then she walks 15 m towards the West. From here, she walks 9 m towards the North-West. Finally she walks 6 m towards the East and stands at the point. How far is she standing from the starting point?

(a) 9 m
(b) 13 m
(c) 10 m
(d) 11 m

Q9. Which is India's newest nuclear power plant?

(a) Kalpakkam
(b) Kaiga
(c) Tarapur
(d) Kudankulam

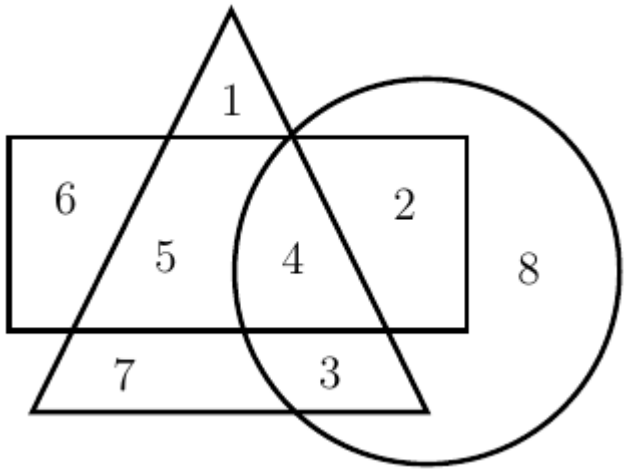
Q10. Which part of the Constitution of India contains Fundamental Rights of the citizens of India?

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

Q11. Which of the following is the classical dance form of erstwhile Andhra Pradesh?

(a) Kathakali
(b) Kathak
(c) Bharatnatyam
(d) Kuchipudi

Q12. In the given diagram, which number is in all the geometrical figures



(a) 8
(b) 4

(c) 5
(d) 3

Q13. Kolleru Lake is located in which state of India?

(a) Kerala
(b) Rajasthan
(c) Maharashtra
(d) Andhra Pradesh

Q14. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?).

7	8	5	8
6	5	4	7
5	2	2	3
12	30	12	?

(a) 35
(b) 28
(c) 24
(d) 49

Q15. Find the greatest number less than 500 that is divisible by 6, 14 and 28.

(a) 440
(b) 460
(c) 480
(d) 420

Q16. Which year was the Beti Bachao, Beti Padhao Yojana was launched?

(a) 2017
(b) 2016
(c) 2015
(d) 2014

Q17. If x^4 + 1/(x^4) = 194 find $x^3 + 1/(x^3)$

(a) 52
(b) 56
(c) 54
(d) 62

Q18. By selling an article for Rs. 45,000, a man loses 10%. For what amount should he sell it so as to gain 15%.

(a) Rs. 55,700
(b) Rs. 67,500
(c) Rs. 75,500
(d) Rs. 57,500

Q19. If '+' = '÷', '×' = '+', '-' = '×' and '÷' = '-', then which of the following equations is correct?

(a) 36 - 6 + 3 × 5 ÷ 3 = 74
(b) 36 × 6 + 7 ÷ 2 = 20
(c) 36 ÷ 6 + 3 × 5 - 3 = 45
(d) 36 + 6 - 3 × 7 ÷ 3 = 24

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Q20. Select the number from among the given options that can replace the question mark (?) in the following series.

8, ?, 30, 105, 472.5

(a) 11
(b) 13
(c) 14
(d) 12

Q21. Out of three numbers, first number is twice of the second and thrice of the third number. If the average of the three numbers is 880, what is the smallest number?

(a) 840
(b) 460
(c) 420
(d) 480

Q22. Anil Kumar took a loan of 24,000 with simple interest for as many years as the rate of interest. If he paid Rs.19,440 as interest at the end of the loan period, what was the rate of interest?

(a) 8%
(b) 8.5%
(c) 10%
(d) 9%

Q23. A man walks around a circular pond exactly once. If his step is 44 cm long and he takes 700 steps to go around the pond, find the area of the pond.

(a) 6574 m^2
(b) 7456 m^2
(c) 7546 m^2
(d) 6546 m^2

Q24. If 15 × 17 = 84, 92 × 23 = 57, 37 × 44 = 84, then 54 × 32 = ?

(a) 54
(b) 87
(c) 91
(d) 51

Q25. In a certain code language, ‘FRENCH’ is written as ‘83145186’, ‘HAPPEN’ is written as '145161618'. What is the code for ‘GERMAN’ in that code language?

(a) 141131857
(b) 1411211959
(c) 151121859
(d) 151318517

Q26. Four numbers have been given, out of which three are alike in some manner and one is different. Select the number that is different from the rest.

(a) 50
(b) 82
(c) 59
(d) 170

Q27. Who launched the Golden Quadrilateral Project?

(a) Narendra Modi
(b) Manmohan Singh
(c) Atal Bihari Vajpayee
(d) Jawaharlal Nehru

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Q28. SAARC comprises how many Member States?

(a) 7
(b) 12
(c) 10
(d) 8

Q29. Who is the founder of Facebook?

(a) Michael S Dell
(b) Bill Gates
(c) Mark Zuckerberg
(d) Tim Berners Lee

Q30. Botanical name of banyan tree is:

(a) Azadirachta indica
(b) Ficus religiosa
(c) Ficus benghalensis
(d) Ocimum tenuiflorum

Q31. Who discovered the cell?

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

Q32. In 1931, who among the following was the President of the Indian National Congress?

(a) Nelly Sengupta
(b) Subhash Chandra Bose
(c) Dr. Rajendra Prasad
(d) Vallabhbhai J Patel

Q33. Where are the Summer Olympic Games going to be held in 2021?

(a) PyeongChang
(b) Tokyo
(c) Paris
(d) Beijing

Q34. Who devised the policy of Doctrine of Lapse?

(a) Lord Dalhousie
(b) General Dyer
(c) Lord Hastings
(d) Lord Clive

Q35. Among the following words, which one will come in the middle if they are arranged as per their order in an English dictionary?

1. Dance 2. Degree 3. Dare 4. Dear 5. Development

(a) Dear
(b) Degree
(c) Dance
(d) Dare

Q36. What is the SI unit of force?

(a) Kip
(b) Pascal
(c) Newton
(d) Dyne

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Q37. Four fifths of a number is 12 more than three fourths of the number. Find the number.

(a) 120
(b) 200
(c) 160
(d) 240

Q38. In Computer field, OLE is the abbreviation of

(a) Object Linking Extension
(b) Object Linking and Enabling
(c) Object Location Enabling
(d) Object Linking and Embedding

Q39. Simplify

(12.25 + 7/8 of 56 - 9)/((25 ÷ 5 × 10.25) + 10/9 of (7/2 - 4/5) - 2)

(a) 5
(b) 15
(c) 2
(d) 1

Q40. A solution reacts with chalk powder to give a gas that turns lime-water milky. The solution contains:

(a) $AlCl_3$
(b) $MgCl_2$
(c) NaCl
(d) HCl

Q41. If the length and breadth of a rectangular plot of land are increased by 10% and 8% respectively, then by how much percentage will its area increase or decrease?

(a) 16.8% increase
(b) 18.8% decrease
(c) 18.8% increase
(d) 16.8% decrease

Q42. When was the provision of Bharat Ratna introduced?

(a) 1954
(b) 1950
(c) 1955
(d) 1952

Q43. A shopkeeper marks his goods at a price so that after allowing a discount of 20%, he still makes a profit of 8%. Find the marked price of an article which costs him Rs. 500.

(a) Rs. 765
(b) Rs. 575
(c) Rs. 875
(d) Rs. 675

Q44. Which countries have been declared malaria-free by WHO in May 2019?

(a) Belgium and Qatar
(b) India and Singapore
(c) Mauritius and Malaysia
(d) Algeria and Argentina

Q45. In 2020, How many countries of the world have Veto power in United Nations Security Council?

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

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(d) 6

Q46. When was Indian National Committee for Space Research formed?

(a) 1965
(b) 1963
(c) 1961
(d) 1962

Q47. What is total forest cover of India as per ISFR report 2019?

(a) 24.39% of the total geographical area of the country
(b) 21.67% of the total geographical area of the country
(c) 24.16% of the total geographical area of the country
(d) 21.05% of the total geographical area of the country

Q48. Which of the following state has implemented a women-oriented community-based poverty alleviation program 'Kudumbasree'?

(a) Tamil Nadu
(b) Andra Pradesh
(c) West Bengal
(d) Kerala

Q49. Buying or selling goods electronically is known as:

(a) multimedia
(b) e-commerce
(c) finance
(d) money control

Q50. The sum of two positive numbers is 384 and their HCF is 24. How many pairs of such numbers can be formed?

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

Q51. The length, breadth and height of a cuboid are 27 cm, 18 cm and 21 cm respectively. How many cubes of side 3 cm can be cut from the cuboid?

(a) 278
(b) 378
(c) 738
(d) 368

Q52. Select the number from among the given options that can replace the question mark (?) in the following series.
70, 72, 78, 80, ?, 88, 94

(a) 96
(b) 80
(c) 86
(d) 74

Q53. In a firm, the ratio of male and female officers is in the ratio 4 : 7. If 50 male officers and 100 female officers are shifted to another firm, then the ratio of male and female officers becomes 7 : 12. Find the number of male officers before shifting in the firm.

(a) 400
(b) 450
(c) 300
(d) 500

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Q54. In the four letter-clusters given below, three are alike in some manner and one is different. Select the odd one.

(a) CGI
(b) EIK
(c) AEG
(d) FHJ

Q55. Service sector is a part of _____ of an economy.

(a) secondary sector
(b) tertiary sector
(c) public sector
(d) primary sector

Q56. A and B can complete a piece of work in 20 days. B and C can complete it in 30 days. A is twice as good as C in completing the work. Find in how many days will B alone complete it.

(a) 60 days
(b) 55 days
(c) 65 days
(d) 50 days

Q57. What is the freezing point of water on Kelvin scale?

(a) 473.15 K
(b) 173.15 K
(c) 273.15 K
(d) 373.15 K

Q58. Which is RK Narayan's first novel?

(a) Swami and Friends
(b) The Guide
(c) The English Teacher
(d) Malgudi Days

Q59. How many cities were selected in 2016 first batch to be develop as smart cities of India?

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

Q60. Find the least number, which must be subtracted from 60065 to make it a perfect square.

(a) 40
(b) 30
(c) 35
(d) 20

Q61. How many members are there in Rajya Sabha?

(a) 230
(b) 240
(c) 250
(d) 225

Q62. If $a + b = 10$ and $a^2 + b^2 = 68$ find $a^3 + b^3$.

(a) 560
(b) 540
(c) 620
(d) 520

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Q63. 2(sin^6θ + cos^6θ) - 3(sin4θ + cos4θ) is equal to:

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

Q64. How many categories are there of Nobel Prize?

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

Q65. When was India's first satellite, the Aryabhata spacecraft launched?

(a) June 10, 1979
(b) April 19, 1976
(c) June 10, 1980
(d) April 19, 1975

Q66. How many wars were fought by the British with Mysore?

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

Q67. When was the first session of Indian National Congress held?

(a) June 1885
(b) December 1889
(c) November 1889
(d) December 1885

Q68. The horizontal distance between two towers is 40√3 m. The angle of depression of the top of the first tower when seen from the top of the second tower is 30°. If the height of the second tower is 130 m, find the height of the first tower.

(a) 80 m
(b) 90 m
(c) 85 m
(d) 95 m

Q69. What is the theme of World Environment Day 2019?

(a) deforestation
(b) Water pollution
(c) Soil pollution
(d) Air pollution

Q70. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

MNTK : HIOF :: RUNA : ?

