RRB NTPC CBT-I Official Paper (Held On: 10 Jan 2021 Shift 2) (Previous Year Paper)

RRB NTPC • 2021 • 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. The base BC of a triangle ABC is divided at D such that BD = half of DC. The area of triangle ABC is _____ times the area of triangle ADC.

(a) three
(b) four
(c) two
(d) 3/2

Q2. Select the combination of letters that when sequentially placed in the blanks will create a repetitive pattern.

bb_cc_bb_bcccc_b

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

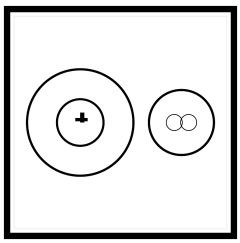
Q3. If MARCH is coded as HMCAR, how will APRIL be coded?

(a) LIAPR
(b) LAPIR
(c) LAIPR
(d) LIRAP

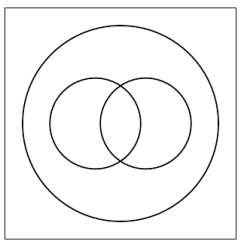
Q4. Four Venn diagrams are given below. You have to select the option that shows the best relationship among the three given classes.

Mother, sister, female

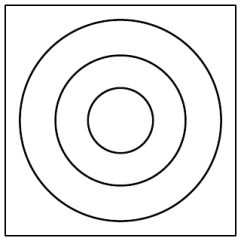
(a)



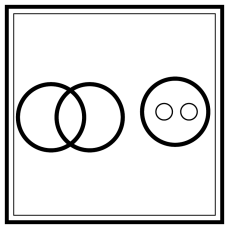
(b)



(c)



(d)



Q5. Which strip of water separates India and Sri Lanka?

(a) Durand line
(b) Strait of Lombok
(c) Strait of Malacca
(d) Palk Strait

Q6. If a = 17, b = 15, c = 1/4 of -128, then what is the value of

$a^3 + b^3 + c^3 - 3abc$?

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

Q7. 3 men and 3 boys can do a piece of work in 10 days. When one man is replaced by a boy, the work is completed in 12 days. In how many days will 2 men and 2 boys complete the work?

(a) 20 days
(b) 15 days
(c) 22 days
(d) 25 days

Q8. The mean score of class A of 40 students in the mathematics test of 30 marks is 23. The mean score of class B of 45 students in the same test is 22. What is the ratio of the mean score of both the classes to that of class A?

(a) 380 : 391
(b) 391 : 382
(c) 390 : 382
(d) 382 : 391

Q9. 20% of the toys produced in a factory were defective and 25% of the remaining were damaged. If 4800 toys were in good condition, then what was the original number of toys produced?

(a) 9000
(b) 8000
(c) 10000
(d) 6000

Q10. Plants are divided into five groups. Which of the following is NOT one?

(a) Bryophytes
(b) Gymnosperms
(c) Pteridophytes

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(d) Protochordata

Q11. In which state is the Satish Dhawan Space Centre, Sriharikota, located?

(a) Andhra Pradesh
(b) Kerala
(c) Tamil Nadu
(d) Karnataka

Q12. In ancient times, a person was weighed against a commodity and the equivalent weight of that commodity was offered as donation. What was this practice called?

(a) Tulabhara
(b) Jallikattu
(c) Thimithi
(d) Pulikali

Q13. Rahim purchased 20 kg of oranges at the rate of Rs. 45/kg and sold them at the rate of Rs. 54/kg. During this period 1.5 kg oranges got spoiled. He sold the spoiled oranges at the rate of Rs. 10/kg. His net gain or loss percent is:

(a) 12 2/3 % gain
(b) 13 2/3 % loss
(c) 14% gain
(d) 14% loss

Q14. In which city was the Indus Waters Treaty (IWT) signed between India and Pakistan, in 1960?

(a) Calcutta
(b) Lahore
(c) Bombay
(d) Karachi

Q15. As of October 2020, which of the following city in India does NOT have an operational metro railway system yet?

(a) Kochi
(b) Pune
(c) Lucknow
(d) Jaipur

Q16. A _____ is a homogeneous mixture of two or more substances.

(a) component
(b) solution
(c) molecule
(d) particle

Q17. Two trains starting at the same time in opposite directions from two stations 200 km apart meet each other at a distance of 110 km from one of the stations. What is the ratio of their speed?

(a) 11 : 9
(b) 12 : 8
(c) 13 : 7
(d) 10 : 9

Q18. A and B borrowed the same amount for the same period. A borrowed on simple interest at the rate of 8% yearly. B borrowed on compound interest of 5% half yearly. At the end of one year the ratio of B's interest to that of A's interest is:

(a) 40 : 41
(b) 32 : 41
(c) 41 : 32
(d) 4 : 3

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Q19. If Bill Gates had his way, by what name was Windows OS planned to be released?

(a) Calculator
(b) Interface Manager
(c) Control Panel
(d) Clipboard Viewer

Q20. If cot A = 1/√3, then what is the value of (1 - cos 2A)/(1 + cos 2A) ?

(a) √3
(b) 1.5
(c) 1/3
(d) 3

Q21. Which of the following was stated in the 'Gandhi-Irwin Pact' signed in March 1931?

(a) All Indians would get good education.
(b) The manufacture of salt along the coast would be stopped.
(c) Prisoners would not be released.
(d) The Civil Disobedience Movement would be called off.

Q22. A water tank is made of an aluminum sheet 3 cm thick. The tank is open at the top. Its external dimensions are 1.36 m, 1.06 m, and height 0.83 m. What is the cost of painting the inner surface of the tank at 50 paise per 100 sq. cm?

(a) Rs. 219
(b) Rs. 240
(c) Rs. 249
(d) Rs. 149

Q23. Pointing towards a man, Vivek said, "His only brother is the father of my daughter's father". From among the given options, how could the man be related to Vivek?

(a) Father-in-law
(b) Uncle
(c) Father
(d) Brother

Q24. Who is regarded as the Father of the Indian Nuclear Program?

(a) Dr. Homi Bhabha
(b) Raja Ramanna
(c) APJ Abdul Kalam
(d) Jawaharlal Nehru

Q25. Simplify

1/1.2.3 + 1/2.3.4 + 1/3.4.5 + 1/4.5.6

(a) 19/30
(b) 5/30
(c) 2/60
(d) 7/30

Q26. With which Chinese technology company has the Trump Administration banned the US government agencies from doing business?

(a) Vivo
(b) Xiaomi
(c) Huawei
(d) Oppo

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Q27. A window in a building is at a height of 10 meters from the ground. The angle of depression of a point P on the ground from the window is 30°. The angle of elevation of the top of the building from the point P is 60°. What is the height of the building?

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

Q28. What was the first domain name ever registered in the World Wide Web?

(a) www.linux.com
(b) www.server.com
(c) www.symbolics.com
(d) www.computer.com

Q29. As of October 2020, who is the Vice President of India?

(a) Ram Nath Kovind
(b) Rajnath Singh
(c) Hamid Ansari
(d) M Venkaiah Naidu

Q30. As of October 2020, who is the captain of the Indian Men's Hockey Team?

(a) Dilpreet Singh
(b) Manpreet Singh
(c) Gagandeep Singh
(d) Harmanpreet Singh

Q31. Which of the following is NOT a monument in Uttar Pradesh?

(a) Bara Imambara
(b) Sarnath Stupa
(c) Safdarjung Tomb
(d) Taj Mahal

Q32. Simplify

$0.3 \div (0.6 \times 2/3) \times 0.2 \ (0.2 \times 2 \div 1/2 + 0.2)$

(a) 1.5
(b) 0.15
(c) 0.02
(d) 0.05

Q33. Who initiated the Pradhan Mantri Jan Dhan Yojana (PMJDY)?

(a) Rajiv Gandhi
(b) Manmohan Singh
(c) Atal Bihari Vajpayee
(d) Narendra Modi

Q34. Select the option that is related to the sixth number in the same way as the third number is related to the fourth number and the first number is related to the second number.

7 : 342 :: 9 : 728 :: ? : 2196

(a) 11
(b) 13
(c) 5
(d) 9

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Q35. PT is a tangent drawn from P, given outside the circle, with center O touching the circle at Q. If PQ = 30 cm and the diameter of the circle is 32cm, then what is the length of OP?

(a) 32
(b) 38
(c) 34
(d) 36

Q36. Rs. 9,000 is divided equally among a certain number of students. Had there been 20 more students each would have got Rs. 160 less. What was the original number of students?

(a) 25
(b) 30
(c) 35
(d) 20

Q37. In which country did Manushi Chhillar win the Miss World 2017 title?

(a) Japan
(b) South Korea
(c) China
(d) Vietnam

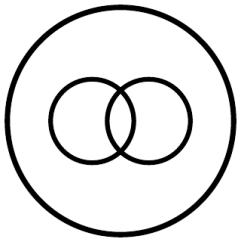
Q38. Which country has the longest written constitution in the world?

(a) USA
(b) Russia
(c) China
(d) India

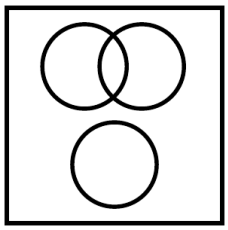
Q39. Four Venn diagrams are given below. You have to select the option that shows the best relationship among the three given classes.

Boy, student, farm

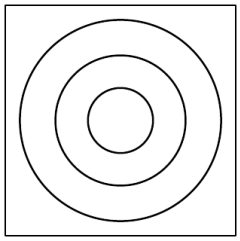
(a)



(b)

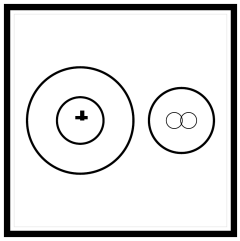


(c)



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(d)



Q40. How many times is digit 3 passed in counting from 301 to 399?

(a) 21
(b) 119
(c) 11
(d) 121

Q41. Endemic species are those species of plants and animals which are _____.

(a) found in a particular area
(b) in very good health
(c) suffering from an epidemic
(d) found only in the forests

Q42. Who among the following did NOT advocate militant opposition to colonial rule through the Swadeshi movement?

(a) Bipin Chandra Pal
(b) Bal Gangadhar Tilak
(c) Lala Lajpat Rai
(d) Gopal Krishna Gokhale

Q43. If (a + b) : (b + c) : (c + a) is 6 : 7 : 8 and also a + b + c = 14, then what is the value of c?

(a) 8
(b) 10
(c) 6
(d) 12

Q44. Which of the following is NOT a National Park in India?

(a) Balphakram National Park
(b) Anshi National Park
(c) Dachigam National Park
(d) Shandur National Park

Q45. Which government organisation is the principal regulator of all the players operating in the Indian securities markets?

(a) SEBI
(b) RBI
(c) IRDAI
(d) NABARD

Q46. Who discovered Penicillin?

(a) Charles Darwin
(b) Alexander Fleming
(c) Gregor Mendel
(d) Louis Pasteur

Q47. A student reaches school on his bicycle in 3/2 hours at a speed of 8km/h. On the return journey he rests for half an hour and takes a route which is 1 km shorter. What should be the percentage increase in the speed of his bicycle so that he reaches home in the same time?

