RRB NTPC CBT-I Official Paper (Held On: 21 Jan 2021 Shift 2) (Previous Year Paper)

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

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Q1. Which is the first and the oldest intergovernmental organization?

(a) Council of Europe
(b) United Nations
(c) Central Commission for Navigation on the Rhine
(d) International Labour Organization

Q2. How many one-thirds are there in 72?

(a) 216
(b) 24
(c) 144
(d) 288

Q3. Which river is known as the Yellow River?

(a) Amur
(b) Mekong
(c) Huang Ho
(d) Yangtze

Q4. If ΔABC is right angled at C, CD ⊥ AB, angle A = 55° then, angle ACD = ?

(a) 35°
(b) 55°
(c) 45°
(d) 60°

Q5. Who was the head of in-house committee that inquired into a sexual harassment case against CJI in 2019?

(a) Justice Indira Banerjee
(b) Justice S.A. Bobde
(c) Justice D.Y. Chandrachud
(d) Justice Indu Malhotra

Q6. The greatest prime number less than 200 is:

(a) 197
(b) 199
(c) 191
(d) 193

Q7. Select the number that can replace the question mark (?) in the following series.

2, 12, 36, 80, ?

(a) 140
(b) 150
(c) 144
(d) 120

Q8. Which of the following elements is a liquid at room temperature?

(a) Mercury
(b) Titanium
(c) Sodium
(d) Chromium

Q9. Which of the following is an ester?

(a) CH3COOC2H5
(b) CH3COOH
(c) CH3CHO
(d) CH3COCH3

Q10. Hurkiya Baul is a folk dance form associated with which Indian state?

(a) Uttarakhand
(b) Haryana
(c) Maharashtra
(d) Goa

Q11. Which mosque, believed to be the first one to be built in Delhi, is situated near Qutub Minar?

(a) Shahi Atala Masjid
(b) Adina Mosque
(c) Nakhoda Masjid
(d) Quwwat-ul-Islam Mosque

Q12. A certain distance (d) is covered by a cyclist at a certain speed. If a jogger covers half the distance in double the time (t), then the ratio of speed of the cyclist to the speed of the jogger is:

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

Q13. Mahesh and Hareesh have invested Rs. 20,000 and Rs. 30,000, respectively, in a business. If after 3 months, Hareesh withdrew Rs. 5,000 from his investment, then the ratio in which they divide the profits will be:

(a) 16 : 20
(b) 16 : 22
(c) 16 : 23
(d) 16 : 21

Q14. If Rama can do a task in 20 days and Krishna can do it in 30 days, then the time taken by both to complete the task working together is:

(a) 15 days
(b) 8 days
(c) 12 days
(d) 10 days

Q15. If P = a × m × r and Q = b × m × 2 × r, where a, b, m, r are odd primes, then the HCF of P and Q is:

(a) m r
(b) 2 r
(c) b r
(d) a r

Q16. Select the number from the given options that can replace the question mark (?) in the following series.

100, 64, 36, ?

(a) 81
(b) 25

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(c) 4
(d) 16

Q17. Which satellite was launched by ISRO in 2018 to boost armed forces' communication capabilities?
(a) Cartosat-2
(b) EMISAT
(c) GSAT-7A
(d) GSAT-29

Q18. Find the area of a triangle whose vertices are (a, b + c), (a, b - c) and (-a, c).
(a) 2b(a + c)
(b) 2ac
(c) 2bc
(d) c(a - b)

Q19. Select the option which is different from the rest.
(a) 729
(b) 343
(c) 256
(d) 512

Q20. Indian economy is a/an:
(a) traditional economy
(b) command economy
(c) market economy
(d) mixed economy

Q21. Which UN body directly deals with reproductive health of population?
(a) WIPO
(b) IFAD
(c) UNDP
(d) UNFPA

Q22. The mixed surd form of √1350 is:
(a) 14√6
(b) 15√6
(c) 13√6
(d) 12√6

Q23. Who started publication of Al Hilal, a newspaper for propagating nationalism?
(a) Maulana Abul Kalam Azad
(b) Mahatma Gandhi
(c) M.A. Ansari
(d) Khan Abdul Ghaffar Khan

Q24. If SUDDEN is coded as RVCEDO, then what will GROWTH be coded as?
(a) FSNXSI
(b) HQPXUG
(c) FSNXUG
(d) FSNXSG

Q25. Balaji invested 1/7 of his total investment at 4%, 1/2 at 5% and the rest at 6% for 1 year. He received a total interest of Rs. 730. What was the total sum invested?
(a) Rs. 7,000
(b) Rs. 38,000

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(c) Rs. 24,000
(d) Rs. 14,000

Q26. Which disease is caused by the deficiency of protein in our body?
(a) Scurvy
(b) Rickets
(c) Beri Beri
(d) Kwashiorkor

Q27. A dealer buys 200 quintals of wheat at Rs. 1,200 per quintal. He spends Rs. 10,000 on transportation and storage. If he sells the wheat at Rs. 13 per kg, then the profit percentage of the dealer is:
(a) 2%
(b) 3%
(c) 4%
(d) 1%

Q28. Bhagat Singh and Batukeshwar Dutt threw smoke bombs at Delhi Central Legislative Assembly. What were they protesting against?
(a) Simon Commission
(b) Indian Council Act
(c) Government of India Act
(d) Trade Disputes Bill and Public Safety Bill

Q29. The factorisation of $x^2 + 11xy + 24y^2$ is:
(a) (x - 8y) (x + 3y)
(b) (x + 8y) (x - 3y)
(c) (x + 8y) (x + 3y)
(d) (x - 8y) (x - 3y)

Q30. 8 students Ani, Bini, Cina, Dia, Eva, Fin, Gim and Haz are sitting in a row facing towards North (not necessarily in the same order). Only four students are sitting between Cina and Bini and one among Cina and Bini is sitting at the end of row. Only three students are sitting between Bini and Ani. Only two students are sitting between Gim and Haz. Dia is sitting to the immediate right of Ani and Ani is fifth to the left of Haz.

Who among the given options could be seated to the immediate left of Bini?
(a) Ani
(b) Haz
(c) Gim
(d) Eva

Q31. Assuming P & Q were Arithmetic Operators, if 24 P 12 Q 13 = 15 and 16 Q 56 P 14 = 20, then 87 P 29 Q 22 = ?
(a) 30
(b) 25
(c) 28
(d) 27

Q32. If a tangent to a circle from a point P meets the circle at A with AP = 15 cm. Given that the radius of the circle is 8 cm, find the distance of P from the centre of the circle.
(a) 20 cm
(b) 12 cm
(c) 17 cm
(d) 15 cm

Q33. Who established Sera-i-Adl, an exclusive market in Delhi for manufactured and exported goods to be sold at prices fixed by administration?
(a) Muhammad bin Tughlaq
(b) Shershah Suri

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(c) Alauddin Khalji
(d) Qutbuddin Mubarak Shah

Q34. Which of the following Indian states was known as North East Frontier Agency till 1972?
(a) Mizoram
(b) Arunachal Pradesh
(c) Nagaland
(d) Meghalaya

Q35. Five friends Sohan, Mohan, Rohan, Ali and Salim like 5 different games i.e. Cricket, Kho-Kho, badminton, football and hockey, but not in the same order. Sohan likes football but does not like playing cricket. Ali and Rohan are best friends. Ali likes badminton and cricket is liked by Mohan. Who likes hockey?
(a) Salim Only
(b) Either Rohan or Salim
(c) Neither Rohan nor Salim
(d) Rohan Only

Q36. Which of the following is NOT a function of RBI?
(a) It promotes the development of securities market.
(b) It manages the banking needs of the government.
(c) It is the custodian of cash reserves of commercial banks.
(d) It issues currency notes.