(a) MPIV
(b) NPIU
(c) MPJV
(d) VZSF

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Q71. If x : y = 4 : 9, find 9x + 4y : 18x + 3y

(a) 2 : 3
(b) 3 : 2
(c) 11 : 8
(d) 8 : 11

Q72. A and B can complete a job in 40 days and 60 days respectively. They work together for some days and B leaves the job. If A completes the rest of the work in 10 days, find for how many days B worked.

(a) 15 days
(b) 18 days
(c) 16 days
(d) 14 days

Q73. Who was one of the co-founder of Ghadar Party?

(a) Lala Lajpatrai
(b) Gopal Krishan Gokhale
(c) Har Dayal
(d) Dada Bhai Naroji

Q74. A man travels a distance of 420 km by train which moves at the speed of 75 km/h and returns back by car at the speed of 50 km/h. Find his average speed for the whole journey.

(a) 65 km/h
(b) 66 km/h
(c) 60 km/h
(d) 68 km/h

Q75. simplify:

(25 + 3 of 8 - 4)/(27 - 3 of (8 - 4))

(a) 5
(b) 37/15
(c) 3
(d) 4

Q76. If √(1225 × √(32 ÷ x))= 70 then find the value of x.

(a) 4
(b) 8
(c) 16
(d) 2

Q77. Symbol for Methane is

(a) CH3
(b) CH1
(c) CH4
(d) CH2

Q78. In ΔABC, angle A = 90°, AB = 6 cm and AC = 8 cm. If AD is perpendicular to BC, the AD is equal to:

(a) 3.8 cm
(b) 4.4 cm
(c) 4.8 cm
(d) 4.6 cm

Q79. When the integer m is divided by 8, the remainder is 5. What is the remainder if 7m is divided by 8?

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

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(d) 6

Q80. When was the Dowry Prohibition Act commenced?

(a) 1960
(b) 1965
(c) 1961
(d) 1963

Q81. Simplify: 245 - [135 - {84 ÷ 4 of 3 - (11 - 12 ÷ 3)}]

(a) 110
(b) 100
(c) 90
(d) 120

Q82. A sum of money is invested for 2 years at 10% compound interest p.a. It would fetch Rs. 1,762 more if interest is calculated half yearly. Find the sum invested.

(a) Rs. 2,30,000
(b) Rs. 3,40,000
(c) Rs. 3,30,000
(d) Rs. 3, 20,000

Q83. What is the approximate total length of coastline of India including the coastline of Lakshadweep islands and Andaman & Nicobar Islands?

(a) 4523 km
(b) 5717 km
(c) 7517 km
(d) 5423 km

Q84. Which is the highest literate state of India as per Census 2011?

(a) Kerala
(b) Mizoram
(c) Lakshadweep
(d) Goa

Q85. Read the given statement(s) 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 statement(s).

Statements:

I. All D are A.

II. No A is C.

Conclusions:

I. No D is C.

II. Some C are D.

(a) Both conclusion I and II follows
(b) Only conclusion I follows
(c) Only conclusion II follows
(d) Neither conclusion follows

Q86. In a certain code, P is coded as 17 and TMR is coded as 54. How will NARESH be written as in that code?

(a) 71
(b) 65
(c) 73
(d) 78

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Q87. If the letters of the word ADISNHPANRKARFACHTARKYAR were written in reverse order, then which would be the third letter to the right of the ninth letter from the left?

(a) A
(b) R
(c) K
(d) N

Q88. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

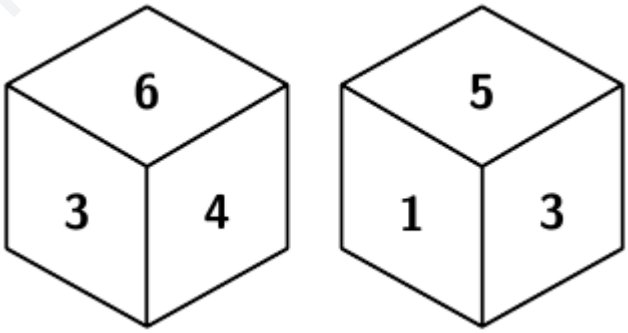
COCK : FRFN :: HANG : ?

(a) IBOJ
(b) JCOI
(c) KDQJ
(d) COBH

Q89. In a class of 36 students, the number of boys are twice the number of girls. In the class, there are 13 boys before Reema (girl) whose position is 19^(th) in the class. How many girls are there in the class after Reema?

(a) 6
(b) 5
(c) 12
(d) 10

Q90. Two different positions of the same dice are shown. Select the number that will be on the face opposite to that of number 5.



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

Q91. If 12 October 1997 was a Saturday, then what day was it on the same date in the year 2008?

(a) Monday
(b) Thursday
(c) Sunday
(d) Saturday

Q92. Six friends are playing cards in a circular enclosure facing the centre. Subhash is sitting to the right of Pramod. There is one person sitting in between Umesh and Suresh. Praveen is sitting in between Subhash and Umesh and Praveen is second to the left of Alok. If Alok and Subhash mutually change their places, then who will be sitting second to the right of Praveen?

(a) Pramod
(b) Subhash
(c) Suresh
(d) Umesh

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Q93. Four numbers have been given, out of which three are alike in some manner and one is different. Select the number that is different from the rest.

(a) 34
(b) 16
(c) 25
(d) 29

Q94. Select the option in which the numbers share the same relationship as that shared by the given pair of numbers.

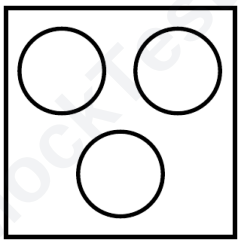
11 : 132

(a) 6 : 48
(b) 8 : 72
(c) 7 : 61
(d) 9 : 93

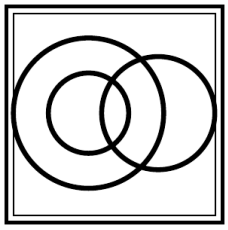
Q95. Select the Venn diagram that best represents the relationship between the following classes.

Sports, Cricket, Cockroach.

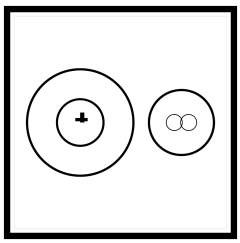
(a)



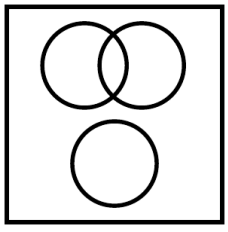
(b)



(c)



(d)



Q96. Read the given statement(s) 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 statement(s).

Statements:

1. All phones are pens.

2, Some pens are pencils.

Conclusions:

I. Some phones are pencils.

II. Some pencils are phones.

III. Some pencils are pens.

IV. Some pens are phones.

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

Q97. Select the option that is related to the third term in the same way as the second term is related to the first term.

Entomology : Insects :: Etymology : ?

(a) Books
(b) Satellites
(c) Words
(d) Plants

Q98. Select the combination of letters that when sequentially placed in the blanks will create a repetitive pattern

a_c_ab/b_a_bc/_bc_ab

(a) cbcaaa
(b) acbabc
(c) bccaac
(d) bcccab

Q99. In a certain code, LITTLE is coded as 24, PARIS is coded as 36, BOX is coded as 14 and PIN is coded as 21. How will DONE be written as in that code?

(a) 29
(b) 27
(c) 20
(d) 38

Q100. From among the given options, identify the number that DOES NOT belong to the following series.

2, 5, 14, 41, 122, 365, 1095

(a) 41
(b) 1095
(c) 122
(d) 365

ANSWER KEY

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

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SOLUTIONS

Q1. Answer: (b) 8√2 cm

Given:

Triangle ABC is an isosceles triangle in which angle C = 90° & AC = 8 cm.

Concept:

AC + BC > AB [Sum of two sides of a triangle is greater than the third side]

AB > AC or BC [Hypotenuse is greater than the Base or Altitude of any right-angle triangle]

Pythagoras Theorem:

=> $AB^2 = AC^2 + BC^2$

Calculation:

ABC is an isosceles triangle; AC = 8 cm

=> BC = 8 cm

AB2 = 8^2+ 82

=> AB = √128

Therefore AB = 8√2 cm

Q2. Answer: (c) 352

The logic followed here is:

In this question,

Row 1: 5, 4, 141

Addition of cube of first number of first column and square of second number of first column and we get third number of first column. Which are given below-

$5^3 + 4^2 = 125 + 16 = 141$

Row 2: 6, 2, 220

And addition of cube of first number of second column and square of second number of second column and we get third number of second column. Which are given below-

6^3 + 22 = 216 + 4 = 220

Similarly,

Row 3: 7, 3, ?

Addition of cube of first number of third column and square of second number of third column and we get third number of third column. Which are given below-

73 + 32 = 343 + 9 = 352

The matrix are given below-

Hence, "352" is the correct answer.

Q3. Answer: (c) Sister

Pointing to a woman, Supriya said, “This woman is the daughter of the only child of my grandmother.”

Woman is the sister of Supriya.

Hence, "Sister" is the correct answer.

Q4. Answer: (b) 2 October 2014

The correct answer is 2 October 2014.

• Swachh Bharat Mission was launched on 2 October 2014.

Key Points

• Swachh Bharat Mission (Gramin and Rural):

• The mission was launched on 2 October 2014.

• The aim of the mission is:

• to accelerate the efforts to achieve universal sanitation coverage and to focus on sanitation in rural places.

• to achieve a clean and open defecation-free (ODF) India.

• The project is implemented by the Ministry of Drinking Water and Sanitation.

• SBM (G) Phase-II was approved in February 2020 by the Ministry of Jal Shakti.

• The mission emphasizes the sustainability of achievements under phase-I and also provides adequate facilities for solid and

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liquid & plastic Waste Management (SLWM) in rural India.

Q5. Answer: (a) 23

Given:

No of officers = 12

The average salary of the entire staff = Rs.3560 per month

The average salary of the officers = Rs.5400 per month

The average salary of the non-officers = Rs.2600 per month

Formula used:

Let the no of non-officers be = a

By Alligation Method

As per the question;

Ratio of the no of officers and non-officers = 24 : 46

=> 12/a = 24/46

=> 1/a = 2/46

=> a = 23

Therefore The no of non-officers is 23.

Q6. Answer: (c) 36

Given:

Smaller no = 24

Calculation:

Let the larger no be = a

Difference of the numbers = a - 24

As per the question;

(a + 24) = 5(a - 24)

=> a + 24 = 5a - 120

=> 144 = 4a

=> a = 36

Therefore The larger no is 36.

Alternate MethodBy Hit and Trail Method

Option 1: (24 + 30) ≠ 5(30 - 24)

Option 2: (24 + 32) ≠ 5(32 - 24)

Option 3: (24 + 36) = 5(36 - 24) = 60

Option 4: (24 + 48) ≠ 5(48 - 24)

Q7. Answer: (a) 1632 AD

The correct answer is 1632 AD.

• The construction of the Taj Mahal Complex began in the year 1632.

Key Points

• Taj Mahal:

• It is located on the right bank of the Yamuna River in Agra, Uttar Pradesh.

• It was built by Mughal Emperor Shah Jahan in memory of his wife Mumtaz Mahal

• Its construction started in 1632 AD.

• The complex consists of the mosque, the guest house, and the main gateway on the south.

• Ustad-Ahmad Lahori was the main architect of the Taj Mahal.

• It reflects Indo-Islamic architecture.

• The construction was completed in the year 1653 AD.