(a) 30.5%

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(b) 37%
(c) 37.5%
(d) 35%

Q48. Which Indian art form is practiced in the Mithila region of Bihar and Nepal?
(a) Tanjore art
(b) Kalamezhuthu
(c) Madhubani painting
(d) Pattachitra painting

Q49. As per a new study by Greenpeace in 2018, which is the most polluted city on earth?
(a) Gurugram
(b) Shanghai
(c) Dhaka
(d) Tokyo

Q50. A shopkeeper purchased a machine for Rs.70,000 and spent Rs.5,000 as overhead expenditure. Had he purchased the machine at 15% less, he would have earned a profit of 15%. What is the selling price of the machine?
(a) Rs.74,000
(b) Rs.75,000
(c) Rs.74,175
(d) Rs.78,175

Q51. A solid metallic cylinder of base radius 3 cm and height 5 cm is melted to form cones each of height 1 cm and base radius 1 mm. How many cones were formed?
(a) 19,500 cones
(b) 10,500 cones
(c) 13,500 cones
(d) 12,500 cones

Q52. If 1/5 of a number multiplied by 2/3 of the same number gives 480, then the number is:
(a) 80
(b) 70
(c) 60
(d) 100

Q53. In a class 82% students passed and 2% students were placed in the reappear category. The number of students who failed was 592. What was the total number of students in the class?
(a) 2700
(b) 3600
(c) 2000
(d) 3700

Q54. The first woman to swim the English Channel was _____.
(a) an Indian
(b) a French
(c) a British
(d) an American

Q55. In a competitive examination 1 mark is awarded for a correct answer, 0 marks for an unattempt question and 1/2 mark is deducted for every wrong answer. Ambika answered 120 questions and got 90 marks. How many answers were correct?
(a) 60
(b) 100
(c) 110
(d) 98

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Q56. Three traffic signals change at intervals of 48, 72 and 108 seconds respectively. They start changing simultaneously at 8:20:00 hours for the first time. At what time will they change again simultaneously?

(a) 8:30:00 hours
(b) 8:27:12 hours
(c) 8:40:00 hours
(d) 8:25:00 hours

Q57. Select the option that is related to the third term in the same way as the second term is related to the first term.

Lion : Cat : : Wolf : ?

(a) Pup
(b) Hyena
(c) Bear
(d) Dog

Q58. A, B and C entered into partnership. A invested 3 times as much as B and B invested 2/3 times of what C invested. At the end of the year the total profit was Rs.6,600. B's share in the profit is:

(a) Rs.2400
(b) Rs.1200
(c) Rs.1600
(d) Rs.1800

Q59. _____ was celebrated as the First War of Indian Independence.

(a) The Uprising of 1857
(b) The Rowlatt Satyagraha of 1919
(c) The Santhal Revolt of 1855-56
(d) The Civil War of 1861

Q60. What is most likely to cause food poisoning?

(a) Eating food spoilt by microorganisms
(b) Eating home cooked food
(c) Eating frozen foods
(d) Eating food with preservatives

Q61. Which edition of the Indian Premier League (IPL) was played in 2020?

(a) 12^(th)
(b) 13^(th)
(c) 10^(th)
(d) 11^(th)

Q62. From which constituencies did Congress leader Rahul Gandhi contest the Lok Sabha Elections of 2019?

(a) Amethi and Lucknow
(b) Varanasi and Lucknow
(c) Varanasi and Wayanad
(d) Amethi and Wayanad

Q63. Reforestation means

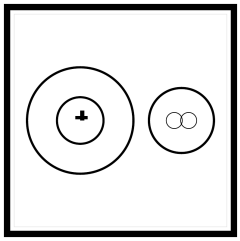
(a) Visiting the forests
(b) Taking care of animals in the forests
(c) Planting new trees in the destroyed forests
(d) Reinforcing forests

Q64. Which of the following Venn diagrams displays the proper relation of following:

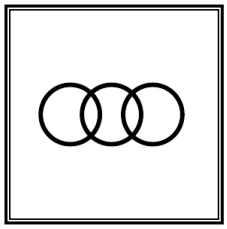
eyes, ears, sensory organs

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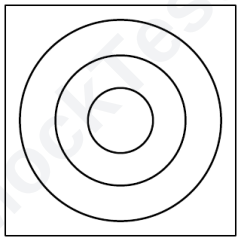
(a)



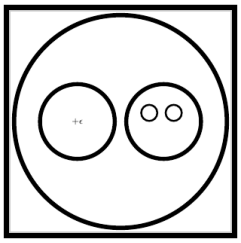
(b)



(c)



(d)



Q65. Which of the following was a result of the Non-Cooperation and Khilafat movements?

(a) Lawyers attended courts.
(b) Students went to schools and colleges run by the government.
(c) The working class went on strike in many towns and cities.
(d) Peasants carried loads for colonial officers.

Q66. a, b and c are the sides of a right triangle with c as hypotenuse. The radius r, of the circle which touches the three sides of the triangle is :

(a) r = (a - b + c)/2
(b) r = (a + b - c)/2
(c) r = (a + b + c)/2
(d) r = (a - b - c)/2

Q67. Identify the number that is different from the rest.

(a) 2548
(b) 1728
(c) 2197
(d) 1331

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Q68. Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.

Statements:

I. All Doctors are social workers.

II. All social workers need money.

Conclusions:

I. All social workers are doctors.

II. Doctors need money.

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

Q69. Which of the following incidents took place after the victory of the British in the Battle of Plassey, in 1757?

(a) No new buildings and institutions were developed.
(b) Trade of the British East India Company expanded.
(c) The port cities of Madras, Calcutta and Bombay were destroyed.
(d) People stayed away from the colonial cities of Madras, Calcutta and Bombay.

Q70. Identify the number that is different from the rest.

23, 29, 31, 37, 42, 43, 47

(a) 43
(b) 42
(c) 31
(d) 37

Q71. Select the option that is related to the third term in the same way as the second term is related to the first term.

Running : Track : : Boxing : ?

(a) Ground
(b) Pitch
(c) Court
(d) Ring

Q72. What is the full form of COBOL?

(a) Common Basic Operating Language
(b) Computer Basic Oriented Language
(c) Computer Based Operating Language
(d) Common Business Oriented Language

Q73. The Minamata Convention in 2013 was held at Japan to address the emissions of which heavy metal?

(a) Cobalt
(b) Zinc
(c) Nickel
(d) Mercury

Q74. With the success of the anti-satellite (ASAT) test in 2019, with which other countries did India join the league?

(a) Russia, China, UK
(b) US, Russia, UK
(c) Russia, China, France
(d) US, Russia, China

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Q75. How many odd numbers are preceded by the number 4 in the following series?

2 6 6 3 4 5 2 4 9 8 6 4 3 4 8 2

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

Q76. (1 - 1/n) + (1 - 2/n) + (1 - 3/n) + up to n term will result as:

(a) 1/2n
(b) (n - 1)/2
(c) $1/(n^2)$
(d) 1/(2n - 1)

Q77. In the following question, select the odd word from the given alternatives.

(a) Script
(b) Dialogue
(c) Plot
(d) Actor

Q78. Who is regarded as the father of modern economics?

(a) Manmohan Singh
(b) Adam Smith
(c) Amartya Sen
(d) John Maynard Keynes

Q79. If x/2y = 6/7, then what is the value of (x - y)/(x + y) + 14/19 ?

(a) 99/109
(b) 110/99
(c) 109/19
(d) 19/19

Q80. Which of the following rivers is NOT in Africa?

(a) Orange
(b) Niger
(c) Nile
(d) Amazon

Q81. If A's height is 25% less than that of B, then approximately by how much percentage is B's height more than that of A?

(a) 50%
(b) 33%
(c) 75%
(d) 25%

Q82. A rectangular field is 16 meters long and 12 meters wide. A barbed fence has to be drawn on three sides of the field leaving one side open along the width. What is the cost of fencing at the rate of 25 paise per cm?

(a) Rs.4400
(b) Rs.1600
(c) Rs.1900
(d) Rs.1100

Q83. Which Navratna company is fondly called 'Vizag steel'?

(a) IISCO Steel Plant
(b) Rashtriya Ispat Nigam Limited
(c) Rourkela Steel Plant

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(d) Bokaro Steel Plant

Q84. If X = 2 - √3, then X - 1/X is:

(a) 5√3
(b) -2√3
(c) 12 - 30√3
(d) 3√3

Q85. Who invented the word 'Brexit'?

(a) Peter Wilding
(b) Nigel Farage
(c) Tommy Robinson
(d) Gerard Batten

Directions

The following table shows the points scored by four players in four games:

Player	Game1	Game2	Game3	Game4
A	12	8	10	6
B	0	8	6	4
C	8	11	4	3
D	10	12	2	8

Q86. Who is the overall best performer considering all the games?

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

Q87. Determine the average number of points scored by A, considering all the games.

(a) 12
(b) 9
(c) 10
(d) 16

Q88. Who is the overall worst performer considering all four games?

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

Q89. What will the difference be, of the average points scored by C and D?

(a) 8.5
(b) 1.5
(c) 6.5
(d) 10.5

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

CJ, FM, ?, LS, OV

(a) IP
(b) HL
(c) RX
(d) KQ

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Q91. A remembers that P's first appointment to the job is after 17^(th) but before 20^(th) March. Whereas B remembers that P's first appointment to the job is after 18^(th) but before 22^(nd) March. Assuming both are correct, which date is most likely to be P's first appointment to the job?

(a) 21^(st) March
(b) 19^(th) March
(c) 18^(th) March
(d) 20^(th) March

Q92. If '÷ ' means '+', '+' means '-', '-' means '×' and '×' means '÷', then what will the value of 16 ÷ 4 × 2 + 5 - 3 be?

(a) 1
(b) 10
(c) 4
(d) 3

Q93. How many numbers are present between 50 and 100 (Both excluding) which contains digit 5 and can be, exactly divisible by digit 5?

(a) 10
(b) 9
(c) 7
(d) 5

Q94. Sheetal walks 25 m east. Then she turns right and walks another 25 m. She then turns right and walks another 40 m. Then again turning right, she walks 25 m. Finally, she turns left and walks 10 m. How far is Sheetal from her original position?

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

Q95. If G stands for 'add', H stands for 'multiply', J stands for 'subtract' and K stands for 'division' then find the value of 125 J 110 K 5 G 7 H 2.

(a) 89
(b) 114
(c) 117
(d) 133

Q96. Select the number from among the given options that can replace the question mark (?) in the following series.
13, 14, 18, 20, 23, ?, 28, 32

(a) 26
(b) 33
(c) 24
(d) 29

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.
INCH : 17 :: YARD : ?

(a) 38
(b) 26
(c) 24
(d) 48

Q98. In a certain code language, 257 means 'I like you', 746 means 'You are good' and 263 means 'I am good'. What number is coded for 'Are'?

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

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(d) 3

Q99. If BLACK is called GREEN, GREEN is called YELLOW, YELLOW is called BLUE and BLUE is called RED, then what would the colour of GOLD be called?

(a) BLUE
(b) BLACK
(c) GREEN
(d) YELLOW

Q100. Which of the following is same as foot, inch and yard?

(a) Pound
(b) Quart
(c) Mile
(d) Gram

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) 3/2

Shortcut Trick
Triangles sharing a common vertex have their areas in the direct ratio of their bases.
Given, BD = (1/2) × DC => DC = 2 × BD
Total base BC = BD + DC = BD + 2 × BD = 3 × BD
Therefore, the ratio of the area of triangle ABC to triangle ADC is:
Area(ABC) ÷ Area(ADC) = BC ÷ DC = (3 × BD) ÷ (2 × BD) = 3/2
Therefore The correct answer is (3)/(2) times.
Alternate Method
Given:
In triangle ABC, the base BC is divided at D such that BD = (1/2) × DC.
Formula Used:
Area of a triangle = (1/2) × Base × Height
Calculations:
Let the length of BD be x.
=> DC = 2x
=> BC = BD + DC = x + 2x = 3x
Let h be the perpendicular height from vertex A to the base BC.
=> Area of triangle ABC = (1/2) × BC × h = (1/2) × 3x × h
=> Area of triangle ADC = (1/2) × DC × h = (1/2) × 2x × h

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Now, let us find the ratio of the area of triangle ABC to the area of triangle ADC:

=> Area(ABC) ÷ Area(ADC) = ((1/2) × 3x × h) ÷ ((1/2) × 2x × h)

=> Area(ABC) ÷ Area(ADC) = 3x ÷ 2x = 3/2

=> Area(ABC) = (3/2) × Area(ADC)

Thus, the area of triangle ABC is (3/2) times the area of triangle ADC.