Q37. What is the main feature of mixed farming?
(a) Cultivation of both cash and food crops
(b) Cultivation of two or more crops in the same field simultaneously
(c) Rearing of animals and cultivation of crops together
(d) Cultivation of different crops in the same field in succession

Q38. If the simple interest on a certain sum of money for 3 years at 8% p.a. is half the compound interest on Rs. 4,000 for 2 years at 10% p.a., then the sum placed on simple interest is:
(a) Rs. 1,550
(b) Rs. 1,750
(c) Rs. 1,650
(d) Rs. 2,000

Q39. Ram pointed to Sohan and said, "He is the only son of my mother's father." How is Sohan related to Ram's mother?
(a) Husband
(b) Nephew
(c) Maternal uncle
(d) Brother

Q40. Which is the longest bone in the human body?
(a) Femur
(b) Patella
(c) Sternum
(d) Tibia

Q41. Select the option that can replace the question marks (?) in the following series.
2, 0, 10, 2, 30, 6, 68, 12, ?, ?
(a) 130; 30
(b) 120; 20
(c) 98; 24
(d) 130; 20

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Q42. What was the real name of the Hindi literary writer Munshi Premchand?

(a) Sachchidanand
(b) Atmaram
(c) Dhanpat Rai
(d) Nawab Rai

Q43. LCM of two numbers is 78. Their GCD is 13. If one of the numbers is 26, then the other number is:

(a) 13
(b) 52
(c) 39
(d) 46

Q44. In the Battle of Plassey, who led the troops of the British East India Company?

(a) James Alexander
(b) Neville Chamberlain
(c) Robert Clive
(d) Allan Cunningham

Q45. The descending order of 2/5, 1/3 and 3/7 is:

(a) 2/5, 1/3, 3/7
(b) 1/3, 2/5, 3/7
(c) 3/7, 1/3, 2/5
(d) 3/7, 2/5, 1/3

Q46. Who won the Men's Individual Title in the Asian Squash Championship in 2019?

(a) Saurav Ghosal
(b) Harinder Pal Sandhu
(c) Mahesh Mangaonkar
(d) Ramit Tandon

Q47. Who among the following has initially drafted the 'Quit India' resolution of the Indian National congress in 1942?

(a) Mahatma Gandhi
(b) B R Ambedkar
(c) Jayaprakash Narayan
(d) Subhash Chandra Bose

Q48. On simplification, (2^(10) - 3^(10))/(5^(10) - 6^(10)) is:

(a) a negative rational number
(b) neither a positive nor a negative rational number
(c) Cannot be defined
(d) a positive rational number

Q49. How many parts are there in the Constitution of India as of October 2020?

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

Q50. Read the given statement and conclusions carefully and decide which of the conclusions logically follow(s) from the statement.

Statement:

India based industrialist, Mukesh Ambani is the Asia's richest person this year.

Conclusions:

I. He is also the richest person of India.

II. He is not the richest person of India.

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(a) Either conclusion I or II follows
(b) Only conclusion II follows
(c) Neither conclusion I nor II follows
(d) Only conclusion I follows

Q51. What will be the value if you multiply 2/11 by the reciprocal of - 5/14 ?
(a) • 10/153
(b) 28/55
(c) • 28/55
(d) 2/3

Q52. Find the third vertex of an equilateral triangle whose two vertices are (2, 4) and (2,6).
(a) (√3, 5)
(b) (2 + √3, 5)
(c) (2√3, 5)
(d) (2, 5)

Q53. What is the full form of DDL in terms of computer jargon?
(a) Direct Data Language
(b) Data Definition Language
(c) Digital Data Logic
(d) Dynamic Data Language

Q54. If in a circle of radius r = 36 cm a sector of arc length l, satisfies 4l = 3r, then the area of the sector is:
(a) 461 cm^2
(b) 486 cm^2
(c) 476 cm^2
(d) 496 cm^2

Q55. If 78/9 is converted into an improper fraction and its numerator is 70 + x, then the value of x is:
(a) 2
(b) 0
(c) 1
(d) 3

Q56. A, B, C, and D are four persons in a group who have to choose one number from 1 to 10. No two persons can take the same number. The Cube of the number chosen by A and the Square of the number chosen by C are both within the permitted number range. B has chosen a number that is just one greater than the number chosen by C and D has chosen the smallest number amongst the four persons. What number has D chosen?
(a) 8
(b) 4
(c) 1
(d) 9

Q57. WHO has partnered with Food and Beverage Alliance to achieve its target of eliminating which of the following from industrially produced global food supply by 2023?
(a) Gluten
(b) Saturated fat
(c) Trans fat
(d) Carotenoids

Q58. The Mid-Day Meal scheme comes under the purview of which ministry?
(a) Ministry of Education
(b) Ministry of Women and Child Development
(c) Ministry of Social Justice and Empowerment

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(d) Ministry of Health and Family Welfare

Q59. Which amendment in the Constitution of India deals with the abolition of Right to Property as a fundamental right?

(a) 40^(th)
(b) 44th
(c) 42nd
(d) 37th

Q60. 8 students P, Q, R, S, T, X, Y and Z are sitting in a row facing towards south (not necessarily in the same order). Only four students are sitting between P and T. Z is fourth to the left of S. R is neighbour of Q. P is sitting to the right of T and T is sitting second to the left of Z. T is not the neighbour of X.

If T is sitting at one of the ends of row, then who will sit at seventh place from the other end?

(a) Y
(b) P
(c) R
(d) Z

Q61. According to the time by Nihaal's watch its half past one and the hour hand is pointing towards the north-east. Assuming that there is no change in Nihaal's position, in which direction would the minute hand point after 30 minutes?

(a) South
(b) East
(c) North
(d) West

Q62. What is the SI unit of resistance?

(a) Coulomb
(b) Seimens
(c) Ohm
(d) Mho

Q63. If $(\sin\theta + \cos\theta)/(\sin\theta - \cos\theta) = (\sqrt{3} - 1)/(\sqrt{3} + 1)$, then the angle θ is

(a) 45°
(b) 90°
(c) 240°
(d) 300°

Q64. The expression $(\tan A)/(1 - \cot A) + (\cot A)/(1 - \tan A)$ can be written as:

(a) 1 + sec A cosec A
(b) 1 + sin A cos A
(c) tan A + cot A
(d) sec A + cosec A

Q65. Which is the only operating nuclear reactor in the world using U 233 fuel?

(a) Dhruva
(b) Hanul
(c) Kamini
(d) Apsara

Q66. From the given options, select the option that can replace the question mark in the series.