Additional Information

• Shahjahan (1628 AD-1658 AD):

• His real name was Khurram.

• French travelers Bernier and Tavernier and the Italian traveler Nicolo Manucci visited during his reign.

• The Red Fort, Jama Masjid, and Taj Mahal are some of the magnificent structures built during his reign.

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• Shahjahan's reign is also said to have marked the pinnacle of the Mughal dynasty and empire.

Q8. Answer: (a) 9 m

Radha walks a distance of 9 m towards the South-East. Then she walks 15 m towards the West. From here, she walks 9 m towards the North-West. Finally she walks 6 m towards the East and stands at the point.

She is 15 - 6 = 9 m standing from the starting point.

Hence, "9 m" is the correct answer.

Q9. Answer: (d) Kudankulam

The correct answer is Kudankulam.

• Kudankulam is India's newest nuclear power plant.

Key Points

• Kudankulam Nuclear Power Plant:

• It is the largest nuclear power station in India.

• It is situated in Kudankulam, Tirunelveli district of Tamil Nadu.

• It was started to establish in 2002.

• became operational in 2013

• Tarapur Atomic Power Station was the first nuclear power plant in India.

• It was established in the year 1969.

Additional Information

• Nuclear Fission and Fusion:

• Chain Reaction: When a uranium atom is bombarded with slow neutrons, fission takes place.

• With the fission of each uranium nucleus, on average, three neutrons and large energy are released.

• These neutrons cause further fission. Clearly, a chain of fission of uranium nucleus starts which continues till the whole of uranium is exhausted. This is called a chain reaction.

• Nuclear reactor:

• A nuclear reactor is an arrangement in which a controlled nuclear fission reaction takes place.

• The first nuclear reactor was established at Chicago University under the supervision of Prof. Fermi.

• Nuclear Fusion:

• When two or more light nuclei are combined together to form a heavier nucleus, tremendous energy is released.

Important Point

Power Plant	Location
Kalpakkam	Tamil Nadu
Narora	Uttar Pradesh
Rawatbhata	Kota, Rajasthan
Kaiga	Karnataka
Kakrapar	Gujarat

Q10. Answer: (c) Part 3

The correct answer is Part 3.

• Part 3 of the Constitution of India contains the Fundamental Rights of the citizens of India.

Key Points

• Fundamental Rights:

• The Fundamental Rights have been described in Articles 12-35, Part III of the Indian Constitution.

• The Right to Property (Article 31) was deleted from the list of Fundamental Rights by the 44th Amendment Act (1978).

• By the 44th Amendment Act, 1978, it is made a normal constitutional right under Act 300A in Part XII of the Constitution.

• Fundamental rights are:

• Right to equality (Articles 14–18)

• Right to freedom (Articles 19–22)

• Right against exploitation (Articles 23–24)

• Right to freedom of religion (Article 25–28)

• Cultural and educational rights (Articles 29–30)

• Right to constitutional remedies (Article 32)

Additional Information

Parts of the Indian Constitution

Part	Content
Part 2	Citizenship
Part 4	Directive Principles of State Policy
Part 1	The Union and its territory

Q11. Answer: (d) Kuchipudi

The correct answer is Kuchipudi.

• Kuchipudi is the classical dance form of erstwhile Andhra Pradesh.

Key Points

• Kuchipudi:

• It is the classical dance form of Andhra Pradesh.

• It derives its name from the Kuchipudi village of Andhra Pradesh.

• Kuchipudi exhibits scenes from the Hindu Epics, legends and mythological tales through a combination of music, dance and acting.

• Like other classical dances, Kuchipudi also comprises pure dance, mime and histrionics but it is the use of speech that distinguishes Kuchipudi's presentation as dance-drama.

• There are two forms of Kuchipudi –the traditional musical dance-drama and the solo dance.

Additional Information

• Kathakali is the classical dance form of Kerala.

• Kathak is the classical dance form of Uttar Pradesh.

• Bharatnatyam is the classical dance form of Tamil Nadu.

Q12. Answer: (b) 4

The figure are given below -

4 is in all the geometrical figures.

Hence, "4" is the correct answer.

Q13. Answer: (d) Andhra Pradesh

The correct answer is Andhra Pradesh.

• Kolleru lake is located in Andhra Pradesh.

Key Points

• Kolleru Lake:

• It is one of the largest freshwater lakes in India.

• It is located in Andhra Pradesh.

• The lake spreads in two districts, Krishna and West Godavari.

• The lake was declared as a wildlife sanctuary in 1999 under India's Wildlife Protection Act of 1972.

• It was also declared as a wetland of international importance in the year 2002 under the Ramsar Convention.

Additional Information

• Chilika Lake is the largest brackish water lake.

• Wular Lake is the largest freshwater lake in India.

Q14. Answer: (a) 35

The logic followed here is:

Column 1: 7, 6, 5, 12

In this matrix, difference between multiplication of first and second number of column1 and multiplication of second and third number of column 1 we get fourth number of column1. Which are given below-

7 × 6 - 6 × 5 = 42 - 30 = 12

Column 2: 8, 5, 2, 30

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The difference between multiplication of first and second number of column 2 and multiplication of second and third number of column 2 we get fourth number of column 2. Which are given below-

8 × 5 - 5 × 2 = 40 - 10 = 30

Column 3: 5, 4, 2, 12

The difference between multiplication of first and second number of column 3 and multiplication of second and third number of column 3 we get fourth number of column 3. Which are given below-

5 × 4 - 4 × 2 = 20 - 8 = 12

Similarly,

Column 4: 8, 7, 3, ?

And the difference between multiplication of first and second number of column 4 and multiplication of second and third number of column 4 we get fourth number of column 4. Which are given below-

8 × 7 - 7 × 3 = 56 - 21 = 35

The matrix are given below -

Hence, "35" is the correct answer.

Q15. Answer: (d) 420

Concept:

The greatest no less than 500 that is divisible by 6, 14 and 28 will be the multiple of the LCM of all these 3 numbers.

Calculation:

LCM (6, 14, 28) = 84

The required number; 84k < 500 [where k is any natural number]

For k = 1, 84 × 1 = 84

For k = 2, 84 × 2 = 168

For k = 3, 84 × 3 = 252

For k = 4, 84 × 4 = 336

For k = 5, 84 × 5 = 420

Therefore At k = 5, 420 is the greatest number which is divisible by 6, 14 and 28.

Q16. Answer: (c) 2015

The correct answer is 2015.

• The Beti Bachao, Beti Padhao yojana was launched in the year 2015.

Key Points

• Beti Bachao Beti Padhao (BBBP):

• The scheme was launched in the year 2015.

• Beti Bachao Beti Padhao (BBBP) was launched by the Prime Minister on 22nd January, 2015 at Panipat, Haryana.

• The Ministry of Women and Child Development launched the National Girl Child Day in 2008.

• Objectives:

• Prevention of gender-biased sex-selective elimination.

• Ensuring survival & protection of the girl child.

• Ensuring education and participation of the girl child.

• Protecting Rights of Girl child.

Q17. Answer: (a) 52

Given:

x^4 + 1/(x^4) = 194

Formulas used:

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

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

Calculation:

x^4 + 1/(x^4) = 194

By adding 2 in both sides:-

=> x^4 + 1/x^4 + 2 = 194 + 2

=> $(x^2 + 1/x^2)^2 = 196$

=> (x2 + 1/x2) = √196

=> (x2 + 1/x2) = 14 (1)

By adding 2 in both sides of equation (1)

=> (x2 + 1/x2) + 2 = 14 + 2

=> $(x + 1/x)^2 = 16$

=> (x + 1/x) = 4 (2)

Now, cubing both sides in equation (2)

=> $(x + 1/x)^3 = 4^3$

=> $x^3 + 1/x^3 + 3 \times x \times 1/x (x + 1/x) = 64$

=> x3 + 1/x3 + 3 × 4 = 64

=> x3 + 1/x3 = 64 - 12 = 52

Therefore The required result is 52.

Q18. Answer: (d) Rs. 57,500

Shortcut TrickSelling price = 90% of the Cost Price

New Selling Price = 115% of the Cost Price

Now, 90% = 45000

=> 1% = 500

=> 100% = 50000 (C.P)

=> 115% = 115 × 1% = 115 × 500

=> 57500

Therefore The required Selling Price should be Rs. 57500

Basic Method:

Given:

Selling Price = Rs.45000 at 10% loss

Formula used:

Cost Price is 100% of itself and Profit or loss is calculated on the Cost Price of the article.

Selling Price at a loss of y% = Cost Price × (100 - y)%

Selling Price at a gain of y% = Cost Price × (100 + y)%

Calculation:

Rs.45000 = (100 - 10)% of Cost Price

=> 45000 = 90% of Cost Price

=> 45000/90% = 1% of Cost Price

=> 45000 × 100%/90% = 100% of Cost Price

=> Cost Price (100%) = 50000

Selling Price at 15% gain:-

=> 50000 × (100 + 15)%

=> 50000 × 115/100

=> 57500

Therefore The selling price at 15% gain is Rs.57500.

Alternate Method

Formulas used:Loss % = (Cost price - Selling price)/Cost price × 100

Profit % = (Selling price - Cost price)/Cost price × 100

Calculation:

Let Cost price be 100a

Selling Price = 45000

Loss % = 10

=> (Cost price - Selling price)/Cost price × 100 = 10

=> (100a - 45000)/100a × 100 = 10

=> (100a - 45000)/a = 10

=> (100a - 45000) = 10a

=> 90a = 45000

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=> 100a = 45000 × 100a/90a
Therefore 100a (CP) = 50000
Profit percent = 15%
(SP - 50000)/50000 × 100 = 15
=> SP - 50000 = 7500
Therefore SP = 7500 + 50000 = 57500

Q19. Answer: (a) 36 - 6 + 3 × 5 ÷ 3 = 74

From option 1 -
36 - 6 + 3 × 5 ÷ 3 = 74
If '+' = '÷', '×' = '+', '-' = '×' and '÷' = '-', then
36 × 6 ÷ 3 + 5 - 3 = 74
Applying BODMAS rule
36 × 2 + 5 - 3 = 74
72 + 5 - 3 = 74
77 - 3 = 74
74 = 74 follow the condition.
From option 2 -
36 × 6 + 7 ÷ 2 = 20
If '+' = '÷', '×' = '+', '-' = '×' and '÷' = '-', then
36 + 6 ÷ 7 - 2 = 20
Applying BODMAS rule
36 + 0.85 - 2 = 20
36.85 - 2 = 20
34.85 - 2 = 20 does not follow the condition.
From option 3 -
36 ÷ 6 + 3 × 5 - 3 = 45
If '+' = '÷', '×' = '+', '-' = '×' and '÷' = '-', then
36 - 6 ÷ 3 + 5 × 3 = 45
Applying BODMAS rule
36 - 2 + 5 × 3 = 45
36 - 2 + 15 = 45
51 - 2 = 45
49 = 45 does not follow the condition.
From option 4 -
36 + 6 - 3 × 7 ÷ 3 = 24
If '+' = '÷', '×' = '+', '-' = '×' and '÷' = '-', then
36 ÷ 6 × 3 + 7 - 3 = 24
Applying BODMAS rule
6 × 3 + 7 - 3 = 24
18 + 7 - 3 = 24
25 - 3 = 24
22 = 24 does not follow the condition.
Hence, "option 1" is the correct answer.