Let us analyze why the other options are incorrect:

Option (1) is incorrect because a ratio of 3 would require the base BC to be 3 times DC, which is false since BC is 1.5 times DC.

Option (2) is incorrect because a ratio of 4 would require the base BC to be 4 times DC.

Option (3) is incorrect because a ratio of 2 would require the base BC to be 2 times DC.

Therefore The correct answer is (3)/(2) times.

Additional Information

Triangles with a Common Vertex

When two or more triangles share a common vertex and have their bases on the same straight line, their perpendicular heights are equal. Consequently, the ratio of their areas is equal to the ratio of their bases.

Median of a Triangle

A median divides a triangle into two triangles of equal area because it bisects the base, making the ratio of the bases 1:1.

Area Ratio Theorem

For any triangle ABC with a point D on BC, the ratio of the areas of the two sub-triangles is given by Area(ABD) ÷ Area(ADC) = BD ÷ DC.

Q2. Answer: (d) c; c; b; b

Given :- bb_cc_bb_bcccc_b

By checking options and substituting accordingly.

Option (1) b; b; c; c → b b b c / c b b b / c b c c / c c c b

Option (2) c; b; c; b → b b c c / c b b b / c b c c / c c b b

Option (3) b; c; c; b → b b b c / c c b b / c b c c / c c b b

Option (4) c; c; b; b → b b c c / c c b b / b b c c / c c b b

♦ Option (4) gives a pattern of b b c c - c c b b - b b c c - c c b b.

Hence, ‘c; c; b; b’ is the correct answer

Q3. Answer: (c) LAIPR

The pattern for the code is as follows,

Similarly,

Hence, ‘APRIL’ is coded as ‘LAIPR’.

Q4. Answer: (b) [figure]

The Venn diagrams best represent the relationship between - Mother, sister, female figure is shown below:

Both Mother and Sister are Female and some Sister is also a mother.

Hence, ‘option 2’ is the correct answer.

Q5. Answer: (d) Palk Strait

The correct answer is Palk Strait.

Important Points

• Palk Strait:

• It is a strait between the Tamil Nadu state of India and the Jaffna District of the Northern Province of the island nation of Sri Lanka.

• The strait is 40 to 85 miles (64 to 137 km) wide, 85 miles long, and less than 330 feet (100 meters) deep.

• It receives several rivers, including the Vaigai (India), and it contains many islands on the Sri Lankan side.

• The Sethusamudram Ship Canal Project (SSCP) is a 167 km long shipping canal and envisages the creation of a navigable canal from the Gulf of Mannar to the Bay of Bengal to facilitate the movement of ships.

• The Adam’s Bridge is a series of sand shoals created by sedimentation over a period of time.

Additional Information

• The Durand Line is the 2640-kilometre (1,640-mile) border between Afghanistan and Pakistan.

• It's the result of an agreement between Sir Mortimer Durand, a secretary of the British Indian government, and Abdur Rahman

Khan, the emir, or ruler, of Afghanistan.

• Lombok Strait is a strait between the Indonesian islands of Java and Sumatra.

• It connects the Java sea to the Indian ocean.

• Malacca Strait is a narrow stretch of water between the Sumatra island of Indonesia and the Malay Peninsula.

• It is the main shipping channel between the Pacific and Indian oceans.

Q6. Answer: (d) 0

Given:

a = 17, b = 15, c = 1/4 of -128

Formula used:

if (a + b + c) = 0 then a3 + b3 + c3 - 3abc = 0

Calculation:

Here,

a = 17

b = 15

c = 1/4 × -128 = - 32

So (a + b +c) = 17 + 15 - 32

=> 0

So a3 + b3 + c3 - 3abc = 0

Therefore Required answer of the question is 0

Q7. Answer: (b) 15 days

Given:

3 men + 3 boys = 10 day

2 men + 4 boys = 12 day

Concept used:

Total work = total person × total time taken

Calculation:

Let efficiency of men be m and boys be b

(3m + 3b)10 = (2m + 4b)12

=> 30m + 30b = 24m + 48b

=> 6m = 18b

=> m = 3b

Efficiency of men = 3 and boys = 1

Total work = 30 × 3 + 30 × 1

=> 90 + 30 = 120

Work will complete in 120/(2 × 3 + 2 × 1)

=> 15 days

Therefore In 15 days 2 men and 2 boys complete the work

Q8. Answer: (d) 382 : 391

Given:

Mean of class A = 23

Mean of class B = 22

Concept used:

Mean = Sum of the terms/No. of terms

Calculation:

Total score of class A = 40 × 23

=> 920

Total score of class B = 45 × 22

=> 990

Total score both the classes = 1910

Mean score of two classes together = 1910/85

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Ratio = 1910/85 : 23

=> 382/17 : 23

=> 382 : 391

Therefore The ratio of the mean score of both the classes to that of class A is 382 : 391

Q9. Answer: (b) 8000

Given:

No. of toys in good condition = 4800

Concept used:

Percentage of distribution

Calculation:

Let the number of toys originally was x

According to the question,

x × 4/5 × 3/4 = 4800

=> 3x/5 = 4800

=> x = 4800 × 5/3

=> x = 8000

Therefore The original number of toys produced was 8000

Q10. Answer: (d) Protochordata

The correct answer is Protochordata.

Key Points

• Plants are divided into five groups- Thallophytes, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms.

Additional Information

• Bryophytes are the amphibian of the plant kingdom.

• They have a unique feature as compared to other green plant groups that are their sporophyte is attached to the gametophyte.

• Bryophytes are the first land inhabitant plants.

• The ciliated sperms and archegonia are present in bryophytes.

• Thallophytes is a polyphyletic group of non-motile organisms traditionally described as thalloid plants.

• They are simple or lower plants.

• Archegonium is absent in thallophyta.

• Thallophtes are an abandoned division of kingdom Plantae which includes fungi, algae, lichens, and some kinds of bacteria, bryophytes, and slime molds.

• Gymnosperms are also known as acrogymnosperms.

• It is a group of seed-producing plants.

• It includes conifers, cycads, ginkgo, and gnetophytes.

• The word gymnosperms in greek means naked seeds because they do not have an outer covering or shell around their seeds.

• They do not produce flowers i.e they are non-flowering plants and neither do they produce fruits. Its pollination is done by the wind (Anemophilous).

• Angiosperms are also known as Angiospermae or Magnoliophyta.

• They are flowering and seed-producing plants.

• It consists of 64 orders, 416 families, approximately 13,000 known genera, and 3,00,000 known species.

• Their seeds develop in the ovaries of flowers and are surrounded by a protective fruit.

• Examples of angiosperms are fruits, vegetables, grains, and flowers.

• Angiosperms are classified as Monocotyledons (monocots) and Dicotyledons (dicots) where monocots are flowering plants whose seeds contain only one embryonic leaf or cotyledon and dicots are flowering plants whose seeds contain two embryonic leaves or cotyledons.

• Pteridophytes are known as the Vascular cryptogams because they are the first non-seeded plants to have a vascular system present.

• They are also called vascular crypto games.

• They are used for medicinal purposes.

• They are not completely differentiated into root, stem, and leaves.

• Hence Protochordata is not included in 5 group.

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Q11. Answer: (a) Andhra Pradesh

The correct answer is Andhra Pradesh.

Important Points

• Satish Dhawan Space Centre is located at Sriharikota in Andhra Pradesh.

• Satish Dhawan Space Centre is an agency responsible for providing launch base infrastructure for the Indian space programme.

• It was established in 1971.

• Satish Dhawan Space Centre (SDSC) or Sriharikota High Altitude Range (SHAR) is a rocket launch centre operated by Indian Space Research Organisation (ISRO).

Additional Information

• ISRO stands for Indian Space Research Organisation.

• The headquarters of ISRO is in Bengaluru.

• The present chairman of ISRO is Dr. S. Somanath.

• ISRO was the world's first space agency to find water on the moon and insert a probe in orbit of Mars in its maiden attempt.

• Vikram Sarabhai is known as the Father of the Indian Space Program.

Q12. Answer: (a) Tulabhara

The correct answer is Tulabhara.

• Tulabhara is an ancient Hindu practice in which a person is weighed against a commodity (such as gold, grain, fruits or other objects), and the equivalent weight of that commodity is offered as a donation.

Additional Information

• Jallikattu is a traditional event in which a bull, such as the Pulikulam or kangyam breeds, is released into a crowd of people, and multiple human participants attempt to grab the large hump on the bull's back with both arms and hang on to it while the bull attempts to escape.

• The Thimithi is a Hindu festival originating in South India that is celebrated during the month of Aipasi of the Tamil calendar.

• The festival is celebrated to commemorate this event and worship Draupadi.

• Pulikali (Tiger Dance) is one of the folk art forms of Kerala.

• On the fourth day of the Onam festival, artists paint their bodies like tigers with stripes of yellow, red, and black and dance to the rhythm of traditional percussion instruments such as Thakil, Udukku, and Chenda.

Q13. Answer: (a) 12 2/3 % gain

Given:

Total quantity of oranges = 20 kg

Rate of per kg = Rs. 45

SP per kg = Rs. 54

Concept used:

Profit % = [(SP - CP)/100] × 100

Calculation:

Total CP = 20 × 45

=> Rs. 900

SP of 18.5 kg oranges = 18.5 × 54

=> Rs. 999

SP of 1.5 kg spoiled oranges = 1.5 × 10

=> Rs. 15

Total SP = 1014

Profit = 1014 - 900

=> 114

Profit % = (114/900) × 100

=> 122/3

Therefore His net gain is 122/3%

Q14. Answer: (d) Karachi

The correct answer is Karachi.

Important Points

• The Indus Waters Treaty is a water-distribution treaty between India and Pakistan which was signed in Karachi in 1960.

• According to the treaty, control over the water flowing from Beas, Ravi and Sutlej were given to India while Pakistan was given the control over Indus, Chenab and Jhelum.

• The treaty was signed in Karachi by then Prime Minister of India Jawaharlal Nehru and then President of Pakistan Ayub Khan.

Q15. Answer: (b) Pune

The correct answer is Pune.

• Pune Metro is a metro rail based rapid transit system under construction to serve the city of Pune, India.

• Hence Pune metro is still not operational.

• Uttar Pradesh Metro Rail Corporation Limited is a state-owned company that operates the Lucknow Metro in Lucknow, Uttar Pradesh.

• The Kochi Metro is a rapid transit system serving the city of Kochi in Kerala, India.

• Jaipur Metro is a rapid transit system in the city of Jaipur, Rajasthan, India.

Additional Information

• Delhi Metro Rail Corporation Limited (DMRC), a company with equal equity participation from the Government of India and the Government of Delhi, built and operates the Delhi Metro.

• Bengaluru Metro Rail Corporation Limited (BMRCL), a joint venture of the Government of India and the State Government of Karnataka, is the agency for building, operating, and expanding the Namma Metro (Bangalore metro) network.

Q16. Answer: (b) solution

The correct answer is solution.

Key Points

• A homogeneous mixture of two or more substances is known as the Solution.