A, D, I, ?, Y

(a) R
(b) N
(c) P
(d) Q

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Q67. Find:

√(1+3+5)(1+3+5+7)(1+3+5+7+9)

(a) 300
(b) 600
(c) 30
(d) 60

Q68. What are the three constituents of CPU in a computer?

(a) Monitor, memory, control unit
(b) Monitor, ALU, memory
(c) Control unit, ALU, memory
(d) Control unit, ALU, keyboard

Q69. The first mechanical computer designed by Charles Babbage was called:

(a) Abacus
(b) Analytical Engine
(c) Calculator
(d) Processor

Q70. Blue Revolution in India is related to:

(a) agriculture
(b) silk production
(c) fisheries
(d) milk production

Q71. The rate of compound interest p.a. at which a sum of Rs. 1,200 will become Rs. 1,348.32 in 2 years is:

(a) 5%
(b) 8%
(c) 7%
(d) 6%

Q72. A microphone converts:

(a) mechanical energy into sound energy
(b) electrical energy into sound energy
(c) sound energy into mechanical energy
(d) sound energy into electrical energy

Q73. When a bicycle manufacturer reduced the selling price of a bicycle by 50%, the number of bicycles sold radically increased by 700%. Initially, the manufacturer was getting a profit of 140%. What is the new profit percentage?

(a) 40%
(b) 20%
(c) 30%
(d) 10%

Q74. The ratio of the number of boys to that of the girls in a school is 3 : 2. If 20% of the boys and 25% of the girls are scholarship holders, find the percentage of those who are NOT scholarship holders.

(a) 68%
(b) 86%
(c) 87%
(d) 78%

Q75. From the given options, select the term that can replace the question mark (?) in the following series.

A1, B27, C125, ?

(a) D216
(b) D516

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(c) D343
(d) C343

Q76. If the side of a cube is 9√3 cm, then its diagonal will be:
(a) 28 cm
(b) 29 cm
(c) 27 cm
(d) 26 cm

Q77. Who among the following is NOT appointed by the President of India?
(a) State's Chief Minister
(b) Judges of High Court
(c) State's Governor
(d) Chief Justice of India

Q78. Which of the following is the semi-high speed train, also known as 'Train 18'?
(a) Vande Bharat Express
(b) Vande Mataram Express
(c) Rajdhani Express
(d) Mahamana Express

Q79. 200 g as a fraction of 1 kg is:
(a) 1/10
(b) 3/10
(c) 1/5
(d) 2/5

Q80. The 'ozone hole' is formed every year in Spring time over:
(a) South America
(b) China
(c) Antarctica
(d) Japan

Q81. Which of these organisations provides an objective, scientific view of climate change as also its natural, political and economic impacts?
(a) International Union for Conservation of Nature
(b) Intergovernmental Panel on Climate Change
(c) United Nations Environment Program
(d) The Climate Project

Q82. Who won the 65^(th) Filmfare Awards, 2020 for Best Actor in a leading role (male)?
(a) Ayushmann Khurrana
(b) Gajraj Rao
(c) Ranveer Singh
(d) Ishaan Khattar

Q83. A works twice as fast as B. If both of them together can finish a job in 12 days, then how many days will B take to finish the job alone?
(a) 36
(b) 12
(c) 24
(d) 48

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Q84. The interest rate offered on saving bank account in India is decided by:

(a) RBI
(b) Finance Ministry
(c) Banks' Association
(d) The respective bank

Q85. What is the name of the robot developed by DRDO that is used for locating, handling and destroying hazardous objects?

(a) Chaturobot
(b) Daksh
(c) PackBot
(d) Rustom

Q86. The following table represents the expenditure of a family on different items.

Items	Food	Clothing	Rent	Education	Miscellaneous
Expenditure	4000	2500	1500	400	1600

If the Expenditure on Food doubles and the expenditure on all other heads reduces by half, what would be the approximate increase in Food Expenses as a percentage of the total expenditure?

(a) 80%
(b) 100%
(c) 33%
(d) 40%

Q87. The marks obtained in a test by students of a class are given below:

23, 2, 15, 38, 21, 19, 24, 26

Scores of how many students are within a +2/-2 range of the average score of the class?

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

Q88. This table shows products manufactured by a company out of which some products are defective. Which product has the lowest percentage of defective units?

Product Name	Total Units manufactured	Defective Units
S	720	408
R	740	405
I	800	404
F	760	402
G	750	402

(a) Product G
(b) Product F
(c) Product S
(d) Product I

Q89. This table shows the number of males and females in some groups. Which of the groups listed has the highest ratio of females to males?

Group Name	No. Of Male	No. of Female
C	950	414

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B	650	414
M	700	410
S	720	408
R	740	405

(a) Group R
(b) Group C
(c) Group S
(d) Group B

Q90. Select the letter that can replace the question mark (?) in the following series.

a, z, b, y, c, ?

(a) e
(b) c
(c) x
(d) d

Q91. Which of the given options is related to the fourth term in the same way as the first term is related to the second term.

Ink : Pen :: ? : Car

(a) Wheels
(b) Gear
(c) Petrol
(d) Body

Q92. Six persons- A, B, C, D, E and F are sitting on a round table facing each other. Two persons are sitting between B and E. A is sitting second to the right of B. D is sitting second to the left of E. Who is sitting between D and E?

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

Q93. In a certain language, 'Delhi is capital' is written as '753 852 159', 'Ram lives in Delhi' is written as, '153 253 159 157' and 'Ram is teacher' is written as '753 157 954'. What is capital coded as?

(a) 753
(b) 852
(c) 253
(d) 159

Q94. In a certain code language, 'JUNIOR' is written as '6', 'LABOURER' is written as '8'. What is the code for 'JOSEPHINE' in that code language?

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

Q95. Read the given statement and assumptions carefully and decide which of the assumptions is/are implied from the statement.

Statement:

Pollution is one of the major causes leading to weather imbalances throughout the world. It must be checked by combined efforts of all.

Assumptions:

I. Weather imbalances affects everyone throughout the world.

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II. Water pollution is causing many diseases.

Chose the correct option.

(a) None assumption is implied
(b) Only assumption I is implied
(c) Only assumption II is implied
(d) Both assumptions are implied

Q96. If LIGHT is coded as KHFGS, then what will SHORT be coded as?

(a) RGNQS
(b) TINQS
(c) TIPSU
(d) RGNSU

Q97. If STYLE is 81, ACE is 9 and BOLD is 33, then what will be the difference between SMART and GOLD if these are coded in the same manner?

(a) 35
(b) 33
(c) 72
(d) 39

Q98. In a workshop, there are five workers - A, V, N, J, and S, who each go to work only once in a week. The workshop operates for 5 days a week. N goes on Monday. A and V go on consecutive days. A goes the next day to that of N. There is a gap of two days between the days on which A and J go to work. On which of the given days S would be going to the workshop?

(a) Wednesday
(b) Friday
(c) Thursday
(d) Monday

Q99. If def is coded as 222120 and qtv is coded as 964, then which of the given options follows the same code?

(a) qpr = 24587
(b) xyz = 2156
(c) hik = 181715
(d) abc = 222324

Q100. If BASE = 27, then what is COLLECTION?