Q20. Answer: (d) 12

Given series are -
8, ?, 30, 105, 472.5
The logic followed here is:
We multiply 1.5 to first number we get second number-
8 × 1.5 = ? = 12.0
We multiply 2.5 to second number we get third number-

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12 × 2.5 = 30.0
We multiply 3.5 to third number we get fourth number-
30 × 3.5 = 105.0
We multiply 4.5 to fourth number we get fifth number-
105 × 4.5 = 472.5
Hence, "12" is the correct answer.

Q21. Answer: (d) 480

Given:
Average of the three numbers is 880
Formula used:
Average of 3 numbers = Sum of the numbers ÷ 3
Calculation:
Let the first, second, and third numbers be 6x, 3x, and 2x respectively
According to the question,
(6x + 3x + 2x) ÷ 3 = 880
=> 11x = 3 × 880
=> x = 240
Smallest number = 2 × 240 = 480
Therefore The smallest number is 480.

Q22. Answer: (d) 9%

Given:
Loan amount = Rs.24000
Interest paid on loan = Rs.19440
Interest rate = No of years
Formula used:
Simple Interest = Principal × Rate% × Time
Calculation:
Let the rate percent and no of years be = a
Simple Interest = 24000 × a/100 × a
=> 19440 = 240 × a^2
=> a2 = 19440/240
=> a = √81 = 9
Therefore The rate of interest is 9% per annum.

Q23. Answer: (c) 7546 m^2

Given:
The length of the man's step = 44 cm
No of steps taken to go around the pond = 700
Formulas used:
Area of a circular pond = πr^2
Circumference of the circular pond = $2\pi r$
Calculation:
Circumference of the circular pond = 44 cm × 700 steps
=> $2\pi r = 44 \times 700$
=> $r = 44 \times 700 \times 7/(2 \times 22)$
=> 4900 cm
=> 49 m
Therefore Area of the circular pond = 22/7 × 49 × 49
=> 7546 m2

Q24. Answer: (d) 51

In this question, subtraction between ones and tens place value of first number and placed at ones place of resultant value and addition of ones and tens place value of second number and placed at tens place of resultant value. which are given below -

If 15 × 17 = 84 then logic are given below

And 92 × 23 = 57 then logic are given below

And 37 × 44 = 84 then logic are given below

Similarly, 54 × 32 = 51 then logic are given below

Hence, "51" is the correct answer.

Q25. Answer: (a) 141131857

In a certain code language, ‘FRENCH’ is written as ‘83145186’

‘HAPPEN’ is written as '145161618'.

then the code for ‘GERMAN’ in that code language

Hence, "141131857" is the correct answer.

Q26. Answer: (c) 59

The logic followed here is:

59 is the prime number and 50, 82 and 170 is not prime number.

Note: The number who divided by 1 and itself called prime number.

Hence, "59" is the correct answer.

Q27. Answer: (c) Atal Bihari Vajpayee

The correct answer is Atal Bihari Vajpayee.

• Atal Bihari Vajpayee launched the Golden Quadrilateral Project.

Key Points

• Golden Quadrilateral:

• It is a 5846 km high-quality road joining the four megacities of the country (Delhi, Kolkata, Chennai, and Mumbai) is called Golden Quadrilateral Connecting National Highways.

• Atal Bihari Vajpayee launched the Golden Quadrilateral Project.

• Delhi-Kolkata: NH-2

• Mumbai -Delhi: NH-8

• Mumbai -Chennai: NH-4

• Chennai-Kolkata: NH-5

Q28. Answer: (d) 8

The correct answer is 8.

• SAARC consists of 8 member countries.

Key Points

• South Asian Association for Regional Cooperation (SAARC):

• It is an economic and political organization of eight countries in South Asia.

• It was established in 1985.

• Its member countries are Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, Afghanistan.

• Afghanistan joined as the 8th member of SAARC in 2007.

• The 18th Summit was the recent SAARC summit and was hosted by Nepal in 2014.

• The aim of the SAARC is to promote economic growth, social progress and cultural development within the South Asia region.

Q29. Answer: (c) Mark Zuckerberg

The correct answer is Mark Zuckerberg.

• Mark Zuckerberg is the founder of Facebook.

Key Points

• Facebook:

• It was founded in 2004.

• Its founders are Mark Zuckerberg, Eduardo Saverin, Andrew McCollum, Dustin Moskovitz, and Chris Hughes.

• Mark Zuckerberg is the current CEO.

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Additional Information

• Michael S. Dell is the founder, chairman, and CEO of Dell Technologies.

• Bill Gates is the co-founder of Microsoft.

• Tim Berners-Lee invented the World Wide Web in 1989.

Q30. Answer: (c) Ficus benghalensis

The correct answer is Ficus benghalensis.

• The botanical name of the banyan tree is Ficus benghalensis.

Additional Information

• Azadirachta indica is the botanical name of Neem Tree.

• Ficus religiosa is the botanical name of the peepal tree.

• Ocimum tenuiflorum is the botanical name of holy basil.

Q31. Answer: (c) Robert Hooke

The correct answer is Robert Hooke.

• Robert Hooke discovered the cell.

Key Points

• Cell:

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

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

• Robert Hooke coined the term cell.

• The first living cell was discovered by Leeuwenhoek.

• The smallest cell is PPLO (Mycoplasma).

• The human nerve cell is the longest animal cell.

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

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

• The longest cell is the neuron.

• The biggest cell is the egg of Ostrich.

Additional Information

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

• Theodor Schwann's discovery of the enzyme pepsin.

Q32. Answer: (d) Vallabhbhai J Patel

The correct answer is Vallabhbhai J Patel.

• Vallabhbhai J Patel was the President of the Indian National Congress in 1931.

Important Points

• Nellie Sengupta was the president of the Indian National Congress in 1933.

• Dr Rajendra Prasad was the president of INC in 1934, 1935 and 1939.

• Subhash Chandra Bose was the president of INC in 1938 and 1939.

Additional Information

Important sessions of Indian National Congress (INC):

Session	Place	Date	President
1st Session	Bombay	Dec. 28-30, 1885	Womesh Chandra Bonnerjee
2nd Session	Calcutta	Dec. 27-30, 1886	Shri Dadabhai Naoroji
3rd Session	Madras	Dec. 27-30, 1887	Badruddin Tyabji
4th Session	Allahabad	Dec. 26-29, 1888	George Yule
5th Session	Bombay	Dec. 26-28, 1889	Sir William Wedderburn
9th Session	Lahore	Dec. 27-30, 1893	Shri Dadabhai Naoroji
18th Session	Ahmedabad	Dec. 28-30, 1902	Surendranath Banerjee
21st Session	Banaras	Dec. 27-30, 1905	Gopal Krishna Gokhale

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22nd Session	Calcutta	Dec. 26-29, 1906	Shri Dadabhai Naoroji
23rd Session (Suspended)	Surat	Dec. 26-27, 1907	Rash Behari Ghosh
31st Session	Lucknow	Dec. 26-30, 1916	Ambica Charan Mazumdar
39th Session	Belgaum	Dec. 26-27, 1924	M.K. Gandhi
40th Session	Cawnpore	Apr. 15-17, 1925	Mrs. Sarojini Naidu
43rd Session	Calcutta	Dec. 29-01, 1929	Motilal Nehru
44th Session	Lahore	Apr. 16-18, 1929	Pt Jawaharlal Nehru
45th Session	Karachi	Mar. 21-31, 1931	Vallabbhai J. Patel
51st Session	Haripura	Feb. 19-21, 1938	Subhash Chandra Bose
52nd Session	Tripuri	Mar. 10-12, 1939	Subhash Chandra Bose
53rd Session	Ramgarh	Mar. 19-20, 1940	Maulana Abul Kalam Azad
54th Session	Meerut	Nov. 23-24, 1946	J.B. Kripalani

Q33. Answer: (b) Tokyo

The correct answer is Tokyo.

• 2021 Summer Olympic Games to be held in Tokyo.

Key Points

• Summer Olympic Games 2021:

• The Olympics took place in Tokyo.

• The cauldron was held by Naomi Osaka.

• Its mascots were Miraitowa (official mascot of the 2020 Summer Olympics) and Someity (the official mascot of the 2020 Summer Paralympics).

• The United States topped the medal tally of Summer Olympics 2021 with 39 golds.

• The People's Republic of China stood in second place with a total of 38 gold medals.

• And Japan was third with a total of 27.

• India's rank in the summer Olympic 2021 was 48^(th).

Additional Information

• Olympics:

• Athens was the venue for the first Olympics which was held in 1896.

• Since then Games are held every four years.

• The Olympic flag was created in 1913 at the suggestion of Baron Pierre de Coubertin.

• In the Amsterdam Games in 1928, an Olympic flame was ceremonially lighted and burned in a giant torch at the entrance of the stadium.

• The Olympic motto is “Citius Altius Fortius” (faster, higher, stronger).

Q34. Answer: (a) Lord Dalhousie

The correct answer is Lord Dalhousie.

• Lord Dalhousie devised the policy of the Doctrine of Lapse.

Key Points

• The doctrine of Lapse:

• The policy was devised by Lord Dalhousie.

• He was the Governor-General of India from 1848 to 1856.

• It was an annexation policy applied by the East India Company in India which was implemented in 1848.

• The provinces that came under the Doctrine of Lapse are Satara (1848 AD), Jaitpur and Sambalpur (1849 AD), Baghat (1850 AD), Udaipur (1852 AD), Jhansi (1853 AD), and Nagpur (1854 AD).

Additional Information

• Lord Dalhousie:

• Abolished Titles and pensions, Widow Remarriage Act (1856 AD).

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• He annexed the whole of Punjab.
• Santhal uprisings took place during his tenure.
• Wood's Educational Despatch of 1854 AD.
• He established an Engineering College at Roorkee.
• Started the first railway line in 1853 AD.
• Started electric telegraph service.
• Laid the basis of the modern Postal System (1854 AD).
• A separate public works department was set up for the first time.

Q35. Answer: (a) Dear

Arranging all the words as per their order in the dictionary:
1. Dance
3. Dare
4. Dear
2. Degree
5. Development
Thus, the correct order is 1, 3, 4, 2, and 5.
Hence, dear will come in the middle if they are arranged as per their order in an English dictionary.

Q36. Answer: (c) Newton

The correct answer is Newton.
• Newton is the SI unit of force.
Key Points
• Force:
• Force is that external cause which when acts on a body, changes or tries to change the initial state of the body.
• Force = mass × acceleration
• Its S.I. unit is Newton (kg. ms^(-2)).
• Force is a vector quantity.
• Dyne is the CGS unit of force.
Additional Information
• Pressure is defined as a force acting normally on the unit area on the surface.
• SI unit of pressure is N/m^2 also called Pascal (Pa).
• Pressure is a scalar quantity.

Q37. Answer: (d) 240

Calculation:
Let the number be 20a
As per the question;
20a × 4/5 - 20a × 3/4 = 12
=> 16a - 15a = 12
=> a = 12
Therefore The required number (20a) = 20 × 12 = 240

Q38. Answer: (d) Object Linking and Embedding

The correct answer is Object Linking and Embedding.
• In the Computer field, OLE is the abbreviation of Object Linking and Embedding.

Key Points
• Object Linking and Embedding is a Microsoft Technology that facilitates the sharing of application data and objects written in different formats from multiple sources.
• Linking establishes a connection between two objects.
• Embedding facilitates data insertion.
• Object Linking and Embedding allows users to edit and create documents that contain objects created by different applications.

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• Object Linking and Embedding allows an editing application to export part of a document to another editing application and then import it with additional content.