• Mixtures are constituted by more than one kind of pure form of matter.

• A solution has a solvent and a solute as its components.

• The component of the solution that dissolves the other component in it (usually the component present in larger amounts) is called the solvent.

• The component of the solution that is dissolved in the solvent (usually present in lesser quantity) is called the solute.

Additional Information

• Mixtures are classified into two categories:-

• A heterogeneous mixture is a mixture of two or more chemical substances where the various components can be visually distinguished.

• A homogeneous mixture is a type of mixture in which the composition is uniform and every part of the solution has the same properties.

• Pure substances are classified into two categories:-

• Elements- A pure substance with only one kind of atom and cannot be broken into two or simpler substances by physical or chemical means is an element.

• Compounds- A pure substance composed of two or more elements and chemically combined in a fixed proportion is called a compound.

Q17. Answer: (a) 11 : 9

Given:

Total distance = 200 km

Concept used:

Relative Speed of 2 bodies

Sum of their individual speeds if they are moving in the opposite direction

Difference of their individual speeds if they are moving in the same direction.

Calculation:

We know the total distance is 200 Km

If both trains crossed each other at a distance of 110 km then one train covered 110 km and the other 90 km [110+90=200km]

So ratio of their speed = 110 : 90 = 11 : 9

Therefore The ratio of their speed is 11 : 9

Q18. Answer: (c) 41 : 32

Given:

Rate of interest of A = 8%

Rate of interest of B = 5%

Concept used:

For half year interest in CI = Interest rate/2

Successive increase concept = a + a + $a^2/100$

a = rate %

Calculation:

5% half-yearly = 5 + 5 + (5 × 5)/100

=> 10 + 1/4

=> 41/4

So ratio of interest =

41/4 : 8

=> 41 : 32

Therefore At the end of one year the ratio of B's interest to that of A's interest is 41 : 32

Traditional method:

Let the sum be Rs. P.

Simple interest = (P × 8 × 1)/100 = 2P/25

Compound interest = $P[(1 + 5/100)^2 - 1]$

=> $P[(21/20^2 - 1]$

=> P(441 - 400)/400

=> 41P/400

Required ratio = (41P/400)/(2P/25)

=> 41 : 32

Therefore At the end of one year the ratio of B's interest to that of A's interest is 41 : 32

Mistake PointsHere 5% of CI is for each half-year i.e 6 months

Q19. Answer: (b) Interface Manager

The correct answer is Interface Manager.

• If Bill Gates had his way, by Interface Manager name was Windows OS planned to be released.

• The interface manager role varies, depending on the size of the project, the number of engineering resources involved, and also on other roles in the project.

• An Interface Manager / Technical Manager / Technical Interface Manager may be responsible for ensuring that the interface management process functions effectively within the project area.

Key Points

• Bill Gates, was born October 28, 1955, in Seattle, Washington, U.S.

• Bill Gates is an American computer programmer and entrepreneur who cofounded Microsoft Corporation, the world’s largest personal computer software company.

• Since 1987, Gates has been included in the Forbes list of the world's wealthiest people. From 1995 to 2017, he held the Forbes title of the richest person in the world every year except from 2010 to 2013.

• Microsoft and Gates launched their first retail version of Microsoft Windows on November 20, 1985.

• As of 2021, the latest release of the OS is known as Windows 11.

Additional Information

Item Name	Details
Calculator	• An electronic calculator is typically a portable electronic device used to perform calculations, ranging from basic arithmetic to complex mathematics. - The first solid-state electronic calculator was created in the early 1960s.
Control Panel	• The Control Panel is a component of Microsoft Windows that provides the ability to view and change system settings. - It's initially released in 1985.
Clipboard Viewer	• Many operating systems include clipboard viewers that display what information is currently stored in the clipboard. - To get to your clipboard history at any time, press Windows logo key + V.

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Q20. Answer: (d) 3

Given:

cot A = 1/√3

Concept used:

Cos(90° + θ) = - Sinθ

Calculation:

cot A = 1/√3

=> cot A = cot60°

=> A = 60°

(1 - cos 2A)/(1 + cos 2A)

=> (1 - cos 120^o)/(1 + cos 120^o)

=> [1 - cos(90 + 30)°]/[1 + cos(90 + 30)°]

=> 1 + sin30°/1 - sin30°

=> (1 + 1/2)/(1 - 1/2)

=> 3

Therefore Required answer is 3

Q21. Answer: (d) The Civil Disobedience Movement would be called off.

The correct answer is The Civil Disobedience Movement would be called off.

Important Points

• Gandhi–Irwin Pact was signed on 5 March 1931.

• The Gandhi-Irwin Pact was a political agreement signed by Mahatma Gandhi and Lord Irwin.

• The important pacts signed in this agreement were:

• The government will release most of the civil disobedience volunteers.

• Indian National Congress will discontinue Civil disobedience movement.

• The congress will participate in the second Round Table Conference.

• Tax on salt will be removed.

Additional Information

• Lord Irwin (1926 AD-1931 AD):

• Simon Commission visited India in 1928.

• Nehru Report, 1928.

• Lahore Session of the Congress, (1929) and Poorna Swaraj, declaration.

• Civil Disobedience Movement, 1930 started.

• Dandi March (12 March 1930).

• Gandhi-Irwin Pact, 5 March 1931.

• Sharda Act, 1929, under which the marriageable age of girls (14 years) and boys (18 years) was raised.

Q22. Answer: (c) Rs. 249

Given:

Thickness = 3 cm

height 0.83 m

Dimensions are 1.36 m, 1.06 m

Formula used:

L.S.A = 2h(l + b)

Area of a rectangle = (l × b)

Calculation:

Inner length = 136 - 6 = 130 cm

Inner breadth = 106 - 6 = 100 cm

Inner height = 83 - 3 = 80 cm

Surface area which has be to be painted = base area + area of 4 walls

So,

(130 × 100) + 2 × 80(130 + 100)

=> 13000 + 36800

=> 49800 cm²

Cost = 49800/100 × 50p

=> Rs. 249

Therefore The cost of painting the inner surface of the tank is Rs. 249

Note:

There was some discrepancy found in this question, In the actual question, height was given as 8.3 m but we have changed it to 0.83 m

Q23. Answer: (b) Uncle

From the given information,

Breaking the statement –

His only brother is the father of Vivek's daughter's father so his brother is the father of Vivek.

We can draw the following tree from the information given above:

Hence, the man is ‘Uncle’ of Vivek.

Q24. Answer: (a) Dr. Homi Bhabha

The correct answer is Dr. Homi Bhabha.

• Homi Jehangir Bhabha is known as the 'Father of the Indian Nuclear Programme'.

• He was an Indian nuclear physicist who founded Bhabha Atomic Research Centre and Tata Institute of Fundamental Research.

• Ajit Kumar Mohanty was appointed as the director of Bhabha Atomic Research Centre (BARC) for a period of three years in march 2019.

• He is a well-known nuclear physicist. He obtained a PhD degree from Bombay University.

• Dr Homi Bhabha established the Atomic Energy Establishment, Trombay (AEET) in January 1954.

• In 1966, at Atomic Energy Establishment, Trombay was renamed Bhabha Atomic Research Centre (BARC).

Additional Information

Person	Known as/for
Vikram Sarabhai	Father of Indian Space programme
CV Raman	Raman effect
Homi Jehangir Bhabha	Father of Indian Nuclear programme
APJ Abdul Kalam	Missile Man of India

Q25. Answer: (d) 7/30

Given:

1/1.2.3 + 1/2.3.4 + 1/3.4.5 + 1/4.5.6

Concept used:

Simple concept of multiplication and summation

Calculation:

1/1.2.3 + 1/2.3.4 + 1/3.4.5 + 1/4.5.6

=> 1/6 + 1/24 + 1/60 + 1/120

=> (20 + 5 + 2 + 1)/120

=> 28/120 = 7/30

Therefore Required answer is 7/30

Q26. Answer: (c) Huawei

The correct answer is Huawei.

Key Points

• US agencies are banned from doing business with Huawei and other Chinese tech companies, as the Trump administration cites security concerns.

• Huawei is 5G equipment from the Chinese telecom company.

• Sweden has banned on security grounds the use of telecom equipment from China's Huawei and ZTE in its 5G network.

• The UK has banned its companies from sourcing 5G equipment from Chinese telecom company Huawei.

Q27. Answer: (d) 30 meters

Given:

The window is at a height of 10 meters

Concept used:

tanθ = P/b

P = perpendicular or height

b = base

Calculation:

Let the window be Q.

Height of the building be AB

Let the point P at a distance of x meter.

In ΔQPB

tan30° = QB/BP

=> 10/x

x = 10/tan30°

=> 10√3

In Δ ABP

tan60° = h/x

=> h = x.tan60°

=> h = x.√3

=> h = 10√3 × √3

=> 30m

So, the height of building = 30 m

Therefore The height of the building is 30 m

Q28. Answer: (c) www.symbolics.com

The correct answer is www.symbolics.com.

Key Points

• The first domain name registered was Symbolics.com.

• It was registered March 15, 1985.

Additional Information

• A domain name is a label that identifies a network domain: a distinct group of computers under a central administration or authority.

• The company managing the reservation of domain names is the domain name registrar.

• A domain name registry is a database of all domain names and the associated registrant information in the top-level domains of the Domain Name System (DNS)

Q29. Answer: (d) M Venkaiah Naidu

The correct answer is M Venkaiah Naidu.

• Muppavarapu Venkaiah Naidu is an Indian politician serving as the 13th vice president of India since 2017.

• Jagdeep Dhankar is the 14th and current Vice President of India.

Additional Information

• Article 63 of the Constitution of India provides that there shall be a Vice-President of India.

• Articles 64 and 89 provide that the Vice-President of India shall be the ex-officio Chairman of the Rajya Sabha and shall not hold any other office of profit.

• The Vice-President of India will preside over the Upper House and will act as the President in certain contingent situations.

• Thus, the Vice President of India has been assigned a dual role, as the second Chief of the Executive and as the Presiding Officer of the Upper House of Parliament.

• The Vice-President is elected by a single transferable vote according to the proportional representation method by the electorate consisting of members of both houses of Parliament.

Q30. Answer: (b) Manpreet Singh

The correct answer is Manpreet Singh.

• Manpreet Singh Pawar is an Indian hockey player and is also the captain of the India men's national field hockey team since

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May 2017.

• The first Indian to win the FIH (Fédération Internationale de Hockey) Player of the Year award 2019.

• Under Manpreet's captaincy, the Indian team won the Asia Cup in 2017, the Asian Champions Trophy in 2018.

Additional Information

• Manpreet Singh were the country's flag bearer at the opening ceremony of the Tokyo Olympics.

• Rani Rampal is the captain of Indian Hockey Team (Women).

Q31. Answer: (c) Safdarjung Tomb

The correct answer is Safdarjung Tomb.

• Safdarjung's Tomb is a late Mughal Empire style tomb built for Nawab Safdarjung in the year 1754.

• It is made of sandstone and marble has the domed structure of arched red-brown and white colour located near the Safdarjung airport in Delhi.

• Safdarjung was the Nawab of Oudh, and also he was a prime minister of the Mughal Empire (Wazir ul-Mamlak-i-Hindustan) when Ahmed Shah Bahadur ascended the throne in 1748.

Additional Information

• Other important monuments of UP:

• Taj Mahal

• Agra Fort in Agra.