(a) 107
(b) 111
(c) 110
(d) 108

ANSWER KEY

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

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91	c	92	b	93	b	94	a	95	b	96	a	97	b	98	c	99	c	100	d

SOLUTIONS

Q1. Answer: (c) Central Commission for Navigation on the Rhine

The correct answer is Central Commission for Navigation on the Rhine.

Key Points

• The Central Commission for the Navigation of the Rhine is a five-member international organisation whose aim is to promote European economy by ensuring a high degree of security for Rhine and surroundings navigation.

• It is the world's oldest international organisation still in operation, having been founded in 1815.

• Since 1920, it has been headquartered in Strasbourg, France.

• Since November 1, 2016, Bruno Georges has served as its Secretary-General.

• Germany, Belgium, France, the Netherlands, and Switzerland are the current members.

• Although the Rhine does not pass through Belgian territory, the Belgian Rhine fleet is the third after the Netherlands and Germany in terms of volume transported.

• The commission is responsible for regulating traffic on the Rhine, assisting with works on the river, and functioning as the seat of the Rhine navigation tribunal.

• Its operational budget is €2.7 million annually.

• According to Article 41 of its rules of procedure, the working languages are German, French, and Dutch.

Additional Information

• Council of Europe:

• The Council of Europe is an international organisation that was established in the aftermath of World War II to promote human rights, democracy, and the rule of law throughout Europe.

• It was founded in 1949 and now has 46 member states with a population of around 675 million people.

• It runs on a budget of around 500 million euros each year.

• The Council of Europe is a United Nations official observer.

• The Council of Europe's headquarters, as well as the Court of Human Rights, are both located in Strasbourg, France.

Its official languages are English and French.

• United Nations:

• The United Nations (UN) is an intergovernmental organisation whose mission is to ensure international peace and security, foster cordial relations between nations, promote international cooperation, and serve as a focal point for coordinating national efforts.

• It is the largest and most well-known international organisation in the world.

• The United Nations has offices in Geneva, Nairobi, Vienna, and The Hague, all of which are on international territory.

• International Labour Organization:

• The International Labour Organization (ILO) is a UN organisation tasked with promoting social and economic fairness by establishing international labour standards.

• It is the UN's first and oldest specialised agency, having been established in October 1919 under the League of Nations.

The ILO has 187 members, including 186 of the 193 UN members and the Cook Islands.

• The company's headquarters are in Geneva, Switzerland.

Q2. Answer: (a) 216

Calculation

let there are x number of one-third in 72.

(1/3) × x = 72

=>x = 72 × 3

=>x = 216

Therefore There are 216 one third.

Q3. Answer: (c) Huang Ho

The correct answer is Huang Ho.

Key Points

• The Yellow River, also known as Huang He, is China's second-longest river after the Yangtze, and the world's sixth-longest river

system, with a total length of 5,464 kilometers.

• It begins in the Bayan Har Mountains in Western China's Qinghai province and flows across nine provinces until emptying into the Bohai Sea near Dongying in Shandong province.

• It covers around 795,000 square kilometers in a total drainage area of 307,000 sq miles.

• The Huang He Valley is where Chinese civilization began.

Additional Information

• Amur:

• The Amur River, the world's tenth longest, runs through Russia's Far East and northeastern China (Inner Manchuria).

• Mekong:

• The Mekong, often known as the Mekong River, is a transboundary river that runs through East and Southeast Asia.

• It is the twelfth longest river in the world and Asia's third-longest.

• Yangtze:

• The Yangtze, also known as Yangzi or Chang Jiang, is Asia's longest river, the world's third-longest, and the world's longest river that flows wholly within one country.

• It originates at Jari Hill in the Tanggula Mountains (Tibetan Plateau) and flows 6,300 kilometers east to the East China Sea. It is the world's seventh-largest river by discharge volume.

• Its drainage basin covers one-fifth of China's land area and houses about a third of the country's people.

Q4. Answer: (a) 35°

Shortcut Trick

In a right-angled triangle ΔABC with an altitude CD drawn to the hypotenuse AB, the angle angle ACD is always complementary to angle A.

=> angle ACD = 90° − angle A

=> angle ACD = 90° − 55°

=> angle ACD = 35°

Therefore The correct answer is 35°.

Alternate Method

Given:

ΔABC is right-angled at C (angle ACB = 90°).

CD is perpendicular to AB (CD perpendicular to AB).

angle A = 55°.

Formula Used:

In any triangle, the sum of all interior angles is 180°.

Calculations:

Consider the small triangle ΔADC.

=> In ΔADC, we have three angles: angle A, angle ADC, and angle ACD.

=> Since CD perpendicular to AB, the angle angle ADC is 90°.

=> Sum of angles in ΔADC = 180°

=> angle A + angle ADC + angle ACD = 180°

=> 55° + 90° + angle ACD = 180°

=> 145° + angle ACD = 180°

=> angle ACD = 180° − 145°

=> angle ACD = 35°

Therefore The correct answer is 35°.

Additional Information

Similarity in Right Triangles

When an altitude is drawn to the hypotenuse of a right triangle, the two smaller triangles formed are similar to the original triangle and to each other (ΔACD ~ ΔCBD ~ ΔABC).

Angle Relationships

In the configuration above, the angles are related as: angle ACD = angle B and angle BCD = angle A.

Right Triangle Complementary Angles

The two acute angles of any right-angled triangle are always complementary, meaning their sum is exactly 90°.

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Q5. Answer: (b) Justice S.A. Bobde

The correct answer is Justice S.A. Bobde.

Key Points

• The Supreme Court employee, who served as a junior court assistant, said that the then CJI Ranjan Gogoi had sexually harassed her. She requested an investigation of Justice Gogoi in a letter to 22 Supreme Court judges.

• An internal investigation committee was formed to investigate the complaints of sexual harassment. Justices SA Bobde, NV Ramana, and Indira Banerjee were the three members of the in-house committee.

• The plaintiff objected to Justice Ramana's presence because of his proximity to Justice Gogoi. Justice Ramana recused himself, and Justice Indu Malhotra was appointed in his place.

Additional Information

• Justice Indira Banerjee:

• Indira Banerjee is a Judge of the Supreme Court of India and the 8th female Judge in the history of the Supreme Court of India.

• She is the former Chief Justice of Madras High Court, the second woman to hold the position in India before being elevated as a Judge of the Supreme Court of India.

• Justice D.Y. Chandrachud:

• Dhananjaya Yeshwant Chandrachud is a judge of the Supreme Court of India.

• He is a former Chief Justice of the Allahabad High Court and a former judge of Bombay High Court.

• He is set to assume the office of Chief Justice of India in November 2022.

• Justice Indu Malhotra:

• Indu Malhotra is a retired judge and senior counsel of the Supreme Court of India.

• She was the second woman to be designated as a Senior Advocate by the Supreme Court.

• She was the first woman advocate to be elevated as a judge of the Supreme Court of India directly from the bar. She also authored the third edition of The Law and Practice of Arbitration and Conciliation (2014).

Q6. Answer: (b) 199

Concept

Prime numbers are those numbers whose factors are 1 and itself. these numbers are not divisible by any other number.

Calculation

Prime number less than 200 are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 191, 193, 197, 199.

so, greatest prime number less than 200 is 199.