Q39. Answer: (d) 1

Follow BODMAS rule to solve this question, as per the order given below,

Calculation:

(12.25 + 7/8 of 56 - 9)/((25 ÷ 5 × 10.25) + 10/9 of (7/2 - 4/5) - 2)

=> (12.25 + 7/8 × 56 - 9) ÷ [(25/5 × 10.25) + 10/9 × (35 - 8)/10 - 2]

=>(12.25 + 49 - 9) ÷ [(5 × 10.25) + 10/9 × 27/10 - 2]

=>52.25 ÷ [51.25 + 3 - 2]

=>52.25 ÷ 52.25

=> 1

Therefore The required value is 1.

Q40. Answer: (d) HCl

The correct answer is HCl.

• A solution reacts with chalk powder to give a gas that turns lime-water milky. The solution contains HCl.

Important Points

• Chalk will dissolve in a strong acid such as hydrochloric even when diluted.

• The chemical formula of chalk is CaCO3.

• The chemical formula of hydrochloric acid is HCl.

• Chalk powder when reacted with hydrochloric acid releases carbon dioxide which turns lime water milky.

Additional Information

Formula	Details
AlCl3	• It is the chemical formula of Aluminium Trichloride. - It is primarily used in making Aluminium metal.
MgCl2	• It is the chemical formula of Magnesium chloride. - It is used for dust control, soil stabilization, wind erosion mitigation.
NaCl	• It is the chemical formula of Sodium chloride. - It is primarily used as flavour and to preserve many foods.
HCl	• It is the chemical formula of Hydrochloric acid. - It is primarily used as a bleaching agent in food, textile, metal and rubber industries.

Q41. Answer: (c) 18.8% increase

Given:

Percentage increase in length = 10%

Percentage increase in breadth = 8%

Formula used:

Area of rectangle = length × breadth

Percentage increase/decrease = Increase/decrease ÷ Old area × 100

Calculation:

Let the length and breadth of rectangle be 100cm and 50 cm respectively.

=> Area = 100 × 50 = 5000 sq. cm

Now, increased length = 100 × 110/100 = 110 cm

=> Increased breadth = 50 × 108/100 = 54

New area = 110 × 54 = 5940

Therefore Percentage increase in area = (5940 - 5000)/5000 × 100

=> 940/5000 × 100 = 18.8%

Alternate Method

Formula used:

Effective rate of increase = x + y + xy/100

Calculation:

Therefore Percentage Increase = 10 + 8 + (10 × 8)/100

=> 18 + 0.8 = 18.8%

Q42. Answer: (a) 1954

The correct answer is 1954.

• The provision of Bharat Ratna was introduced in 1954.

Key Points

• Bharat Ratna:

• The highest civilian award is given for exceptional service the advancement of art, literature and science, and in recognition of public service of the highest order.

• The first receiver of the Bharat Ratna award was C. Rajagopalachari.

• Khan Abdul Ghaffar Khan was the first foreigner to be honoured with this award in 1987.

• Lal Bahadur Shastri was the first person to be honoured with Bharat Ratna posthumously.

• Indira Gandhi was the first woman recipient of Bharat Ratna.

Additional Information

• Bharat Ratna Award 2019 Awardees were:

• Nanaji Deshmukh

• Bhupen Hazarika

• Pranab Mukherjee

• Padma Bhushan:

• The award is given for distinguished service of a high order in any field, including service rendered by government servants.

• It is the third-highest civilian honour in India.

• It was first awarded in 1954.

• Padma Vibhushan:

• The award is given for exceptional and distinguished services in any field including service rendered by government servants.

• It is the second-highest civilian honour in India.

• Padma Shri:

• The award is given for distinguished service in any field including service rendered by government servants.

• It is the fourth-highest civilian honour in India.

Q43. Answer: (d) Rs. 675

Given:

Cost Price = Rs.500

Discount = 20%

Profit = 8%

Formulas used:

Profit = Selling Price - Cost Price

Profit percent = Profit/Cost Price × 100

Discount = Marked Price - Selling Price

Discount percent = Discount/MP × 100

Calculation:

Selling price at 8% profit;

=> 500 × 8% + 500

=> Selling price = 40 + 500 = Rs.540

Discount percent = (Marked price - Selling price)/Marked price × 100

=> 20 = (MP - 540)/MP × 100

=> MP = 5MP - 2700

=> 4MP = 2700

Therefore MP = Rs.675

Shortcut Trick

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Q44. Answer: (d) Algeria and Argentina

The correct answer is Algeria and Argentina.

• Algeria and Argentina have been declared malaria-free by WHO in May 2019.

Key Points

• The World Health Organization has declared Argentina and Algeria malaria-free as no cases of transmission of the disease have been reported.

• Algeria is the second African country after Mauritius to be declared malaria-free.

• Argentina is the second American country after Paraguay.

• In 2021, two countries El Salvador and China were declared malaria-free by the World Health Organization.

• Globally 40 countries and territories have been granted malaria-free certification by the World Health Organization.

• To receive malaria-free certification by the World Health Organization, a country must demonstrate that the chain of indigenous transmission by the Anopheles mosquito has been disrupted nationwide for at least three consecutive years.

Important Points

• Malaria is a disease caused by the Plasmodium parasite usually transmitted by the bite of an infected female Anopheles mosquito.

• It is both preventable and curable.

Additional Information

Country	Details
Belgium	• Belgium is a country in Western Europe. - Its capital is Brussels.
Qatar	• Qatar is a country in Western Europe. - Its capital is Doha.
India	• India is a country in South Asia. - Its capital is New Delhi.
Singapore	• Singapore is an island city-state in Southeast Asia. - Its capital is Singapore.
Mauritius	• Mauritius is a country in East Africa. - Its capital is Port Louis.
Malaysia	• Malaysia is a country in Southeast Asia. - Its capital is Kaula Lampur.
Algeria	• Algeria is a country in North Africa. - Its capital is Algiers.
Argentina	• Argentina is a country in South America. - Its capital is Buenos Aires.

Q45. Answer: (a) 5

The correct answer is 5.

• The number of countries in the world to have veto power in the UN Security Council in 2020 is 5.

Important Points

• The United Nations Security Council is one of the six principal organs of the United Nations.

• Its headquarter is in New York, United States.

• It was established on 24 October 1945.

• The five permanent members have been given veto power to veto the original resolution.

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

Q46. Answer: (d) 1962

The correct answer is 1962.

• Indian National Committee for Space Research was formed in 1962.

Key Points

• Indian National Committee for Space Research (INCOSPAR):

• It was formed in the year 1962.

• It was set up by Dr. Vikram Sarabhai.

• The aim of the committee was to formulate the Indian Space Programme.

• Indian National Committee for Space Research first set up the Thumba Equatorial Rocket Launching Station.

• INCOSPAR was dissolved and superseded by the Indian Space Research Organisation (ISRO) in 1969.

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Additional Information

• Indian Space Research Organisation (ISRO):

• It was founded in 1969 to develop an independent Indian space program.

• It is headquartered in Bengaluru.

• It comes under the aegis of the Department of Space.

• Its current chairman is Shri S. Somanath

Q47. Answer: (b) 21.67% of the total geographical area of the country

The correct answer is 21.67% of the total geographical area of the country.

• The total forest cover of India as per the ISFR report 2019 was 21.67% of the total geographical area of the country.

Key Points

• India State of Forest Report (ISFR), 2019:

• Ministry for Environment, Forests and Climate Change releases the ISFR.

• It is a biennial publication of the Forest Survey of India (FSI).

• The report assesses the forest and tree cover, bamboo resources, carbon stock, forest fires and various other parameters.

• The Total Forest and tree cover of India was 24.56% of the geographical area of the country.

• The Total Forest cover was 21.67% of the geographical area of the country.

• The Tree cover is 2.89% of the geographical area of the country.

• The largest forest cover in states, according to the area are Madhya Pradesh > Arunachal Pradesh > Chhattisgarh > Odisha > Maharashtra.

• Forest cover as percentage of total geographical area Mizoram (85.41%) > Arunachal Pradesh (79.63%) > Meghalaya (76.33%) > Manipur (75.46%) > Nagaland (75.31%).

Q48. Answer: (d) Kerala

The correct answer is Kerala.

• Kudumbashree, the Kerala State Poverty Alleviation Mission was inaugurated on 17 May 1998 by the Prime Minister Shri Atal Bihari Vajpayee.

• The mission aims at eradicating absolute poverty within a fixed time frame of 10 years under the leadership of empowered local self-government constituted by the 73rd and 74th Amendments to the Constitution of India.

• The mission launched by the State Government with the active support of the Government of India and NABARD has taken a different approach to eradicate poverty by organizing the poor into community-based organizations.

• The mission follows a process approach rather than a project approach.

Additional Information

• Kudumbashree has a three-tier structure for its women's community network

• Neighborhood group at the lowest level (NHG)

• Area Development Committees (ADS) at the Intermediate Level

• Community Development Committees (CDS) at the local government level

Q49. Answer: (b) e-commerce

The correct answer is e-commerce.

• Buying or selling goods electronically is known as e-commerce.

Key Points

• E-commerce:

• E-commerce or electronic commerce is the buying and selling of goods and services, over the internet.

• These transactions occur either as business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer or consumer-to-business.

• Famous e-commerce sites are Amazon, Flipkart and Alibaba.

Q50. Answer: (d) 4

Given:

Sum of two positive numbers = 384

HCF of two positive numbers = 24

Calculation:

Let the two numbers be a and b respectively.

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Now, 24a + 24b = 384
=> 24(a + b) = 384
=> a + b = 384/24 = 16
=> a + b = 16
NOTE - The numbers that we take should be co-prime.
For a = 1, b = 15 [1 × 24 + 15 × 24 = 384]
For a = 3, b = 13 [3 × 24 + 13 × 24 = 384]
For a = 5, b = 11 [5 × 24 + 11 × 24 = 384]
For a = 7, b = 9 [7 × 24 + 9 × 24 = 384]
Therefore The number of such pairs is 4.

Q51. Answer: (b) 378

Given:
Dimensions of a cuboid are, l × b × h = 27 cm × 18 cm × 21 cm
Formulas used:
Volume of cuboid = l × b × h
Volume of cube with side a = a^3
Calculation:
No of cube to be cut = Volume of cuboid/Volume of cube
=> (27 cm × 18 cm × 21 cm)/(3 × 3 × 3)
=> 18 × 21
=> 378
Therefore The no of cubes that can be cut out of cuboid = 378

Q52. Answer: (c) 86

Given: 70, 72, 78, 80, ?, 88, 94.
The logic follows here is: Addition of 2 and 6 alternatively as shown below,
Hence, 86 is the correct answer.

Q53. Answer: (a) 400

Given:
The ratio of male and female officers = 4 : 7
Calculation:
Let the number of male and female officers be 4y and 7y.
As per the question;
(4y - 50)/(7y - 100) = 7/12
=> (7y - 100) × 7 = (4y - 50) × 12
=> 49y - 700 = 48y - 600
=> y = - 600 + 700
=> y = 100
Therefore No of male officer before shifting = 4y = 4 × 100
=> 400

Q54. Answer: (d) FHJ

By checking options:
(1) CGI
(2) EIK
(3) AEG
(4) FHJ
Hence, FHJ is the odd one.

Q55. Answer: (b) tertiary sector

The correct answer is the tertiary sector.
• The service sector is a part of the tertiary sector of an economy.

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Key Points

• Broad Sectors of Indian Economy

• Primary Sector: This sector of a country's economy includes agriculture, forestry, fishing, mining, quarrying, and extraction of minerals.

• Secondary Sector: Manufacturing, electricity gas and water supply, construction.