• Fatehpur Sikri Fort, Agra

• Bara Imambara in Lucknow

• Kans Qila or Kans Fort in Mathura

• Dhamek Stupa Varanasi

Q32. Answer: (b) 0.15

Given:

0.3 ÷ (0.6 × 2/3) × 0.2 (0.2 × 2 ÷ 1/2 + 0.2)

Concept used:

Calculation:

0.3 ÷ (0.6 × 2/3) × 0.2 (0.2 × 2 ÷ 1/2 + 0.2)

=> 0.3 ÷ (0.2 × 2) × 0.2 (0.2 × 2 × 2 + 0.2)

=> 0.3 ÷ 0.4 × 0.2 (0.2 × 4 + 0.2)

=> 0.3 ÷ 0.4 × 0.2 (0.8 + 0.2)

=> 0.3 ÷ 0.4 × 0.2 × 1

=> 0.3 ÷ 0.4 × 0.2

=> 0.3 × 1/0.4 × 0.2

=> 0.75 × 0.2 = 0.15

Therefore The correct answer is option (2).

Q33. Answer: (d) Narendra Modi

The correct answer is Narendra Modi.

Important Points

• Pradhan Mantri Jan Dhan Yojana was announced by PM Narendra Modi on 15 August 2014 from the ramparts of the Red Fort and was launched on 28 August 2014.

Additional Information

• Pradhan Mantri Jan-Dhan Yojana

• Date of launch 28th August 2014

• Government Ministry Ministry of Finance

• The scheme covers both the urban as well as rural areas and provides an indigenous Debit Card (RuPay card) to each of its account holders.

• No minimum balance is required for opening an account under this scheme.

• The beneficiary can open his/her account in any bank branch or Business Correspondent outlet at zero balance.

• It ensures to provide on Core Banking System (CBS) along with mobile banking using USSD facilities.

• A facility of call centre and a toll-free number is available nationwide.

• Pradhan Mantri Jan Dhan Yojana provides each beneficiary with basic banking accounts with a debit card with inbuilt accident insurance.

• Rs. 5,000 overdraft facility for Aadhar-linked accounts as well as a RuPay debit card with inbuilt Rs. 1 lakh accident insurance cover is one of the main features provided by this scheme.

• For accounts that are opened between 15th August 2014 and 26th January 2015, a Life Insurance cover of Rupees 30,000 is provided to the eligible beneficiaries. Also after remaining active for 6 months, the beneficiary will be eligible for an overdraft of up to Rs 5,000.

Q34. Answer: (b) 13

The pattern followed here is,

Let (M : N)

Step 1 → $M^3 = A$ (A any number)

Step 2 → A - 1= N

Now follow the steps:

7 : 342

Step 1 → $7^3 = 343$

Step 2 → 343 – 1 = 342

And,

9 : 728

Step 1 → $9^3 = 729$

Step 2 → 729 – 1 = 728

Similarly,

? : 2196

Step 1 → $13^3 = 2197$

Step 2 → 2197 – 1 = 2196

Hence, '13 : 2196' is correct answer.

Q35. Answer: (c) 34

Given:

PQ = 30 cm

Diameter = 32 cm

Concept used:

Tangent is perpendicular to the radius at the point of contact

Calculation:

OQ is the radius of a circle

OQ = 16 cm

angle OQP = 90°

now apply Pythagoras theorem to

$OP^2 = PQ^2 + OQ^2$

$\Rightarrow OP^2 = 30^2 + 16^2$

$\Rightarrow OP = 1156$

$\Rightarrow OP = 34$ cm

Therefore The length of OP is 34 cm

Q36. Answer: (a) 25

Given:

Total amount = Rs. 9000

Calculation:

According to the question,

$9000/(a + 20) = 9000/a - 160$

$\Rightarrow 9000a = (9000 – 160a)(a + 20)$

$\Rightarrow 9000a = 9000a + 180000 – 160a^2 – 3200a$

$\Rightarrow a^2 + 20a – 1125 = 0$

=> $a^2 + 45a – 25a – 1125 = 0$

=> $a(a + 45) – 25(a + 45) = 0$

=> $(a – 25)(a + 45) = 0$

=> $a = 25$ or $a = -45$

(- 45 Neglected as the number of people can never be negative)

Therefore The original number of people is 25

Q37. Answer: (c) China

The correct option is China.

Important Points

• Manushi Chhillar is an Indian actress and model.

• She won the Miss World 2017 pageant.

• She is from Haryana, India.

• Miss World 2017 was held in China.

Additional Information

• Miss World 2020 is Toni-Ann Singh of Jamaica.

• Miss Universe 2020 is Andrea Meza of Mexico.

• Mr. World 2020 won by Dhruba Tamuly from Assam.

Q38. Answer: (d) India

The correct answer is India.

• The Constitution of India is the longest written constitution of any sovereign country in the world, containing 448 articles grouped in 22 parts with 12 schedules.

Additional Information

• There were 395 articles originally in the Constitution of India.

• Presently 470 articles are there in Constitution.

• The Indian Constitution was originally written in English.

• Prem Behari Narain Raizada wrote the Indian constitution by hand.

• Dr. BR Ambedkar is known as the father of the Indian Constitution.

• Indian Constitution was adopted by the Constituent Assembly of India on 26 November 1949 and became effective on 26 January 1950.

Q39. Answer: (b) [figure]

The Venn diagrams best represent the relationship between -

Boy, student, farm figure are shown below:

Some boys are students it is possible but any boy and student are farm it is not possible.

Hence, ‘option 2’ is the correct answer.

Q40. Answer: (b) 119

100’s place - (301, 302, 303,.....399) = 99 times

10’s place (30, 31, 32,.....39) = 10 times

1’s place (03, 13, 23…....93) = 10 times

Total = 99 + 20 = 119 times

Therefore Answer is 119 times

Q41. Answer: (a) found in a particular area

The correct answer is found in a particular area.

Important Points

• Endemic species are those species of plants and animals which are found in a particular area.

• In ecology, an endemic species is one that is unique to the area in which it is found.

• A species might be endemic to a limited geographic area, such as a single island, or a larger geographical area, such as a continent.

• The lion-tailed macaque is endemic to India.

Additional Information

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Some of the tags of IUCN are

Categories (IUNC Status)	Definition	Examples
Extinct (EX)	No known individuals remaining	Pink, Head Duck, Indian aurochs
Extinct in wild (EW)	Known only to survive in captivity	Alagoas curassow, Beloribitsa
Critically endangered (CR)	Extremely high risk of extinction in the wild.	Cross River Gorilla, Eastern Lowland Gorilla, Hawksbill, Turtle, Gharial
Endangered (EN)	High risk of extinction in the wild	Pygmy Hog, Northern Right Whale, The Vaquita, Amur, Leopard, Lion Tailed Macaque
Vulnerable (VU)	High risk of endangerment in the wild.	Nilgiri Marten, Nilgiri Langoor, Marbled cat
Near Threatened (NT)	Likely to become endangered in the near future	Przewalski's horse, Humpback whale
Least Concern (LC)	Lowest risk	Harp Seal, Giraffe

Q42. Answer: (d) Gopal Krishna Gokhale

The correct answer is Gopal Krishna Gokhale.

• Gopal Krishna Gokhale did NOT advocate militant opposition to colonial rule through the Swadeshi movement.

• Gopal Krishna Gokhale was born on 9 May 1866 in the Bombay Presidency.

• From 1899 and 1902, he was a member of the Bombay Legislative Council, followed by a stint in the Imperial Legislative Council from 1902 until his death.

• In the Imperial legislature, Gokhale was instrumental in formulating the Morley-Minto Reforms of 1909 and advocated for the expansion of legislative councils both at the center and in the provinces.

• In the Banaras session of 1905, Gokhale became the President of the Congress.

Key Points

• Swadeshi Movement:

• On August 7, 1905, a boycott resolution was passed at the Calcutta City Hall, where it was decided to boycott Manchester's use of cloth and salt from Liverpool.

• In Western India (Maharashtra), Shivaji and Ganpati festivals were organized by Lokmanya Tilak to spread the Swadeshi message and boycott movements among the masses.

• The Swadeshi and Boycott movements were India's first movements of the 20th century that encouraged collective participation in modern nationalist politics by a large section of society.

Additional Information

Person Name	Details
Bipin Chandra Pal	• Bipin Chandra Pal is also known as the Father of Revolutionary Thoughts in India. - He also participated in the Swadeshi movement and the non-cooperation movement.
Bal Gangadhar Tilak	• He was born on 23rd July 1856 in Ratnagiri, Maharashtra. - Founder of the Deccan Education Society (1884) along with his associate Gopal Ganesh Agarkar and others. - One of the founders of the Fergusson College (1885) in Pune through the Deccan Education Society.
Lala Lajpat Rai	• Lala Lajpat Rai was born on January 28, 1865, to Munshi Radha Krishna Azad and Gulab Devi at Dhudike village in Ferozpur District. - In 1895 Rai helped found the Punjab National Bank, demonstrating his concern for self-help and enterprise.

Q43. Answer: (c) 6

Given:

(a + b) : (b + c) : (c + a) = 6 : 7 : 8

a + b + c = 14

Concept used:

If (a + b) : (b + c) : (c + a) is x : y : z

(a + b + c) = (x + y + z)/2

Calculation:

Let (a + b) : (b + c) : (c + a) be 6x : 7x : 8x

a + b + b + c + c + a = 6x + 7x + 8x

2(a + b + c) = 21x

(a + b + c) = 21x/2

=> 21x/2 = 14

=> x = 28/21

=> 4/3

(a + b) = 6 × 4/3 = 8

So c = 14 - 8

=> 6

Therefore The value of c is 6

Q44. Answer: (d) Shandur National Park

The correct answer is Shandur National Park.

• Shandur National Park is located in District Ghizer, Pakistan.

• It is often called 'Roof of the World'.

• Hence it is the correct answer.

Additional Information

• Important facts about the National Parks in India

• The number of National Park - 104.

• Maximum National Park state- Madhya Pradesh (10).

• First National Park Jim Corbett National Park.

• Largest National Park Hemis National Park.

• Smallest National Park South Button National Park.

Q45. Answer: (a) SEBI

The correct answer is SEBI.

Important Points

• Securities and Exchange Board of India (SEBI) is a statutory body and a market regulator, which controls the securities market in India.

• The basic functions of SEBI are to protect the interests of investors in securities and to promote and regulate the securities market.

• SEBI is run by its board of members, the board consists of a Chairman and several other whole time and part-time members.

• The chairman is nominated by the union government.

• Founded: 12 April 1992

• Headquarters: Mumbai

• Agency executive: Shri Tuhin Kanta Pandey (Chairperson)

Additional Information

• RBI:

• Governor - Sanjay Malhotra.

• Headquarters - Mumbai.

• Founded: 1 April 1935, Kolkata.

• IRDAI:

• Founded: 1999

• Headquarters: Hyderabad

• NABARD:

• Founded: 12 July 1982

• Headquarters: Mumbai

• Chairperson:Shaji K V

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Q46. Answer: (b) Alexander Fleming

The correct answer is Alexander Fleming.

• Alexander Fleming discovered penicillin.

• This discovery led to the introduction of antibiotics that greatly reduced the number of deaths from infection.

• Penicillin prevents the bacteria from synthesizing peptidoglycan, a molecule in the cell wall that provides the wall with the strength it needs to survive in the human body.

Additional Information

• Charles Darwin is regarded as the "Father of Evolution."

• Louis Pasteur developed the Rabies Vaccine.

• Gregor Mendel is called the father of genetics.

Q47. Answer: (c) 37.5%

Given:

Speed of the student = 8 km/h

Time taken = 3/2 hours

Concept used:

Speed = Distance/time

Calculation:

Distance cover = 8 × 3/2 = 12 km

Now at the time of return, he will cover 11 km as given in the question

He has taken a rest for 30 minutes

So he will cover 11 km in 1 hour

So his new speed = 11 km/h

Speed increased = 3 km/h

% change = 3/8 × 100

=> 37.5%

Therefore The required increase in speed is 37.5%

Q48. Answer: (c) Madhubani painting

The correct answer is Madhubani painting.