Q7. Answer: (b) 150

The logic followed here is:-

Hence, "Option 2" is the correct answer.

Q8. Answer: (a) Mercury

The correct answer is Mercury.

Key Points

• At ordinary temperatures, mercury is the only common metal that is liquid.

• Mercury has a melting point of -38.9oC, and a boiling point of 356.7oC. Mercury's atomic number is 80.

• Droplets of liquid mercury are shiny and silver-white with high surface tension, appearing rounded when on flat surfaces.

• Mercury is also known as quicksilver. It's a silvery-white, heavy liquid metal.

• When compared to other metals, it is a poor heat conductor, yet it is a good conductor of electricity. Many metals, including gold, silver, and tin, easily alloy with it.

• It's utilized in barometers and manometers because of its high density. It's commonly found in thermometers.

• Its ability to amalgamate with gold is utilized to extract gold from its ores.

• Mercury metal is used as a liquid electrode in the electrolysis of brine to produce chlorine and sodium hydroxide.

• Mercury is still used in some electrical gear, such as switches and rectifiers, which need to be reliable, and for industrial catalysis.

Additional Information

• Titanium:

• Ti is a chemical element with the atomic number 22 and mass 47.90.

• Titanium is a light-colored transition metal with a white-silvery metallic appearance. It's tough, glossy, and corrosion-proof.

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• Titanium is insoluble in water, although it dissolves in concentrated acids.

• When exposed to high temperatures in the air, this metal generates a passive yet protective oxide coating (leading to corrosion resistance), but it resists tarnishing at normal temperatures.

• When heated to obtain the dioxide, TiO2, and when mixed with halogens, this element burns in the air.

• Sodium:

• The chemical element sodium (Na) belongs to the alkali metal group (Group 1) of the periodic table. Sodium is a silvery-white soft metal. Sodium is the most common alkali metal and the world's sixth most plentiful element, accounting for 2.8% of the planet's crust.

• Chromium:

• Chromium is a chemical element with the symbol Cr and atomic number 24.

• It is the first element in group 6. It is a steely-grey, lustrous, hard, and brittle transition metal.

• Chromium metal is valued for its high corrosion resistance and hardness.

Q9. Answer: (a) CH3COOC2H5

The correct answer is CH3COOC2H5.

Key Points

• An ester is an organic molecule in which the carboxyl group's hydrogen is replaced with a hydrocarbon group.

• Esters are made up of carboxylic acids and alcohol. In an ester, the hydrogen is replaced by a hydrocarbon, whereas carboxylic acid possesses the -COOH group.

• An ester's chemical formula is RCO2R′, where R represents the carboxylic acid's hydrocarbon components and R′ represents the alcohol.

• Ethyl acetate (ethyl ethanoate) CH3COOC2H5, is an ester. The hydrogen on the carboxyl group of acetic acid is replaced with an ethyl group.

• Ethyl propanoate, propyl methanoate, propyl ethanoate, and methyl butanoate are examples of esters. Glycerides are glycerol fatty acid esters.

• Because they can act as hydrogen-bond acceptors to generate hydrogen bonds, esters are moderately soluble in water.

• They cannot, however, act as hydrogen-bond donors and so can not self-associate.

• Esters are less polar than alcohols, more polar than ethers, and more volatile than carboxylic acids of comparable size.

• Esters usually have a fruity scent. Because of their volatility, they can be differentiated from one another using gas chromatography.

Additional Information

• CH3COOH:

• Acetic acid is an organic compound with the chemical formula CH3COOH that is acidic and colourless.

• Apart from water and other trace ingredients, vinegar contains at least 4% acetic acid by volume.

• The second most basic carboxylic acid is acetic acid (after formic acid).

• It's a significant chemical reagent and industrial chemical that's used to make cellulose acetate for photographic film, polyvinyl acetate for wood glue, and synthetic fibres and fabrics, among other things.

• Descaling treatments made from diluted acetic acid are commonly used in homes.

• Acetic acid is a food additive with the code E260 that is used as an acidity regulator and a condiment in the food industry.

• CH3CHO:

• The organic chemical compound acetaldehyde (IUPAC systematic name ethanal) has the formula CH3CHO and is commonly abbreviated by scientists as MeCHO (Me = methyl).

• It's a colourless gas or liquid that boils at about room temperature.

• Acetaldehyde is produced by plants and can be found in coffee, bread, and ripe fruit.

• Acetaldehyde is "one of the most often discovered air pollutants with one-in-a-million cancer risk.

• CH3COCH3:

• The chemical molecule acetone, also known as propanone or dimethyl ketone, has the formula (CH3)2CO.

• It is the most basic and tiniest ketone. It's a colourless, extremely volatile, combustible liquid with a distinctive pungent odour.

• Acetone is miscible with water and is a significant organic solvent in business, the household, and the laboratory.

• Acetone is created and eliminated by regular metabolic processes in the human body.

• It's usually seen in the blood and urine. It is produced in greater quantities in diabetic ketoacidosis patients.

Q10. Answer: (a) Uttarakhand

The correct answer is Uttarakhand.

Key Points

• The Hurkiya Baul dance is done in the fields while paddy and maize are being grown.

• After executing the preceding ceremony on a set day, the dance is done in several fields to various tunes. The dance is named from the Hurka, which is the drum that provides musical accompaniment to the dance, and Baul, which is the song.

• The only musical instrument used in the dance is the hurka.

• The singer relates the story of conflicts and heroic acts slowly and interestingly in the Hurka Baul dance performance. The actors usually arrive from two directions and execute the story in a sequence of snappy motions and appealing dancing styles.

• Other important dance forms of Uttarakhand are Pandav Nritya, Bhotia Dance, Cholia Dance, Jhora Dance, and Mukhota Dance.

Additional Information

State	Dance form
Haryana	Jhumar, Phag, Daph, Dhamal, Loor, Gugga, Khor, Gagor.
Maharashtra	Dhangari Gaja, Folk Dances, Koli Dance, Lavani Dance, Povadas Dance,Tamasha.
Goa	Dekhni, Dashavatara, Fugdi (Foogdi), Dhalo, Dhangar dance, Goff, Musalam Khel, Kunbi

Q11. Answer: (d) Quwwat-ul-Islam Mosque

The correct answer is Quwwat-ul-Islam Mosque.

Key Points

• Qutub-ud-din Aibak, the founder of the Mamluk dynasty, sponsored Quwwat-ul-Islam.

• Quwwat-ul-Islam is most famous for its victory tower, which commemorates the Muslim conquest of India.

• It's made of red sandstone, grey quartz, and white marble, although it's likely inspired by the nearby iron "Pillar of the Law."

• When Qutub built the mosque, he built around it. Despite being built of iron, it has remained rust-free for nearly 1,500 years, demonstrating the Mauryan's superior metallurgical abilities.

Additional Information

• Shahi Atala Masjid:

• In Jaunpur, Uttar Pradesh, India, the Atala Masjid or Atala Mosque is a 14th-century mosque.

• It is 300 meter away from Shahi Qila, Jaunpur.

• It is 2.2 kilometres north of Jaunpur, 7.3 kilometres northwest of Zafarbd, 16.8 kilometres north of Mariahu, and 26.3 kilometres west of Kirakat.