• Tertiary Sector: It is also called the service sector which includes Business, transport, telecommunication, banking, insurance, real estate, community and personnel services.

Additional Information

• Types of the economy are:

• Agrarian Economy: In an Agrarian economy, agriculture dominance prevails in both the Gross National Product (GNP) and employment.

• Mixed Economy: It is an economy, where both the public and private sectors co-exist.

• Developing Economy

• Low per capita income.

• The occupational pattern is primary producing.

• Heavy population pressure.

• Prevalence of chronic unemployment and underemployment.

• Steadily improving rate of capital formation.

• Low capital per head.

• Unequal distribution of wealth/ assets.

Q56. Answer: (a) 60 days

Given:

Time taken by A and B = 20 days

Time taken by B and C = 30 days

Formula used:

Total work = No of days × Efficiency

The ratio of efficiency of A and C = 2 : 1

=> A/C = 2 : 1

=> 2C = A

Calculation:

By LCM Method, let the total work be the common multiple of 20 and 30, that is 60.

One day work done by (A + B) = 3 (1)

One day work done by (B + C) = 2 (2)

By putting the value of 2C = A in (1)

=> A + B = 3

=> 2C + B = 3 (3)

By solving [2 × (2) - (3)]

=> 2B + 2C - (2C + B) = 4 - 3

=> B = 1

By putting the value of B = 1 in equation (1)

=> A + B = 3

=> A + 1 = 3

=> A = 2

One day work by (A + B) = 1 + 2 = 3

Total work = 20 × 3 = 60

Therefore No of days taken by B = 60/1 = 60

Q57. Answer: (c) 273.15 K

The correct answer is 273.15 K.

• The freezing point of water on the Kelvin scale is 273.15 K.

Important Points

• The temperature of the Freezing point of water is 32 ºF or 273.15 K

• The freezing point is the temperature at which a liquid turns into a solid.
• Water is an inorganic, transparent, tasteless, odorless substance.
• The chemical formula is H2O.
• The boiling point of water is 100 ºC.

Q58. Answer: (a) Swami and Friends

The correct answer is Swami and Friends.
• The first novel of RK Narayan is Swami and Friends.
Key Points
• Rasipuram Krishnaswami Iyer Naryanswami (RK Narayan) was an Indian writer.
• He was a leading author in early Indian literature in English.
• He was born in 1906, Madras.
• In 1960 he won Sahitya Akademi Award for 'The Guide'
• His famous works include
• Swami and Friends
• The Guide
• Malgudi Days
• Dark Room
• A Tiger of Malgudi.
• The Vendor of Sweets
• The English Teacher.

Q59. Answer: (d) 20

The correct answer is 20.
• The number of cities selected in the first batch to be developed as Smart Cities of India in 2016 is 20.
Key Points
• The Government of India has launched Smart City Mission on 25 June 2015.
• It is under the Ministry of Housing and Urban Affairs.
• The main objective is to promote sustainable and inclusive cities that provide core infrastructure and provide their citizens with a good quality of life, a clean and sustainable environment and the application of smart solutions.

Q60. Answer: (a) 40

Given:
60065
Calculation:
√60065 = √5 × 41 × 293 = 245.08
A perfect square number is less than 245.08. Now, we find the square of 245.
=> 245 × 245 = 60025
Let us now subtract 60025 from 60065.
=> 60065 - 60025 = 40
Therefore 40 must be subtracted from 60065 to make it a perfect square.
Alternate MethodBy long division method
Here, 40 is the remainder.
Perfect square = Dividend - Remainder
=> 60065 - 40 = 60025 [$245^2 = 60025$]
Shortcut Trick By Hit and Trial
Option 1: 60065 - 40 = 60025 (245 = √60025)
Option 2: 60065 - 30 = 60035 (245.02 = √60035)
Option 3: 60065 - 35 = 60030 (245.01 = √60030)
Option 4: 60065 - 20 = 60045 (245.04 = √60045)

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Q61. Answer: (c) 250

The correct answer is 250.

• The number of members present in the Rajya Sabha is 250.

Key Points

• The Rajya Sabha or the Council of States is the upper house of the bicameral Parliament of India.

• The current (2021) Chairman of Rajya Sabha is M Venkaiah Naidu.

• The origins of the second chamber date back to the Montagu-Chelmsford Report of 1918.

• The first sitting of the Rajya Sabha was held on 13 May 1952.

• Article 80 of the Constitution sets the maximum strength of the Rajya Sabha at 250.

• The 238 members are representatives of the states and union territories and 12 members are nominated by the President of India.

• The members nominated by the President should have special knowledge or practical experience in respect of matters such as literature, science, art, social service.

• The members of the Rajya Sabha are elected by an electoral college consisting of elected members of the State Legislative Assembly with a system of proportional representation by means of the single transferable vote.

Q62. Answer: (d) 520

Shortcut Trick

Use the Algebraic Identity: $a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

First, find ab: $(a + b)^2 = a^2 + b^2 + 2ab \Rightarrow 100 = 68 + 2ab \Rightarrow 2ab = 32 \Rightarrow ab = 16$

Now, substitute the values: $a^3 + b^3 = 10 \times (68 - 16)$

$a^3 + b^3 = 10 \times 52 = 520$

Therefore The correct answer is 520.

Alternate Method

Given:

$a + b = 10$

$a^2 + b^2 = 68$

Formula Used:

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

2. $a^3 + b^3 = (a + b)^3 - 3ab(a + b)$

Calculations:

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

$\Rightarrow (10)^2 = 68 + 2ab$

$\Rightarrow 100 - 68 = 2ab$

$\Rightarrow 32 = 2ab$

$\Rightarrow ab = 16$

$\Rightarrow a^3 + b^3 = (a + b)^3 - 3ab(a + b)$

$\Rightarrow a^3 + b^3 = (10)^3 - 3(16)(10)$

$\Rightarrow a^3 + b^3 = 1000 - 480$

$\Rightarrow a^3 + b^3 = 520$

Therefore The correct answer is 520.

Additional Information

Sum of Cubes Identity

The expression $a^3 + b^3$ can always be factored into $(a + b)(a^2 - ab + b^2)$.

Difference of Cubes Identity

Similarly, the difference of cubes is given by: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$.

Square of a Binomial

The identity $(a + b)^2 = a^2 + b^2 + 2ab$ is essential for finding the product term ab when the sum and sum of squares are known.

Q63. Answer: (b) -1

Given:

$2(\sin6\theta + \cos6\theta) - 3(\sin4\theta + \cos4\theta)$

Formulas used:

$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

=> (a + b)3 - 3ab(a + b) = a3 + b3

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

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

$\sin^2 a + \cos^2 a = 1$

Calculation:

$2(\sin 6\theta + \cos 6\theta) - 3(\sin 4\theta + \cos 4\theta)$

$\Rightarrow 2\{(\sin^2\theta + \cos^2\theta)^3 - 3\sin 2\theta \cos 2\theta(\sin 2\theta + \cos 2\theta)\} - 3\{(\sin^2\theta + \cos^2\theta) - 2\sin 2\theta \cos 2\theta\}$

$\Rightarrow 2\{1 - 3\sin 2\theta \cos 2\theta\} - 3\{1 - 2\sin 2\theta \cos 2\theta\}$

$\Rightarrow 2 - 6\sin 2\theta \cos 2\theta - 3 + 6\sin 2\theta \cos 2\theta$

$\Rightarrow 2 - 3 = -1$

Therefore $2(\sin 6\theta + \cos 6\theta) - 3(\sin 4\theta + \cos 4\theta) = -1$

Q64. Answer: (d) 6

The correct answer is 6.

• The number of categories in the Nobel Prize is 6.

Key Points

• The Nobel Prize is the most prestigious award given for intellectual achievement in the world.

• It is awarded in six categories namely Physics, Chemistry, Physiology-Medicine, Literature, Peace, and Economics.

• According to the will and testament of Alfred Nobel, the Nobel Foundation was established as a private organization on 29th June 1900.

• Its function is to manage the finances and administration of the Nobel Prize.

• Its purpose was to reward those who served humanity.

• The Nobel Prize was first awarded in 1901.

Additional Information

• Alfred Nobel was a Swedish chemist, engineer, and industrialist.

• He is famous for his invention 'Dynamite'.

Q65. Answer: (d) April 19, 1975

The correct answer is April 19, 1975.

• India's first satellite, the Aryabhata spacecraft was launched on April 19, 1975.

Important Points

• India's first satellite was the Aryabhata spacecraft named after the famous astronomer.

• It was completely designed and manufactured in India.

• It was launched from Kapustin by a Soviet Kosmos-3M rocket.

• It was launched from the Volgograd launch station (currently in Russia).

• Aryabhata is an experimental satellite with a mission life of 6 months (nominal) and an orbital life of about seventeen years.

Additional Information

• Aryabhata was the first major mathematician and astronomer.

• He belonged to Gupta Era.

• His famous works include the 'Aryabhatiya' - a compilation of mathematics and astronomy and the Arya-Siddhanta, a work on astronomical computation.

Q66. Answer: (b) 4

The correct answer is 4.

• The number of wars fought by the British with Mysore was 4.

Key Points

• The series of four wars fought between the British and the Kingdom of Mysore in South India during the 18th century was known as the Anglo-Mysore War.

• First Anglo-Mysore War: It was fought between 1767-1769 AD.

• Governor: Lord Verelst was the governor during this period.

• In the first Anglo-Mysore, the British, the Nizam and the Marathas fought together against Hyder Ali.

• Treaty of Madras: Hyder Ali wins against the British. A defense treaty was concluded in 1769.

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• Second Anglo-Mysore War: It was fought between 1780-1784 AD.
• Governor: Lord Warren Hastings was the governor during this period.
• In the second Anglo-Mysore, Hyder Ali, the Nizam and the Marathas fought together against the British.
• Hyder Ali defeated Colonel Bailey.
• Hyder Ali died in 1782 during the Second Anglo-Mysore War and was succeeded by his son Tipu Sultan.
• Treaty of Mangalore: The Second Anglo-Mysore War ended with the signing of the Treaty of Mangalore by Tipu Sultan in 1784.
• Third Anglo-Mysore War: It was fought between 1790-1792 AD.
• Governor: Lord Cornwallis was the governor during this period.
• In the third Anglo-Mysore, the British, the Nizam and the Marathas fought together against Tipu Sultan.
• Treaty of Srirangapatna: It was signed by Tipu Sultan in 1792.
• Fourth Anglo-Mysore War: It was fought between AD 1799.
• Governor: Lord Wellesley was the governor during this period.
• Tipu died in 1799 while defending the Mysore capital, Srirangapatna.
• The threat of the French to the British ended by the year 1799.

Q67. Answer: (d) December 1885

The correct answer is December 1885.
• The first session of the Indian National Congress was held in December 1885.

Important Points
• The Indian National Congress was founded on 28 December 1885 by Alan Octavian Hume (A.O.Hume), a retired British civil servant.
• Safety Valve Theory: The theory states that the British wanted to quell the growing discontent among Indians through the Indian National Congress.
• The governor was Lord Dufferin.
• The objective of the Indian National Congress was to formulate popular demands and present them to the government on behalf of the people.

Additional Information

Name	Details
W.C.Bennerjee	• He presided over the first session of the Indian National Congress in 1885. - It was held in Bombay.
Dadabhai Naoroji	• He presided over the second session of the Indian National Congress in 1886. - It was held in Calcutta.
Syed Badruddin Tyabji	• He presided over the third session of the Indian National Congress in 1887. - It was held in Madras. - Syed Badruddin Tyabji was the first Muslim president of the Indian National Congress.
Kadambi Ganguli	• She was the first women graduate of Calcutta University. - She addressed the Calcutta session of the Indian National Congress in 1890.