Important Points

• Mithila painting, popularly known as Madhubani art.

• It is from the district of the same name in Bihar and Nepal.

• The colours used in Madhubani paintings are usually derived from plants and other natural sources.

• Most commonly, a coloured paste of powdered rice is used for Madhubani painting.

• Women usually paint their homes to celebrate festivals and the theme of the painting can be varied from nature to myths.

• Women decorate the nuptial chamber and the inner walls of their homes to celebrate festivals.

Additional Information

Other states and their traditional artforms:

States	Traditional artform
Odisha	Patachitra
Rajasthan	Kavad art
Maharashtra	Warli art
Tamil Nadu	Tanjore painting
West Bengal	Jharnapatachitra
Andhra Pradesh	Kalamkari painting

Q49. Answer: (a) Gurugram

The correct answer is Gurugram.

Important Points

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• Gurugram topped the list of the most polluted cities in the world in a recent study conducted by NGO Greenpeace India.
• It was ranked first among 62 polluted cities in the report, Global Air Pollution 2018.
• The report measures the air quality in terms of PM 2.5 data as aggregated through the IQAir AirVisual platform in 2018.
Additional Information
• According to the 'World Air Quality Report, 2020', prepared by a Swiss organization.
• The world's 30 most polluted cities are in India.
• Delhi is ranked as the most polluted capital city globally.

Q50. Answer: (c) Rs.74,175

Given:
Price at which the machine was purchased = Rs.70000
Overhead expenditure = Rs.5000
Formulas used:
Profit or Loss is calculated on the Cost Price of the machine, which is 100% of itself.
Selling Price = Cost Price + Profit
or
Selling Price = Cost Price × (100 + Profit)%
Calculation:
Total cost of the machine = Purchasing Price + Overhead Expenses
=> 70000 + 5000 = Rs.75000
As per the question,
Cost of machine at 15% less = 70000 × (100 - 15)% + 5000
=> Rs.64500
Selling Price = 64500 × (100 + 15)/100
=> Rs.74175
Therefore The selling price of the machine is Rs.74175.

Q51. Answer: (c) 13,500 cones

Shortcut Trick
When a solid is melted to form identical smaller objects, the number of objects is equal to the ratio of their volumes.
Number of cones (N) = Volume of Cylinder ÷ Volume of 1 Cone
=> N = (π × R^2 × H) ÷ (1/3 × π × r^2 × h)
Convert everything to cm (R = 3 cm, H = 5 cm, r = 0.1 cm, h = 1 cm):
=> N = 3 × (3^2 × 5) ÷ (0.1^2 × 1) = (3 × 45) ÷ 0.01 = 135 ÷ 0.01 = 13,500
Therefore The correct answer is 13,500 cones.
Alternate Method
Given:
For the cylinder:
=> Radius (R) = 3 cm = 30 mm
=> Height (H) = 5 cm = 50 mm
For each cone:
=> Radius (r) = 1 mm
=> Height (h) = 1 cm = 10 mm
Formula Used:
Volume of Cylinder = πR^2H
Volume of Cone = 1/3 × πr^2h
Calculations:
=> Volume of the given cylinder = π × $(30)^2$ × 50 = 45,000π mm^3
=> Volume of one cone = 1/3 × π × $(1)^2$ × 10 = 10π/3 mm^3
=> Number of cones formed = Total Volume of Cylinder ÷ Volume of One Cone
=> Number of cones = 45,000π ÷ (10π/3)
=> Number of cones = 45,000 × (3 / 10)

=> Number of cones = 4500 × 3 = 13,500

Therefore The correct answer is 13,500 cones.

Additional Information

Melting and Recasting of Solids

When a solid object is melted and recast into a different shape, the overall volume of the material remains constant. Total Initial Volume = Total Final Volume.

Volume of a Cylinder

The volume of a right circular cylinder is given by $V = \pi r^2 h$, where r is the base radius and h is the height.

Volume of a Cone

The volume of a right circular cone is exactly one-third of the volume of a cylinder with the same base radius and height: $V = 1/3 \times \pi r^2 h$.

Q52. Answer: (c) 60

Calculation:

Let the number be = a

So, $1/5 \times a \times 2/3 \times a = 480$

=> $2a^2/15 = 480$

=> $a^2 = 2^4 \times 3^2 \times 5^2$

=> $a = \sqrt{24 \times 32 \times 52}$

=> $a = 4 \times 3 \times 5 = 60$

Therefore The required number is 60.

Alternate MethodBy Hit and Trial Method

We will check the condition as, $1/5 \times a \times 2/3 \times a = 480$

Option 1: For a = 80, $1/5 \times 80 \times 80 \times 2/3 \neq 480$

Option 2: For a = 70, $1/5 \times 70 \times 70 \times 2/3 \neq 480$

Option 3: For a = 60, $1/5 \times 60 \times 60 \times 2/3 = 480$

Option 4: For a = 100, $1/5 \times 100 \times 100 \times 2/3 \neq 480$

Q53. Answer: (d) 3700

Given:

Percentage of students passed = 82%

Percentage of students placed in reappear category = 2%

Number of students failed = 592

Calculation:

Let the total number of students be 100%

Percentage of students failed = 100% - Passed Percent - Reappear Category Percent

=> 100% - 82% - 2%

=> 16%

Because 16% = 592

=> 100% = 592 × 100%/16%

=> 100% = 3700

Therefore Total number of students in the class are 3700.

Q54. Answer: (d) an American

The correct answer is an American.

• Gertrude Ederle of the United States at the young age of 19 years, became the first woman to swim across the English channel.

• She swam 21 miles in her second attempt from Dover, England.

Additional Information

• Arati Saha was the first Indian swimmer to cross the English Channel in 1959.

• In 1960, she became the first Indian sportswoman to be awarded the Padma Shri, the fourth highest civilian honour in India.

• She was inspired by the ace Indian swimmer Mihir Sen.

• Mihir Sen was the first Asian to swim across the English Channel.

• English channel connects the North Sea to the Strait of Dover.

• Mihir sen is also the first swimmer to swim across Palk strait.

Q55. Answer: (b) 100

Given:

Number of question attempted = 120

Marks received by Ambika = 90

Marks awarded for correct answer = 1

Marks deducted for wrong answer = 0.5

Calculation:

Let the number of correct answer be = a

=> Number of wrong answers = 120 - a

Marks for 'a' right answers = a × 1 = a

Marks deducted for (120 - a) wrong answers = (120 - a) × 0.5 = 60 - 0.5a

As per the question;

Total marks scored = Marks received for right answers - Marks deducted for wrong answers

=> 90 = a - (60 - 0.5a)

=> 1.5a = 150

=> a = 100

Therefore The number of correct answers is 100.

Q56. Answer: (b) 8:27:12 hours

Given:

3 traffic signals change after every 48, 72 and 108 respectively.

Time when 3 lights started changing simultaneously = 8:20

Concept Used:

Lowest Common Multiple

Calculation:

The time of changing the 3 traffic lights simultaneously will be the LCM of 48, 72, and 108 as the first common multiple of the numbers.

By Prime Factorisation we will take LCM of 48, 72 and 108 seconds.

48 = 2^4 × 3

72 = $2^3 \times 3^2$

108 = $2^2 \times 3^3$

LCM (48, 72, 108) = 2^4 × 3^3 = 432

Hence after 432 seconds, they will change simultancously.

=> 432/60 minutes

=> 7 minutes 12 seconds

Therefore Lights will change at 8:20:00 + 7 minutes + 12 seconds = 8:27:12 hours

Q57. Answer: (d) Dog

The logic followed here is:

Lion : Cat → Lion and Cat both are 'Felidae' family.

Similarly,

Wolf : Dog → Wolf and Dog both are 'Canidae' family.

Hence, ‘Dog’ is the correct answer.

Additional Information

• Felidae is a family of mammals in the order Carnivora, colloquially referred to as cats, and constitutes a clade. A member of this family is also called a felid. The term "cat" refers both to felids in general and specifically to the domestic cat.

• Canidae is a biological family of dog-like carnivorans, colloquially referred to as dogs, and constitutes a clade. A member of this family is also called a canid. There are three subfamilies found within the canid family, which are the extinct Borophaginae and Hesperocyoninae, and the extant Caninae.

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Q58. Answer: (b) Rs.1200

Given:

A's investment = 3 times as much as B's investment

B's investment = 2/3 times of C's investment

Total profit of the year = Rs.6600

Concept used:

Ratio of investment = Ratio of Profit to be shared

Calculation:

Let the sum invested by C = a

=> Sum invested by B = 2/3 × a

=> Sum invested by A = 2a/3 × 3 = 2a

Ratio of profit to be shared between A, B, and C:

A : B : C = a : 2a/3 : 2a

=> A : B : C = 3 : 2 : 6

B's profit share will be = Rs.6600 × 2/11

=> Rs.1200

Therefore B's share in the profit for the year is Rs.1200.

Q59. Answer: (a) The Uprising of 1857

The correct answer is The Uprising of 1857.

Important Points

• The First War of Indian Independence was fought in the year 1857.

• It is also known as the Indian Sepoy Mutiny of 1857.

• It was called The First War of Indian Independence by V.D Savarkar.

• He authored a book called 'The History of the War of Indian Independence' in which he stated his views and announced the mutiny as the First War of Indian Independence.

• Lord Canning (1856-1862) was the Governor-General of India/ Viceroy of India during this revolt.

Additional Information

• Rowlatt Satyagraha was a nationwide satyagraha against the proposed Rowlatt Act (1919).

• It was launched by Mahatma Gandhi in 1919.

• Rowlatt satyagraha made Gandhiji a truly national leader.

• The Santhal Revolt took place in 1855-56.

• This was the first peasant revolt that occurred in India.

• The revolt can be attributed to the introduction of the Permanent Land Settlement of 1793.

Q60. Answer: (a) Eating food spoilt by microorganisms

The correct answer is Eating food spoilt by microorganisms.

Key Points

• Food poisoning is mostly caused by the consumption of food that is contaminated with bacteria/microorganisms like Salmonella, Listeria or E.coli.

• Although rarely but parasites like Toxoplasma and virus-like the Norwalk virus can also cause food poisoning.

• Symptoms of food poisoning include- nausea, bloody stool, fever, fatigue, and abdominal pain.

• Chemical food preservatives are substances that help either delay the growth of microorganisms/destroy them, thus preventing quality deterioration during manufacture and distribution.

Q61. Answer: (b) 13^(th)

The correct answer is 13th.

• IPL 2020 was the 13th edition of India's premier T20 league.

• Indian Premier League was conceptualized after India's landmark victory in the maiden ICC WT20 in 2007.

• IPL has been a great platform for young talent to showcase their skills and rub shoulders with the best players in the world.

Additional Information

• Mumbai Indians won the Indian Premier League (IPL), 2020.

• The final match was played between Mumbai Indians and Delhi Capitals.

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• Mumbai Indians won this match by 5 wickets.
• Mumbai Indians also won Paytm Fairplay Award this year.
• This is the consecutive second time Mumbai Indians won the IPL title & and overall 5th time.

Q62. Answer: (d) Amethi and Wayanad

The correct answer is Amethi and Wayanad.
• Congress leader Rahul Gandhi contest the Lok Sabha Elections of 2019 from Amethi, Uttar Pradesh and Kerala's Wayanad.
Additional Information
• The seventeenth General Elections were held from 11 April to 19 May 2019.
• The Bharatiya Janata Party having 303 Members is the largest party in the Seventeenth Lok Sabha followed by the Indian National Congress having 52 Members.
• There are 541 MPs at present in the 17th Lok Sabha.
• Shri Om Birla is the Speaker of the Lok Sabha.