• Ibrahim Shah Sharqi constructed the Atala Masjid in 1408 A.D. by destroying a Hindu temple, which became the model for the construction of Jaunpur's subsequent mosques.

• Sharqi Style is the architectural style of the Atala Masjid. The inner walls and pillars of this masjid preserve the old Hindu temple construction, despite the outside changes.

• Adina Mosque:

• The Adina Mosque is a former mosque in West Bengal's Malda District.

• It was the largest such construction on the Indian subcontinent, and it was built as a royal mosque by Sikandar Shah, who is also buried inside, during the Bengal Sultanate.

• Pandua, a former royal capital, houses the mosque.

• The large architecture is linked to the Umayyad Mosque's hypostyle.

• In 1373, the Adina Mosque was built. Materials from pre-Islamic Hindu and Buddhist temples were employed in its construction.

• Adina Mosque is an ASI classified monument, according to West Bengal's List of Monuments of National Importance.

• Nakhoda Masjid:

• The Nakhoda Musjid is Kolkata's main mosque, located in the Chitpur neighbourhood of the Burrabazar commercial sector in central Kolkata, at the corner of Zakaria Street and Rabindra Sarani.

• Kutchi Memon Jamat, a small Sunni Muslim community from Kutch, constructed the mosque in the style of Mughal Emperor Akbar's mausoleum in Sikandra, Agra.

Q12. Answer: (b) 4 : 1

Given:

Distance covered by cyclist = d

Time taken by cyclist = t
Distance covered by jogger = d/2
Time taken by jogger = 2t
Formula:
Speed = Distance / Time
Calculation:
Cyclist speed = d / t
Jogger speed = (d/2) / (2t) = d / (4t)
Ratio of cyclist speed to jogger speed:
=> (d / t) / (d / (4t)) = (d/t) × (4t/d) = 4/1
Ratio = 4:1

Q13. Answer: (d) 16 : 21

Given
Amount invested by Mahesh = Rs. 20,000
Amount invested by Hareesh = Rs. 30,000
Formula used
Ratio of profit = (Amount invested by person A × period of investment) : (amount invested by person B × period of investment)
Calculation
Ratio of profit = (20,000 × 12) : (30,000 × 3 + 25,000 ×9)
=>2,40,000 : (90,000 + 2,25,000)
=>2,40,000 : 3,15,000
=>240 : 315
=>16 : 21
Therefore The ratio of profit is 16 : 21.

Q14. Answer: (c) 12 days

Given
Rama completes a work in 20 days
Krishna completes a work in 30 days
Concept
Find the total work, them efficiency of Rama and Krishna individually.
Work = Efficiency × Time
Calculation
Total units of work(L.C.M OF 20 and 30) = 60 units
Work done by Rama in one day = 60/20
=>3 units
Work done by Krishna in one day = 60/30
=>2 units
work done by Rama and Krishna in one day = 3 units + 2 units
=>5 units
Work done by Rama and Krishna = 60/5
=>12 days.
Therefore Time taken by Rama and Krishna to complete a work together is 12 days.

Q15. Answer: (a) m r

Given
P = a × m × r
Q = b × m × 2 × r
Calculation
HCF of P and Q = m r
as m and r common to P and Q.
a,b,m are r are odd primes numbers such that there is nothing common between them except 1.so, HCF is m r only.

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Therefore the HCF of P and Q is m r.

Q16. Answer: (d) 16

The logic followed here is:-

Hence, "16" is the correct answer.

Q17. Answer: (c) GSAT-7A

The correct answer is GSAT-7A.

Key Points

• GSAT-7A, an ISRO military communication satellite, was launched from Sriharikota, Andhra Pradesh.

• GSAT-7A is India's 35th communication satellite, weighing 2,250 kilogrammes.

• It is the latest geosynchronous communications satellite in the GSAT series.

• The Indian Air Force (IAF) operates the GSAT-7A satellite, which delivers Ku-band communications across the country.

• Along with the IAF's upcoming communication satellite GSAT-7C, it intends to improve global operations and network-centric combat capabilities.

• For orbit-raising and orbit height or position modifications, it uses a 3.3kW chemical propulsion system.

• The satellite has an eight-year operational mission life.

• GSAT-7A also helps the Indian Navy reduce its dependency on ground control stations for military UAV control.

Additional Information

• Cartosat-2:

• Cartosat-2 is a Sun-synchronous Earth observation spacecraft and the second in the Cartosat family of satellites. The Indian Space Research Organisation built, launched, and manages the satellite (ISRO). It will be used mostly for cartography in India, weighing roughly 680 kg at launch. On January 10, 2007, it was launched by the Polar Satellite Launch Vehicle PSLV-C7 launch vehicle.

• EMISAT:

• It is an Indian reconnaissance satellite that was launched on April 1, 2019, as part of the Defence Research and Development Organisation's (DRDO) project Kautilya, which is a space-based electronic signal intelligence or ELINT package. The spacecraft assists the Indian Armed Forces in boosting situational awareness by providing information and the position of enemy radars.

• GSAT-29:

• The Indian Space Research Organisation created GSAT-29, a high-throughput communication satellite (ISRO). The mission's goal is to provide high-speed bandwidth to rural Village Resource Centres (VRCs). Under the Digital India programme, the two Ku and Ka operational payloads will deliver communication services to Jammu and Kashmir and Northeast India.

Q18. Answer: (b) 2ac

Shortcut Trick

The vertices (a, b + c) and (a, b − c) share the same x-coordinate, forming a vertical base.

Base length = |(b + c) − (b − c)| = |b + c − b + c| = 2c.

The height of the triangle is the horizontal distance from the third vertex (−a, c) to the line x = a.

Height = |a − (−a)| = 2a.

Area = 1/2 × Base × Height = 1/2 × 2c × 2a = 2ac.

Therefore The correct answer is 2ac.

Alternate Method

Given: Vertices of the triangle are (x1, y1) = (a, b + c), (x2, y2) = (a, b − c), and (x3, y3) = (−a, c).

Formula Used: Area = 1/2 |x1(y2 − y3) + x2(y3 − y1) + x3(y1 − y2)|

=> Area = 1/2 |a((b − c) − c) + a(c − (b + c)) + (−a)((b + c) − (b − c))|

=> Area = 1/2 |a(b − 2c) + a(c − b − c) − a(b + c − b + c)|

=> Area = 1/2 |ab − 2ac + a(−b) − a(2c)|

=> Area = 1/2 |ab − 2ac − ab − 2ac|

=> Area = 1/2 |−4ac|

=> Area = 2ac

Therefore The correct answer is 2ac.

Additional Information

Area of Triangle (Coordinate Geometry)

The area of a triangle with vertices (x1, y1), (x2, y2), and (x3, y3) is given by 1/2 |x1(y2 − y3) + x2(y3 − y1) + x3(y1 − y2)|.

Condition for Collinearity

Three points are collinear if the area of the triangle formed by them is exactly 0.

Centroid of a Triangle

The centroid G(x, y) is the point of intersection of medians, calculated as x = (x1 + x2 + x3)/3 and y = (y1 + y2 + y3)/3.

Q19. Answer: (c) 256

The logic followed here is:-

1. $729 = 9^3$

2. $343 = 7^3$

3. $256 = 16^2$

4. $512 = 8^3$

Hence, "option 3" is the correct answer.