Q68. Answer: (b) 90 m

Given:
The horizontal distance between two towers = 40√3 m
Calculation:
Let the height of the first tower = h
In triangle ABC, AB/BC = tan 30°
=> (130 - h)/40√3 = 1/√3
=> 130 - h = 40
=> h = 90
Therefore The height of the first tower = 90 m

Q69. Answer: (d) Air pollution

The correct answer is Air pollution.

• The theme of World Environment Day 2019 is Air Pollution.

Important Points

• World Environment Day is the United Nations day for encouraging worldwide awareness and action to protect the environment.

• Also called Eco Day it is celebrated on June 5.

• The first celebration of World Environment Day took place in 1974 under the slogan "Only One Earth".

Year	Theme
2019	Air Pollution
2020	Celebrate Biodiversity
2021	Ecosystem Restoration

Additional Information

Name	Details
Deforestation	• Deforestation is the removal of a forest or stands of trees from land that is then converted to non-forest use.
Water pollution	• Water pollution is the contamination of water bodies as a result of human activities.
Soil pollution	• Soil pollution is the presence of toxic chemicals in soil with high concentrations which poses a threat to mankind.
Air pollution	• Air pollution is the presence of substances in the air that are harmful to the health of human beings.

Q70. Answer: (a) MPIV

Given: MNTK : HIOF :: RUNA : ?

The logic follows here is:

Similarly,

Hence, MPIV is the correct answer.

Q71. Answer: (d) 8 : 11

Given:

x : y = 4 : 9

Calculation:

By putting the values of x : y in the equations, we get;

9x + 4y = 9 × 4 + 4 × 9 = 72

18x + 3y = 18 × 4 + 3 × 9 = 99

Therefore The required ratio 9x + 4y : 18x + 3y = 72 : 99

=> 8 : 11

Q72. Answer: (b) 18 days

Given:

Time taken by A = 40 days

Time taken by B = 60 days

Calculation:

Let the total work be = 1

One day work done by A = 1/40

One day work done by B = 1/60

One day work done by both A and B = 1/40 + 1/60

Remaining work done by A in 10 days = 10 × 1/40 = 1/4

=> Part of the work done by A and B together = 1 - 1/4 = 3/4

Efficiency × No of days = Total work

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(1/40 + 1/60) × No of days = 3/4

=> No of days = 3/4 ÷ (1/40 + 1/60)

=> No of days = 3/4 ÷ 5/120

=> 3/4 × 120/5

=> 18

Therefore The no of days B worked for is 18.

Alternate MethodBy LCM Method

Total work = No of days × Efficiency

Let the total work be the common multiple of 40 and 60, that is 120.

Part of the work completed by A in 10 days = 3 × 10 = 30

Part of the work completed by A and B together = 120 - 30 = 90

Therefore No of days taken by A and B = 90/(3 + 2) = 90/5

=> 18

Q73. Answer: (c) Har Dayal

The correct answer is Har Dayal.

• One of the co-founders of the Ghadar Party is Har Dayal.

Key Points

• The Ghadar Party was formed by a group of Indian revolutionaries that included migrant workers from Punjab and Bengali and Punjabi intellectuals and students.

• Its main objective is to reflect the values of independent India by overthrowing the British rule and adopting secularism and unity despite regional, religious and linguistic differences.

• It was established in the year 1913.

• The party was dissolved in 1948 after India gained independence.

• Its founders were Hardayal, Sohan Singh Bhakna, Santokh Singh, Baba Jwala Singh, Vashakha Singh Dandekar.

• The party launched its first newspaper 'Gadar' (Weekly) in November 1913.

• The title of the newspaper is 'Angrezi Raj Ka Dushman' (Enemy of British Raj).

Additional Information

Name	Details
Lala Lajpatrai	• He was an Independence Indian activist. - He is known as Punjab Kesari(Lion of Punjab).
Gopal Krishan Gokhale	• Gopal Krishan Gokhale was a social reformer and political leader during the Indian Independence movement. - He was the founder of Servants of Indian Society.
Dada Bhai Naroji	• Dada Bhai Naroji was an Indian social-political leader. - He is known as 'Grand old man of India' and 'Unofficial Ambassador of India'.

Q74. Answer: (c) 60 km/h

Shortcut Trick

When equal distances are covered at speeds x and y, Average Speed = (2 × x × y) ÷ (x + y)

Here, the distance is the same for both onward and return journeys with x = 75 km/h and y = 50 km/h.

=> Average Speed = (2 × 75 × 50) ÷ (75 + 50)

=> Average Speed = 7500 ÷ 125 = 60 km/h

Therefore The correct answer is 60 km/h.

Alternate Method

Given:

Distance covered by train = 420 km at 75 km/h

Distance covered by car = 420 km at 50 km/h

Formula Used:

Time = Distance ÷ Speed

Average Speed = Total Distance ÷ Total Time

Start

End

420 km

Train: 75 km/h

Car: 50 km/h

Calculations:

=> Total distance = 420 + 420 = 840 km

=> Time taken by train = 420 ÷ 75 = 5.6 hours

=> Time taken by car = 420 ÷ 50 = 8.4 hours

=> Total time taken = 5.6 + 8.4 = 14 hours

=> Average Speed = Total Distance ÷ Total Time

=> Average Speed = 840 ÷ 14 = 60 km/h

Therefore The correct answer is 60 km/h.

Additional Information

Average Speed for Three Equal Distances

If a journey consists of three equal parts covered at speeds x, y, and z, the average speed over the entire journey is given by (3xyz) ÷ (xy + yz + zx).

Average Speed (Equal Time Intervals)

When a person travels at speed x for the first half of the time and at speed y for the second half of the time, the average speed is simply the arithmetic mean: (x + y) ÷ 2.

Relative Speed Concept

For two bodies moving in opposite directions, their relative speed is S1 + S2. For bodies moving in the same direction, their relative speed is |S1 − S2|.

Q75. Answer: (c) 3

Given:

(25 + 3 of 8 - 4)/(27 - 3 of (8 - 4))

Calculation:

(25 + 3 of 8 - 4)/(27 - 3 of (8 - 4))

=> (25 + 3 × 8 - 4)/(27 - 3 of 4)

=> (25 + 24 - 4)/(27 - 3 × 4)

=> 45/(27 - 12)

=> 45/15

=> 3

Therefore The required result = 3

Q76. Answer: (d) 2

Given:

√(1225 × √(32 ÷ x))= 70

Formulas used:

√a = (a)^(1/2) = b

=> (a)1/2 = b

=> a = b^2

Calculation:

√(1225 × √(32 ÷ x))= 70

=> √(5^2 × 7^2 × √(2^5 ÷ x)) = 70

=> 35 × √(2^2(√(2/x)) = 70)

=> 35 × 2 √(√2/x) = 70

=> 70 × √√2/x = 70

=> √√2/x = 1

=> √2/x = 1^2

=> √2/x = 1

=> 2/x = 1^2

=> 2/x = 1

=> x = 2

Therefore The value of x is 2.

Alternate MethodBy Hit & Trial Method:

Option 4: At x = 2

√(1225 × √(32 ÷ x))= 70

=> √{1225 × √(32/2)} = 70

=> √{1225 × √16} = 70

=> √{1225 × 4} = 70

=> √{5^2 × 7^2 × 2^2} = 70

=> 5 × 7 × 2 = 70

Because 70 = 70

Therefore LHS = RHS

No other options satisfy LHS = RHS condition, hence it is the required result.

Q77. Answer: (c) CH4

The correct answer is CH4.

• The symbol for Methane is CH4.

Important Points

• Methane is a hydrocarbon that is a primary component of natural gas.

• Methane is the second most abundant Green House Gas after Carbon dioxide.

• Properties:

• It is a Tetrahedral molecule.

• It is a colorless and odorless gas.

• Methane is nontoxic but is extremely inflammable which makes it explosive when mixed with air.

• Natural Sources: Decay of organic material, digestion of food by cattle.

• Anthropogenic Sources: Landfills, agricultural activities, coal mining, wastewater treatment, some industrial processes.

• Uses:

• It is used as Rocket fuel.

• Methane is a fertilizer ingredient.

• It is used to make carbon black.

• It is used in industrial chemical processes.

• It is used as a fuel to make light and heat.

• Methane is used to clean products.

Q78. Answer: (c) 4.8 cm

Given:

In ΔABC, angle A = 90°, AB = 6 cm and AC = 8 cm

AD is perpendicular to BC.

Formulas used:

Area of triangle = 1/2 × Base × Altitude

Pythagoras Theorem

$BC^2 = AB^2 + AC^2$

Calculation:

BC2 = $6^2 + 8^2 = 36 + 64$

=> BC = √100 = 10 cm

Area of triangle ABC;

1/2 × AC × AB = 1/2 × BC × AD

=> 8 × 6 = 10 × AD

=> AD = 48/10

=> AD = 4.8 cm

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Q79. Answer: (c) 3

Concept:

Dividend = Divisor × Quotient + Remainder

Calculation:

m = 8 × q + 5 [where q is quotient]

7m = 7(8 × q + 5)

=> 7 × 8q + 7 × 5

=> 7 × 8q + 32 + 3

=> 7 × 8q + 8 × 4 + 3

=> 8(7q + 4) + 3

Therefore The remainder when 7m is divided by 8 is 3.

Q80. Answer: (c) 1961

The correct answer is 1961.

• The Dowry Prohibition Act was commenced in the year 1961.

Key Points

• Dowry Prohibition Act was enacted on May 1, 1961:

• Its purpose was to prevent the giving and receiving of dowry.

• According to the Dowry Prohibition Act, "dowry" means any property or valuable security given or agreed to be given directly or indirectly.

• The Dowry Prohibition Act is applicable to persons of all religions in India.

• Punishment for violation of law is 5 years imprisonment and Rs 15000/- or the value of dowry whichever is higher.

• Amendment: The 1984 Act required the maintenance of a list describing the identity of the person giving each gift, its value, as a gift given to the bride and groom at the time of marriage.

• Amendments were also made to the original Dowry Prohibition Act to establish maximum and minimum penalties for giving and receiving dowry.

• Proposals to demand dowry or to advertise money or property in connection with marriage shall be fined.