Q63. Answer: (c) Planting new trees in the destroyed forests

The correct answer is planting new trees in the destroyed forests.
• Reforestation means planting new trees in the destroyed forests.
• It is the re-growing of forests that have previously been cut down using tree species that are native to the geographic area.
Additional Information
• Afforestation
• It is the process of introducing trees and tree seedlings to an area that has previously not been forested.
• It can be done through tree planting and seeding, naturally or artificially.
• Deforestation
• It refers to the decrease in forest areas across the world that are lost for other uses such as agricultural croplands, urbanization, or mining activities.
• It is a particular concern in tropical rainforests because these forests are home to much of the world's biodiversity.

Q64. Answer: (d) [figure]

The Venn diagrams best represent the relationship between - eyes, ears, sensory organs figure are shown below:
Eyes and ears both are sensory organs.
Hence, ‘option 4’ is the correct answer.
Important Points
• The sensory nervous system is a part of the nervous system responsible for processing sensory information. A sensory system consists of sensory neurons, neural pathways, and parts of the brain involved in sensory perception.
• The sense organs are the body organs by which humans are able to see, smell, hear, taste, and touch or feel. The five sense organs are the eyes (for seeing), nose (for smelling), ears (for hearing), tongue (for tasting), and skin (for touching or feeling).

Q65. Answer: (c) The working class went on strike in many towns and cities.

The correct answer is The working class went on strike in many towns and cities.
• Non-cooperation Movement was conducted from September 1920 to February 1922. It was initiated by Gandhi after the Jallianwala Bagh Massacre.
• People started protesting with Non-Ahimsa and at the same time boycotted British goods.
• After the Chauri-Chaura incident, Gandhi withdrew the movement.
• The Khilafat Movement was essentially a movement to express Muslim support for the Caliph of Turkey against the allied powers particularly Britain.
• The Muslims were especially upset about the future of the Islamic places of worship after the allied powers had partitioned the Turkish Empire.
• Maulana Abul Kalam Azad, Dr. M.A. Ansari and the Ali brothers were the prominent leaders of the movement.
• Gandhiji supported the Khilafat movement to unite Hindu and the Muslims.
• By the mid-1920s, the Khilafat leaders joined hands with Gandhi's Non-Cooperation Movement.
• In both the movements the working class went on strike in many towns and cities.

Q66. Answer: (b) r = (a + b - c)/2

Given:
a, b and c are the sides of a right triangle with c as the hypotenuse.

An incircle with radius 'r'.

Formula used:

Inradius = (Base + Height - Hypotenuse)/2

Calculation:

Therefore Inradius of the circle with radius 'r' = (a + b - c)/2

Q67. Answer: (a) 2548

The pattern followed here is,

Option 1 → 2548 → Not a perfect cube of any number

Option 2 → 1728 → Perfect cube of '12'

Option 3 → 2197→ Perfect cube of '13'

Option 4 → 1331 → Perfect cube of '11'

All options follow the same pattern, except 'Option 1'

Hence, "2548" is the correct answer.

Q68. Answer: (d) Only conclusion II follows

(Note: In original paper this question has discrepancy. We have corrected as per the given statements.)

Given:

Statements:

I. All Doctors are social workers.

II. All social workers need money.

The least possible diagram for the given statements is as follows

Conclusions:

I. All social workers are doctors → False (it is possible but not definite)

II. Doctors need money → True (because all social workers need money and all doctors are social workers so all doctors need money.)

Hence, "Only conclusions II follow".

Additional Information

Q69. Answer: (b) Trade of the British East India Company expanded.

The correct answer is Trade of the British East India Company expanded.

Battle of Plassey -

• It took place on June 23, 1757.

• It was fought between the forces of East India Company headed by Robert Clive and Siraj-Ud-Daulah (Nawab of Bengal).

• It resulted in the decisive victory of the East India Company over a much larger force of Siraj-Ud-Daulah.

• After the Battle of Plassey, the Britishers virtually monopolized the trade and commerce of Bengal.

Additional Information

• Shuja-Ud-Daula -

• He was Nawab of Avadh (Oudh) and took the title Nawab Wazir.

• He was son of Nawab Safdarjang.

• He is associated with the Battle of Buxar.

Q70. Answer: (b) 42

The logic is here,

In given series 23, 29, 31, 37, 43, 47 all are prime number except 42.

41 is prime number not 42.

Hence, "42" is correct answer.

Q71. Answer: (d) Ring

The logic followed here is:

Running : Track → Running on the track.

Similarly,

Boxing : Ring → Boxing is played in the ring.

Hence, 'Ring' is the correct answer.

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Additional Information

Sports	Field related to sports
Football, Baseball	Ground
Cricket	Pitch
Tennis, Volleyball, Basketball	Court
Skating, Boxing	Ring

Q72. Answer: (d) Common Business Oriented Language

The correct answer is Common Business Oriented Language.

• COBOL stands for Common Business Oriented Language.

• It is first developed in 1960 by the CODASYL Committee (Conference on Data Systems Languages).

• It is primarily designed for use in business-oriented applications.

Additional Information

• Some important Abbreviations

Abbreviation	Stands for
ASCII	American Standard Code for Information Interchange.
BIOS	Basic Input Output System.
COBOL	Common Business Oriented Language.
DBMS	Database Management System.
EBCDIC	Extended Binary Coded Decimal Interchange Code.
HTTP	HyperText Transfer Protocol.
IBM	International Business Machine.
JPEG	Joint Photographic Experts Group.

Q73. Answer: (d) Mercury

The correct answer is Mercury.

• Minamata Convention is an international treaty that is designed to protect human health and the environment from the harmful effect of Mercury and its compounds.

• The convention is named after the Japanese city, Minamata, which was severely affected by the devastation of Mercury poisoning.

• The agreement is aimed at reducing mercury pollution and spreading awareness of its harmful effects.

Additional Information

Environmental Convention	Related to
CITES	International Trade in Endangered Species of Wild Fauna and Flora
Ramsar Convention	Conservation of Wetlands
Vienna Convention	Protection of Ozone Layer
Montreal Protocol	Substances that deplete the Ozone Layer
Basel Convention	Control of Transboundary Movements of Hazardous Wastes and their Disposal
Convention on Biological Diversity (CBD)	Conservation of biological diversity
United Nations Framework Convention on Climate Change (UNFCCC)	Combat climate change through adaptation and mitigation efforts directed at control of emission of GreenHouse Gases (GHGs)
Rio Summit	Environment and Development
UNCCD	Combat Desertification

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Kyoto Protocol	Reduce greenhouse gas emissions
Rotterdam Convention	Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
Cartagena Protocol	Biosafety to the Convention on Biological Diversity
Stockholm Convention	Persistent Organic Pollutants (POPs)
Nagoya Protocol	Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity (CBD)
Minamata Convention	Protect the health and the environment from the adverse effects of mercury
Kigali Agreement	Amendment to the Montreal Protocol

Q74. Answer: (d) US, Russia, China

The correct answer is US, Russia, China.

• ‘Mission Shakti’ was the country’s first-ever Anti-Satellite (ASAT) Missile Test successfully conducted on 27th March 2019 from Dr AP J Abdul Kalam Island in Odisha, where a fast-moving Indian orbiting target satellite in Low Earth Orbit (LEO) was neutralised with pinpoint accuracy.

• This was a highly complex mission, conducted at extremely high speed with remarkable precision.

• The successful conduct of Mission Shakti was made India the fourth nation in the world after US, Russia, China with the capability to defend its assets in outer space.

Additional Information

• Countries that have launched Anti-satellite missions:

• Russia PL-19

• China SC-19

• The United States of America USA-193

Q75. Answer: (d) 3

Left 2 6 6 3 4 5 2 4 9 8 6 4 3 4 8 2 Right

Odd numbers are preceded by the number 4 in the following series is:

4 → Odd number.

2 6 6 3 4 5 2 4 9 8 6 4 3 4 8 2.

There are 3 odd numbers are preceded by the number 4.

Hence, "3" is the correct answer.

Mistake PointsImmediately preceded by means immediately before or to come just before.

Immediately followed by means immediately after or to come just after.

Important Points

In this approach, we analyze the number at “ones” place in an integer to check if the number is even or odd.

• All the numbers ending with 1, 3, 5, 7 and 9 are odd numbers. For example, numbers such as 11, 23, 35, 47 etc. are odd numbers.

• All the numbers ending with 0, 2, 4, 6 and 8 are even numbers. For example, numbers such as 14, 26, 32, 40 and 88 are even numbers.

• Odd numbers are not evenly divisible by 2 and end in 1, 3, 5, 7, or 9.

Q76. Answer: (b) (n - 1)/2

Shortcut Trick

The series consists of n terms, where each term is of the form (1 − k/n).

Separate the integer parts and the fractional parts: (1 + 1 + ... n times) − (1/n + 2/n + ... + n/n).

Sum of n ones = n. Sum of fractions = (1/n) × [n(n + 1)/2] = (n + 1)/2.

Net result = n − (n + 1)/2 = (2n − n − 1)/2 = (n − 1)/2.

Therefore The correct answer is (n − 1)/2.

Alternate Method

Given: The series is (1 − 1/n) + (1 − 2/n) + (1 − 3/n) + ... up to n terms.

Formula Used: Sum of the first n natural numbers (Σn) = n(n + 1)/2.

Calculations:

=> Let S = (1 − 1/n) + (1 − 2/n) + (1 − 3/n) + ... + (1 − n/n)

=> S = (1 + 1 + 1 + ... up to n terms) − (1/n + 2/n + 3/n + ... + n/n)

=> S = n − (1/n) × (1 + 2 + 3 + ... + n)

=> S = n − (1/n) × [n(n + 1)/2]

=> S = n − (n + 1)/2

=> S = (2n − (n + 1))/2

=> S = (2n − n − 1)/2

=> S = (n − 1)/2

Therefore The correct answer is (n − 1)/2.

Additional Information

Sum of First n Natural Numbers

The sum of the first n positive integers is given by the formula S = n(n + 1)/2.

Arithmetic Progression (AP)

A sequence where the difference between consecutive terms is constant. The sum of n terms is S_n = (n/2)[first term + last term].

General Term of the Series

The k-th term of the given series is T_k = (1 − k/n). For k = n, the term becomes (1 − n/n) = 0.

Q77. Answer: (d) Actor

The logic followed here is:

Except Actor, all are intangible whereas Actor is tangible.

Word	Meaning
Script	Intangible
Dialogue	Intangible
Plot	Intangible
Actor	Tangible

Hence, the correct answer is "Actor".

Key PointsThe primary difference between tangible and intangible is that tangible is something which a person can see, feel or touch and thus they have the physical existence, whereas, the intangible is something which a person cannot see, feel or touch and thus do not have any of the physical existence.

• Tangible assets are physical; they include cash, inventory, vehicles, equipment, buildings and investments.

• Intangible assets do not exist in physical form and include things like accounts receivable, pre-paid expenses, and patents and goodwill.

Additional InformationScript is defined as the written words of a play, movie or show, or a standard message to deliver on the phone or in person.

• For example of a script is the screenplay for the movie Chinatown. An example of a script is the greeting which is spoken when making phone calls for a call center.

Dialogue is the exchange of spoken words between two or more characters in a book, play, or other written work.

• Conversation between people in a book, play, etc.

Plot → In a literary work, film, or other narrative, the plot is the sequence of events where each affects the next one through the principle of cause-and-effect.