Q20. Answer: (d) mixed economy

The correct answer is mixed economy.

Key Points

• The public and private sectors coexist in a mixed economy.

• The central planning authority and the price mechanism both decide what, how, and for whom to produce. India's economy is a mixed economy.

• In a mixed economy, major economic decisions are made by the central government authority in the public sector while the private sector is allowed to free play of market forces. While market forces ensured that individual income and growth rates were maximized, the central government ensured that societal welfare was maximized.

• A Mixed Economy's purpose is to fix the problems of both a capitalist and a socialist economy in order to develop a unique system.

• It upholds the principles of private property and resource ownership, as well as the corresponding freedom.

• It also recognizes the perils of unrestrained capitalism. As a result, it argues for government control and economic planning in order to prevent discrimination against the poorest populations.

• The 'Industrial Policy Resolution' of 1948 and the Indian Constitution's Directive Principles reflected this perspective.

Additional Information

• Traditional economy:

• A traditional economy is an economic system in which traditions, customs, and beliefs help shape the goods and services the economy produces, as well as the rule and manner of their distribution. Countries that use this type of economic system are often rural and farm-based.

• Examples of traditional economies include the Inuit people in the United States' Alaska, Canada, and the Denmark territory of Greenland.

• Command economy:

• A command economy is a key aspect of a political system in which a central governmental authority dictates the levels of production that are permissible and the prices that may be charged for goods and services. Most industries are publicly owned.

• China, North Korea, and the former Soviet Union are all examples of command economies.

• Market economy:

• A market economy is an economic system where two forces, known as supply and demand, direct the production of goods and services.

• Market economies are not controlled by a central authority (like a government) and are instead based on voluntary exchange.

Q21. Answer: (d) UNFPA

The correct answer is UNFPA.

Key Points

• The United Nations Population Fund (UNFPA), previously the United Nations Fund for Population Activities, is a UN organisation dedicated to improving reproductive and maternal health around the world.

• Its work includes creating national healthcare policies and procedures, expanding birth control access, and leading campaigns against child marriage, gender-based violence, obstetric fistula, and female genital mutilation.

• More than 144 nations in four geographic regions are supported by the UNFPA: Arab States and Europe, Asia and the Pacific, Latin America and the Caribbean, and Sub-Saharan Africa.

• It is a founding member of the UN Development Group, a group of UN agencies and programmes dedicated to achieving the Sustainable Development Goals.

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• New York City, United States of America is the headquarter.

• Natalia Kanem, is the head of UNFPA.

Additional Information

• WIPO:

• The World Intellectual Property Organization is one of the United Nations' 15 specialised agencies (UN).

• WIPO was created to promote and protect intellectual property (IP) across the world by cooperating with countries as well as international organizations.

It began operations on 26 April 1970 when the convention entered into force.

• Singaporean Daren Tang, the previous head of the Intellectual Property Office of Singapore, is the current Director-General.

• WIPO now has 193 members, comprising 190 UN member nations as well as the Cook Islands, Holy See, and Niue.

• Palestine is a permanent observer.

• The Federated States of Micronesia, Palau, and South Sudan are the only non-members among the UN's recognised countries.

• IFAD:

• The International Fund for Agricultural Development (IFAD) is an international financial institution and a United Nations specialised agency that seeks to alleviate poverty and hunger in developing countries' rural areas.

• IFAD is based in Rome, Italy, and works on over 200 programmes in nearly 100 countries.

• It supports and funds projects that enhance land and water management, expand rural infrastructure, train and educate farmers in more efficient technologies, increase climate change resilience, improve market access, and more.

IFAD has 177 member countries and collaborates with the Organization of the Petroleum Exporting Countries (OPEC) and members of the Organisation for Economic Cooperation and Development (OECD).

• UNDP:

• The United Nations Development Programme (UNDP) is a UN agency entrusted with assisting countries in overcoming poverty and achieving long-term economic and human development.

• It is the largest UN development aid agency, with operations in 170 countries and headquarters in New York City.

• The UNDP places a high priority on building local capacity for long-term self-sufficiency and development. It oversees programmes aimed at attracting investment, technical training, and technological advancement, as well as providing experts to assist in the development of legal and political institutions and the expansion of the private sector.

Q22. Answer: (b) 15√6

Given

√1350

Calculation

√1350 = √2 × 3 × 3 × 3 × 5 × 5

=>3 × 5 × √2 × 3

=>15√6

Therefore The mixed surd form of √1350 is 15√6

Q23. Answer: (a) Maulana Abul Kalam Azad

The correct answer is Maulana Abul Kalam Azad.

Key Points

• Maulana Abul Kalam Azad, an Indian Muslim independence activist, founded Al-Hilal, a weekly Urdu language newspaper.

• The periodical was noteworthy for its criticism of the British Raj in India and exhortation to Indian Muslims to join the growing independence struggle in India.

• Al-Hilal was published from 1912 to 1914, when it was force to close due to the Press Act.

• Azad created a new newspaper, the Al-Balagh, on November 12, 1915, which expanded its aggressive support for nationalist causes and communal unity.

• He was a supporter of the Khilafat movement at the time.

• Under the Defence of India Regulations Act of 1916, the government banned Al-Balagh.

• Maulana Abul Kalam Azad was a senior leader of the Indian National Congress and an Indian independence campaigner, Islamic scholar, and writer.

• Following India's independence, he became the Indian government's First Minister of Education.

• Ad Azad was a key organiser of the Dharasana Satyagraha in 1931, and he quickly rose to prominence as one of India's most powerful national leaders, promoting Hindu–Muslim unity as well as secularism and socialism.

From 1940 until 1945, he was the president of the Congress, during which time the Quit India movement was initiated.

Additional Information

• Mahatma Gandhi:

• Mohandas Karamchand Gandhi was an Indian lawyer, anti-colonial patriot, and political ethicist who used nonviolent resistance to lead India's victorious battle for independence from British control, and to later inspire civil rights and freedom movements around the world.

• The honorific "Mahatma" was first assigned to him in South Africa in 1914 and is now used all throughout the world.

• M.A. Ansari:

• During the Indian Independence Movement, Mukhtar Ahmed Ansari was an Indian nationalist and politician who served as president of the Indian National Congress and the Muslim League.

• He was a co-founder of Jamia Millia Islamia University and served as its chancellor from 1928 until 1936.

• Khan Abdul Ghaffar Khan:

• Khan Abdul Ghaffar Khan, also known as Badshah Khan, Frontier Gandhi, or Bacha Khan, and formally known as Fakhr-e-Afghan, was a Pashtun independence activist in India who fought against the British colonial power.

• He was a devoted Muslim and advocated for Hindu-Muslim unity in the Indian subcontinent. He was a political and spiritual leader recognised for his peaceful opposition and lifelong nonviolence.

• Khan was given the nickname Sarhadi Gandhi by his close colleague Amir Chand Bombwal because of his similar views and close friendship with Mahatma Gandhi.

• Khan formed the Khudai Khidmatgar, a nonviolent anti-colonial resistance movement, in 1929.

Q24. Answer: (a) FSNXSI

The logic followed here is:-

• SUDDEN is coded as RVCEDO.