Q81. Answer: (a) 110

Follow BODMAS rule to solve this question, as per the order given below,

Given:

245 - [135 - {84 ÷ 4 of 3 - (11 - 12 ÷ 3)}]

Calculation:

245 - [135 - {84 ÷ 4 of 3 - (11 - 12 ÷ 3)}]

=> 245 - [135 - {84 ÷ 4 of 3 - (11 - 4)}]

=> 245 - [135 - {84 ÷ 4 × 3 - 7}]

=> 245 - [135 - {84 ÷ 12 - 7}]

=> 245 - [135 - {7 - 7}]

=> 245 - [135 - 0]

=> 245 - 135

=> 110

Therefore The required result = 110

Q82. Answer: (d) Rs. 3, 20,000

Given:

Difference between the compound interest received for 2 years compounded annually and half yearly = Rs.1762

Time = 2 years

Rate = 10% per annum

Formulas used:

Compound Interest = Amount - Principal

=> Amount = Principal + Compound Interest

=> Amount = Principal × $(1 + r/100)^n$ [n = No of periods]

Calculation:

Amount, when interest is compounded annually:
n = 2, R = 10%
=> P (1 + 10/100)²
=> P (11/10)² (1)
Amount, when interest is compounded half yearly:
n = 2 × 2 = 4
Rate = 10%/2 = 5%
=> P (1 + 5/100)^4
=> P (105/100)^4
=> P (21/20)^4 (2)
As per the question:
P (21/20)4 - P (11/10)2 = 1762
=> P (21 × 21 × 21 × 21) ÷ (20 × 20 × 20 × 20) - P (11 × 11) ÷ (10 × 10) = 1762
=> P [194481/160000 - 121/100] = 1762
=> P [(194481 - 1600 × 121)/160000] = 1762
=> P [(194481 - 193600)/160000] = 1762
=> P [881/160000] = 1762
=> P × 881 = 1762 × 160000
=> P = (1762 × 160000)/881
=> P = 320000
Therefore The required sum is Rs.320000.
Alternate Method
Effective rate of interest = x + x + x²/100
Amount = Principal + Compound Interest
Effective rate for 2 years at 10% pa = 10 + 10 + 10 × 10/100
=> 20 + 1 = 21%
Effective rate for 2 years at 10% p.a. compounded half yearly:
Rate = 10%/2 = 5% ; Years = 4 half years
=> For 2 half years = 5 + 5 + 5 × 5/100
=> 10 + 0.25 = 10.25%
For 4 half years = 10.25 + 10.25 + (10.25 × 10.25)/100
=> 20.5 + 1.050625 = 21.550625%
Therefore Effective rate of interest for 4 half years at 5% = 21.550625%
As per the question:
P × 21.550625% - P × 21% = 1762
=> P × 0.550625% = 1762
=> P = 1762/0.550625 × 100
Therefore P = Rs.320000
Alternate Method By Interest Tree Method:
Let the principal be = 1000
CI at 10% p.a. interest rate, for 2 years
=> 210 (1)
CI at 5% interest rate for 4 half years
=> Rs.215.50625 (2)
(2) - (1) = 215.50625 - 210 = 5.50625
5.50625 = Rs.1762 [Given]
=> 1 = 1762/5.50625
=> 1000 = 1762/5.50625 × 1000
=> 1000 = Rs.320000
Therefore The principal is Rs.320000

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Q83. Answer: (c) 7517 km

The correct answer is 7517 km.

• The estimated total length of the coastline of India including the coastline of Lakshadweep Islands and Andaman and Nicobar Islands is 7517 km.

Important Points

• The Indian coastline touches nine states and four union territories.

• The nine states are Gujarat, Maharashtra, Goa, Karnataka, Kerala, Tamil Nadu, Andhra Pradesh, Odisha and West Bengal.

• The union territories are Daman and Diu, Puducherry, Andaman and Nicobar and Lakshadweep.

• Gujarat has the longest coastline of 1600 km among the nine states.

• The eastern coastline includes the Bay of Bengal and the Eastern Ghats.

• It is divided into Orissa Coastal Plain, Andhra Pradesh Coastal Plain, Tamil Nadu Coastal Plain.

• The Western Coastal Plain extends from the Rann of Kutch in the north to Kanyakumari in the south.

• It is divided into Konkan Coastal Plain, Karnataka Coastal Plain, and Kerala Coastal Plain.

Q84. Answer: (a) Kerala

The correct answer is Kerala.

• The highest literate state of India as per Census 2011 is Kerala.

• According to the 2011 census, the literacy rate of Kerala is 94%.

• Kerala, Lakshadweep, Mizoram, Goa, Tripura are the top five literate states in India as per the 2011 census.

Important Points

• Census 2011 is the 15th National Census Survey conducted by the Census Organization of India.

• Shri C. Chandramouli is the Commissioner and Registrar General of Census of India 2011.

Additional Information

Place	Details
Kerala	• Kerala is a state on India's tropical Malabar Coast. - The capital of Kerala is Thiruvananthapuram.
Mizoram	• Mizoram is a state in northeastern India. - The capital of Mizoram is Aizawl.
Lakshadweep	• Lakshadweep is a union territory of India. - The capital of Lakshadweep is Kavaratti.
Goa	• Goa is a state in western India. - The capital of Goa is Panaji.

Q85. Answer: (b) Only conclusion I follows

The least possible Venn diagram is:

Conclusions:

I. No D is C → True (as all D are A and no A is C, implies no D is C also)

II. Some C are D → False (as no D is C is true)

Hence, Only conclusion I follows.

Additional Information

Q86. Answer: (a) 71

Given: P is coded as 17 and TMR is coded as 54.

The logic follows here is:

Sum of positional value + number of letters, as shown below,

P = Number of letter = 1

TMR = Number of letters = 3

Similarly,

NARESH = Number of letters = 6

Hence, 71 is the correct answer.

Q87. Answer: (b) R

Given: ADISNHPANRKARFACHTARKYAR

The logic follows here is:

(1) When given word is written in reverse order → RAYKRATHCAFRAKRNAPHNSIDA

(2) The ninth letter from the left → RAYKRATHCAFRAKRNAPHNSIDA → C

(3) The third letter to the right of the ninth letter from the left → RAYKRATHCAFRAKRNAPHNSIDA → R

Shortcut Trick

Same Direction → Subtraction

Opposite Direction → Addition

Here, right and left (opposite) → Addition

= 9 + 3 = 12th letter from left → RAYKRATHCAFRAKRNAPHNSIDA → R

Hence, R is the correct answer.

Q88. Answer: (c) KDQJ

Given: COCK : FRFN :: HANG : ?

The logic follows here is: Addition of 3 to the positional values, as shown below,

Similarly,

Hence, KDQJ is the correct answer.

Q89. Answer: (a) 6

Total students in a class = 36.

Let the number of girls be G, then number of boys will be 2G (according to the question), therefore,

G + 2G = 36

3G = 36

G = 12

Thus, the number of girls = 12

And, the number of boys = 24

Now, according to question,

Position of Reema in class = 19th

Number of students before Reema = 19 - 1 = 18

Number of boys before Reema = 13 (given)

Therefore, number of girls before Reema = 18 - 13 = 5

Number of girls after Reema (girl) = Total girls - 5 - 1

= 12 - 5 - 1

= 6

Hence, there are 6 girls after Reema.

Q90. Answer: (d) 4

Given:

From Dice (1) and Dice (2), while moving in clockwise direction from common number 3:

From the both dices:

Dice 1	**3**	**6**	**4**
Dice 3	3	1	5

Thus, 4 is opposite to 5.

Hence, 4 is the correct answer.

Q91. Answer: (d) Saturday

Given: 12 October 1997 was a Saturday.

Number of leap years = 3 (2000, 2004, 2008)

Therefore, number of odd days = 3 × 2 = 6

Non leap years = 8 (1998, 1999, 2001, 2002, 2003, 2005, 2006, and 2007)

Therefore, number of odd days = 8 × 1 = 8

Total odd days = 6 + 8
= 14
Now, 14 ÷ 7 = 2
=> No remainder.
=> 12 October 2008 will be the same day as on 12 October 1997.
Hence, Saturday is the correct answer.

Q92. Answer: (b) Subhash

Six friends are playing cards in a circular enclosure facing the centre.
(1) Praveen is second to the left of Alok.
(2) There is one person sitting in between Umesh and Suresh.
(3) Praveen is sitting in between Subhash and Umesh.
(4) Subhash is sitting to the right of Pramod. Thus, the final seating arrangement is as follows:
Now, if Alok and Subhash mutually change their places,
Hence, Subash will be sitting second to the right of Praveen.

Q93. Answer: (d) 29

The logic follows here is:
All numbers except 29 are composite number, whereas 29 is a prime number.
By checking options:
(1) 34 → It is a composite number.
(2) 16 → It is a composite number.
(3) 25 → It is a composite number.
(4) 29 → It is a prime number.
Hence, 29 is the odd one out.
Important PointsPrime number is a whole number greater than 1. It has exactly two factors, that is, 1 and the number itself.
Composite numbers are numbers with more than two factors.

Q94. Answer: (b) 8 : 72

Given: 11 : 132
The logic follows here is:
11 : 132 → 11 × (11 + 1)
= 11 × 12
= 132
By checking options:
(1) 6 : 48 → 6 × (6 + 1)
= 6 × 7
= 42 ≠ 48
(2) 8 : 72 → 8 × (8 + 1)
= 8 × 9
= 72
(3) 7 : 61 → 7 × (7 + 1)
= 7 × 8
= 56 ≠ 61
(4) 9 : 93 → 9 × (9 + 1)
= 9 × 10
= 90 ≠ 93
Hence, 8 : 72 is the correct answer.
Alternate Method 11 : 132
=> 112 + 11 = 121 + 11 = 132
Similarly,
8 : 72
=> 82 + 8 = 64 + 8 = 72

Q95. Answer: (c) [figure]

Cricket is one of the most popular sports in the world and Cockroaches are insects.

The Venn diagram that best represents the relationship between the following classes.

Sports, Cricket, Cockroach. which figure are given below -

Cricket has been an established team sport for hundreds of years and is one of the most popular sports in the world. Competitive cricket is essentially a bat and ball sport. It is played by two teams on an oval and involves batting, fielding and bowling.

Cockroaches are generalized insects with few special adaptations, and may be among the most primitive living Neopteran insects.

Hence, "option 3" is the correct answer.

Q96. Answer: (c) Only conclusions III and IV follow

Statements:

1. All phones are pens.

2, Some pens are pencils.

Conclusions:

I. Some phones are pencils. → Not follow (All phones are pens, some pens are pencils. There is no relation between phone and pencil)

II. Some pencils are phones. → Not follow (All phones are pens, some pens are pencils. There is no relation between pencil and phone)

III. Some pencils are pens. → Follow (Some pens are pencils. Some part of pencils are pens from the figure)

IV. Some pens are phones. → Follow (All phones are pens. So some pens are phones also possible)

Hence, "option 3" is the correct answer.

Additional Information

Q97. Answer: (c) Words

The logic followed here is:

Entomology is the study of Insects.

Similarly,

Etymology is the study of Words.

Hence, "Words" is the correct answer.

Q98. Answer: (c) bccaac

In the given question pattern are -

a_c_ab/b_a_bc/_bc_ab

1. cbcaaa → a c c b a b / b c a a b c / a b c a a b → there is not correct pattern.

2. acbabc → a a c c a b / b b a a b c / b b c c a b → there is not correct pattern.

3. bccaac → a b c c a b / b c a a b c / a b c c a b → there is correct pattern.

► In which all three group two times a, b and c are present.

4. bcccab → a b c c a b / b c a c b c / a b c b a b → there is not correct pattern.

► Option (3) gives a pattern of a b c c a b / b c a a b c / a b c c a b.

Hence, "option 3" is the correct answer.

Q99. Answer: (c) 20

Given: LITTLE is coded as 24, PARIS is coded as 36, BOX is coded as 14 and PIN is coded as 21.

The logic follow here is:

Sum of digits of place value of the given letter in a word = code in number

Similarly,

Hence, 20 is the correct answer.

Q100. Answer: (b) 1095

The wrong number series are given below -

2, 5, 14, 41, 122, 365, 1095

The logic followed here is:

We multiply by 3 in first number and subtract 1 we get second number, we multiply by 3 in second number and subtract 1 we get third number and so on.

2 × 3 - 1 = 6 - 1 = 5
5 × 3 - 1 = 15 - 1 = 14
14 × 3 - 1 = 42 - 1 = 41
41 × 3 - 1 = 123 - 1 = 122
122 × 3 - 1 = 366 - 1 = 365
365 × 3 - 1 = 1095 - 1 = 1094 but given is 1095 which is wrong.
Hence, "1095" is the correct answer.

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