• The series of events which form the story of a novel, film, etc.

Q78. Answer: (b) Adam Smith

The correct answer is Adam Smith.

• Adam Smith was a Scottish economist and also known as the Father of economics or the Father of Capitalism.

• Adam Smith work includes

• The Theory of Moral Sentiments(1759)

• An Inquiry into Nature and Causes of the Wealth of Nations. (1776)

• Economics is a social science concerned with the production, distribution, and consumption of goods and services. It studies how individuals, businesses, governments, and nations make choices about how to allocate resources.

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Additional Information

• Amartya Sen is a world-renowned economist awarded the 1998 Nobel Prize.

• He has propounded "the concept of public welfare economics".

• He was also awarded the "Bharat Ratna", India's highest civilian honor in 1999.

• Dr. Manmohan Singh

• Indian economist.

• Served as the 13th Prime Minister of India.

• Served as the Deputy Chairman of the Planning Commission.

• Former Governor of the Reserve Bank of India.

• Notable works: Changing India, The Quest for Equity in Development.

• John Maynard Keynes was an economist who advocated for increased government expenditures and lower taxes to stimulate demand.

Q79. Answer: (d) 19/19

Given:

x/2y = 6/7

Calculation:

x/2y = 6/7

By cross multiplication, we get

=> 7x = 12y

=> x/y = 12/7

Now, (x - y)/(x + y) + 14/19

=> (12 - 7)/(12 + 7) + 14/19

=> 5/19 + 14/19

=> 19/19 or 1

Therefore The required value is 19/19.

Q80. Answer: (d) Amazon

The correct answer is Amazon.

Key Points

• Amazon river is the largest river in the world in terms of discharge volume of water and also the longest river in South America.

• It flows through the continent South America and countries Brazil, Colombia, Peru, Venezuela, Bolivia, Ecuador, and Guyana.

• Hence it is the correct option.

Important Points

• Orange River primarily flows in South Africa.

• The Orange river extends into Namibia and Botswana to the north.

• It is the longest river in South Africa

• Niger river

• It flows in West Africa and it is the third-longest river in Africa.

• Nile River

• It is a north-flowing river in northeastern Africa and is the longest river in the world.

Q81. Answer: (b) 33%

Given:

A's height = 25% less than that of B

Calculation:

Let the height of B = 100

=> A's height = 100 - 100 × 25/100

=> A's height = 75

Difference between the height of B and A = 100 - 75 = 25

Therefore The required percentage = 25/75 × 100

=> 33.33%

Shortcut Trick 25% = 25/100 = 1/4

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=> A/B = 3/4

Therefore The required percentage = (4 - 3)/3 × 100

=> 33.33%

Q82. Answer: (d) Rs.1100

Given:

Dimensions of rectangular field = 16 m × 12 m

Cost of fencing = 25 paise per cm

Formula used:

Length of rectangular field with one side open = 2 × Length + Breadth

Calculation:

Length of field = 2 × 16 m + 12 m

=> 44 m = 4400 cm

Therefore Cost of fencing at 25 paise per cm = 4400 cm × 25/100

=> Rs.1100

Q83. Answer: (b) Rashtriya Ispat Nigam Limited

The correct answer is Rashtriya Ispat Nigam Limited.

• Rashtriya Ispat Nigam Limited Company is called Vizag Steel.

Key Points

• Rashtriya Ispat Nigam Limited, the corporate arm of Visakhapatnam Steel Plant, is a Navratna PSU under the Ministry of Steel.

• It was established in 1982, RINL was wholly owned by the Government of India. In November 2010, the company was accorded Navratna status by the government.

• It is the first coast-based integrated steel plant in the country.

• It is the first steel plant to be certified to ISO 9001:2008 (currently 2015), ISO 14001:2004 (currently 2015), OHSAS 18001:2007 and ISO/IEC 27001:2013 standards.

• It is also the first PSU to be certified ISO 50001:2011 Energy Management System and has received CMMI Level 3 certification for development.

Additional Information

Company Name	Details
IISCO Steel Plant	• IISCO steel plant was founded in 1918. - IISCO Steel Plant of Steel Authority of India Limited is an integrated steel plant located at Burnpur, West Bengal, India.
Rourkela Steel Plant	• Rourkela Steel Plant, in Rourkela, Odisha is the first integrated steel plant in the public sector in India. - It was set up with West Germany collaboration with an installed capacity of 1 million tonnes in the 1960s. - It is operated by the Steel Authority of India.
Bokaro Steel Plant	• It was founded on 29 January 1964. - It is the fourth integrated public sector steel plant in India built with Soviet help.

Q84. Answer: (b) -2√3

Given:

X = 2 - √ 3

Formula Used:

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

Calculation:

X = 2 - √ 3

1/X = 1/(2 - √3)

By Rationalization

=>1/X = 1/(2 - √3) × (2 + √3)/(2 + √3)

=> (2 + √3)/(2^2 - $√3^2$) Because [a^2 - b^2 = (a + b)(a - b)]

=> (2 + √3)/(4 - 3)

=> (2 + √3)/1

Therefore X - 1/X = 2 - √3 - (2 + √3)

=> 2 - √3 - 2 - √3

=> -2√3

Q85. Answer: (a) Peter Wilding

The correct answer is Peter Wilding.

• The term Brexit was invented by Peter Wilding.

• He wrote about Brexit in May 2012, eight months before then-Prime Minister David Cameron announced he would hold a referendum.

• Brexit refers to the possibility of Britain leaving the European Union (EU).

Additional Information

Person Name	Details
Peter Wilding	• Peter Wilding is the man who coined the word Brexit. - He is a pro-Europe political advisor and solicitor in European Law. - He has stood for the UK and EU Parliaments and was appointed by former UK Prime Minister, David Cameron.
Nigel Farage	• Nigel Paul Farage is a British broadcaster and former politician who was Leader of the UK Independence Party from 2006 to 2009 and 2010 to 2016 and Leader of the Brexit Party from 2019 to 2021.
Tommy Robinson	• He was a member of the neo-fascist and white nationalist British National Party (BNP) from 2004 to 2005. - Robinson founded the English Defence League (EDL) in 2009 with his cousin Kevin Carroll and became its leader with Carroll as deputy leader.
Gerard Batten	• Batten was a member of the Anti-Federalist League, an early Eurosceptic cross-party political alliance from 1992 to 1993.

Q86. Answer: (c) A

Calculation:

Points scored by player A in all the games = 12 + 8 + 10 + 6 = 36

Points scored by player B in all the games = 0 + 8 + 6 + 4 = 18

Points scored by player C in all the games = 8 + 11 + 4 + 3 = 26

Points scored by player D in all the games = 10 + 12 + 2 + 8 = 32

Therefore The overall best performer is player A as he/she scored the maximum points.

Q87. Answer: (b) 9

Formula used:

Average scored by a player in 4 games = Sum of the points scored/4

Calculation:

Points scored by player A in all the games = 12 + 8 + 10 + 6 = 36

Therefore The average number of points scored by A = 36/4 = 9

Q88. Answer: (a) B

Calculation:

Points scored by player A in all the games = 12 + 8 + 10 + 6 = 36

Points scored by player B in all the games = 0 + 8 + 6 + 4 = 18

Points scored by player C in all the games = 8 + 11 + 4 + 3 = 26

Points scored by player D in all the games = 10 + 12 + 2 + 8 = 32

Therefore The overall worst performer is player B as he/she scored the minimum points.

Q89. Answer: (b) 1.5

Formula used:

Average scored by a player in 4 games = Sum of the points scored/4

Calculation:

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Average points scored by player C in 4 games = 8 + 11 + 4 + 3 = 26/4 = 6.5
Average points scored by player D in 4 games = 10 + 12 + 2 + 8 = 32/4 = 8
Therefore The difference of the average points scored by D and C = 8 - 6.5
=> 1.5

Q90. Answer: (a) IP

Table show alphabet serial number –
The logic is shown below –
Hence, “IP” is the missing term that completes the series.

Q91. Answer: (b) 19^(th) March

The logic followed here is,
P's first appointment to the job is after 17^(th) but before 20^(th) March.
Two date for between 17^(th) but before 20^(th) March → 18^(th) march and 19^(th) march.
And,
B remembers that P's first appointment to the job is after 18^(th) but before 22^(nd) March.
Three date between 18^(th) to 22^(nd) March → 19^(th) march, 20^(th) march and 21 march.
There are common date is 19^(th) March.
So, 19^(th) march is most likely to be P's first appointment to the job.
Hence, correct answer is 19^(th) march.

Q92. Answer: (d) 3

Decoding the information,

Sing	**÷**	**•**	**•**	**×**
Means	•	•	×	÷

Given:
16 ÷ 4 × 2 + 5 – 3
After replacing the signs from left to right and using the BODMAS rule,
16 + 4 ÷ 2 - 5 × 3
= 16 + 2 – 5 × 3
= 16 + 2 - 15
= 18 - 15
= 3
Hence, “3” is the correct answer.

Q93. Answer: (d) 5

Given:
Numbers between 50 to 100
Calculation:
Numbers are = 55, 65, 75, 85, 95
So, total numbers are = 5
Therefore Answer is 5

Q94. Answer: (b) 25 m

Drawing the diagram according to the given information,
So, the distance between the starting and ending point = 40 - 25 +10 = 25 m.
Hence, 25 m is the correct answer.

Q95. Answer: (c) 117

BODMAS rule:
Decoding the information,

Symbol	**Meaning**

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G	•
H	×
J	-
K	÷

Given:
125 J 110 K 5 G 7 H 2
After replacing the signs from left to right and using the BODMAS rule,
125 - 110 ÷ 5 + 7 × 2
= 125 – 22 + 7 × 2
= 125 – 22 + 14
= 139 - 22
= 117
Hence, “117” is the correct answer.

Q96. Answer: (a) 26

The pattern followed here is -
Hence, “26” is the missing term.

Q97. Answer: (c) 24

The pattern followed here is,
Sum of all alphabet place value ÷ 2 = Number.
Now follow the steps:
INCH : 17
Step 1 → INCH = I(9) + N(14) + C(3) + H(8) = 34.
Step 2 → 34 ÷ 2 = 17.
Similarly,
YARD : ?
Step 1 → YARD = Y(25) + A(1) + R(18) + D(4) = 48.
Step 2 → 48 ÷ 2 = 24.
Hence, "24" is correct answer.

Q98. Answer: (c) 4

According to the given information,
‘Are’ is coded as 4.
Hence, ‘4’ is the correct answer.

Q99. Answer: (a) BLUE

The pattern followed here is:
Given;
BLACK is called GREEN.
GREEN is called YELLOW.
YELLOW is called BLUE.
BLUE is called RED.
The colour of Gold is Yellow, and YELLOW is called BLUE.
Hence, “BLUE” is the right answer.

Q100. Answer: (c) Mile

The correct answer is Mile.
• Mile is the same as foot, inch, and yard.
Key Points
• Final thoughts about measuring length:
• 1 foot = 12 inches.

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• 1 yard = 3 feet = 36 inches.

• 1 mile = 1,760 yards = 5,280 feet = 63,360 inches

Additional Information

Measurement	Details
Pound	• One pound is 0.45359237 kg. - The pound or pound-mass is a unit of mass used in British imperial and the United States customary systems of measurement. - The pound symbol is lb.
Quart	• Quart, a unit of capacity in the British Imperial and U.S. Customary systems of measurement. - The quart was originally a medieval English unit for dry and liquid measures that varied between 0.95 and 1.16 liters.
Gram	• A gram is a unit of mass. - The gram of force is equal to the weight of a gram of mass under standard gravity.

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