Similarly,

• GROWTH = ?

Hence, "FSNXSI" is the correct answer.

Q25. Answer: (d) Rs. 14,000

let the investment is Rs.x

$(1/7) \times x \times (4/100) + (1/2) \times x \times (5/100) + \{x - [(x/7) + (x/2)] \times 6/100\} = 730$

$(4x/700) + (5x/200) + \{[x - (2x + 7x)/14] \times 6/100\} = 730$

$(8x + 35x)/1400 + \{[x - (9x/14)] \times 6/100\} = 730$

$43x/1400 + \{[(14x - 9x)/14] \times 6/100\} = 730$

$43x/1400 + [5x/14] \times 6/100 = 730$

$(43x/1400) + (30x/1400) = 730$

$(43x+ 30 x)/1400 = 730$

$73x/1400 = 730$

$x = (730 \times 1400)/73$

$x = 14000$

Therefore Total sum is Rs.14,0000

Q26. Answer: (d) Kwashiorkor

the correct answer is Kwashiorkor.

Key Points

• Kwashiorkor is a type of malnutrition that is very severe. It's especially common where newborns and children's diets are deficient in protein and other vital nutrients.

• The main symptom of kwashiorkor is an excess of fluid in the body's tissues, resulting in swelling beneath the skin (oedema). It typically starts in the legs but can spread across the body, including the face.

• Symptoms of kwashiorkor can include, loss of muscle mass, an enlarged tummy ("pot belly"), regular infections, or more serious or long-lasting infections, red or inflamed patches of skin that darken and peel or split open, dry or brittle hair that falls out easily and may lose its color, failure to grow in height, tiredness or irritability or ridged or cracked nails

• It's particularly common in poorer nations, where there's a scarcity of food, poor sanitation, and a lack of awareness about the significance of feeding babies and children a healthy diet.

• Kwashiorkor can be treated with specially prepared milk-based feeds or ready-to-use therapeutic food if caught early (RUTF).

• Peanut butter, milk powder, sugar, vegetable oil, and vitamins and minerals are common ingredients in RUTF.

• In severe cases, hospitalisation is required for more intensive therapy.

Additional Information

• Scurvy:

• Scurvy is a disease that occurs when you have a severe lack of vitamin C (ascorbic acid) in your diet.

• Scurvy causes general weakness, anemia, gum disease, and skin hemorrhages.

• Older adults who are not getting proper nutrition are most affected by scurvy.

• Rickets:

• Rickets is a condition that affects bone development in children.

• It causes bone pain, poor growth and soft, weak bones that can lead to bone deformities..

• Beri Beri:

• Beriberi is a disease caused by a vitamin B1 deficiency, also known as thiamine deficiency.

• It often occurs in developing countries among people with a diet that consists mostly of white rice or highly refined carbohydrates.

Q27. Answer: (c) 4%

Given

cost of wheat 1 quintal = Rs.1200

Transportation cost = Rs.10,000

selling price of wheat per Kg = Rs.13

Formula used

Profit = Selling price - Cost price

profit % = (profit/cost price) × 100

1 quintal = 100 Kg

Calculation

Total cost of wheat of 200 quintals = 1200 × 200 + 10,000

=>240,000 + 10,000

=>2,50,000

Cost of 1 Kg wheat = 2,50,000/(200 × 100)

=>Rs 12.50

Selling Price of 1 Kg wheat = Rs.13

Profit per Kg = Rs 13 - Rs.12.50

=>Rs. 0.50

Profit % = (0.50/12.50) × 100

=>4%

Therefore The profit % of dealer is 4.

Q28. Answer: (d) Trade Disputes Bill and Public Safety Bill

The correct answer is Trade Disputes Bill and Public Safety Bill.

Key Points

• To suppress the rising of revolutionaries such as Bhagat Singh, the British government passed the Defence of India Act 1915, which gave the police broad powers.

• Bhagat Singh submitted to the HSRA his proposal to ignite a bomb inside the Central Legislative Assembly, which it agreed to after being influenced by a French anarchist who bombed the French Chamber of Deputies.

• Initially, Batukeshwar Dutt and Sukhdev Thapar were to plant the device, while Singh would proceed to the Soviet Union. The idea was eventually revised, and Dutt was given the task of planting it with Singh.

• Singh and Dutt threw two bombs into the gathering from the Visitor's Gallery on April 8, 1929.

• The Hall was flooded with smoke from the blast, and people chanted "Inquilab Zindabad!" and tossed flyers around.

• According to the leaflet, the act was carried out in protest of the Trade Disputes and Public Safety Bill being introduced in the Central Assembly, as well as the death of Lala Lajpat Rai.

• The explosion caused minor injuries but no deaths; Singh and Dutt claimed that the deed was deliberate.

• Singh and Dutt were apprehended.

• After they were arrested, tried, and imprisoned for life, he and Singh initiated a historic hunger strike protesting against the abusive treatment of Indian political prisoners and eventually secured some rights for them.

Additional Information

• Simon Commission:

• The Simon Commission after its chairman Sir John Allsebrook Simon was sent to India in 1928 to study potential constitutional reform.

• Simon Commission, a group appointed in November 1927 by the British Conservative government under Stanley Baldwin to report on the working of the Indian constitution established by the Government of India Act of 1919.

Q29. Answer: (c) (x + 8y) (x + 3y)

Given

$x2 + 11xy + 24y^2$

Concept

Middle term splitting

Calculation

$x^2 + 8xy + 3xy + 24y^2$

$=>x(x + 8y) + 3y(x + 8y)$

$=>(x + 3y) (x + 8y)$

Therefore Factorisation of $x2 + 11xy + 24y^2$ are $(x + 3y) (x + 8y)$

Q30. Answer: (d) Eva

According to the given information:-

• Only four students are sitting between Cina and Bini and one among Cina and Bini is sitting at the end of the row.

• Only three students are sitting between Bini and Ani.

• Dia is sitting to the immediate right of Ani and Ani is fifth to the left of Haz.

• Here case - 2, case - 3, and case - 4 get eliminated.

• Only two students are sitting between Gim and Haz.

• Eva or Fin is immediate left of Bini.

• But Fin is not given in any options so Eva sits immediate left of Bini.

Hence, "option 4" is the correct answer.

Q31. Answer: (b) 25

Let:

Variable	P	Q
Operators	÷	•

Given that:-

24 P 12 Q 13 = 15

Putting the value of P and Q we get:-

• 24 ÷ 12 + 13 = 15

• Applying BODMAS rule

• 2 + 13 = 15

• 15 = 15

And,

16 Q 56 P 14 = 20

Putting the value of P and Q we get:-

• 16 + 56 ÷ 14 = 20

• Applying BODMAS rule;

• 16 + 4 = 20

• 20 = 20

Similarly,

87 P 29 Q 22 = ?

Putting the value of P and Q we get:-

• 87 ÷ 29 + 22 = ?

• Applying BODMAS rule;

• 3 + 22 = ?

• 25 = ?

Hence, "option 2" is the correct answer.

Q32. Answer: (c) 17 cm

Given

AP = 15 cm

Radius of circle,r = 8 cm

Concept

A line drawn through the centre of a circle is perpendicular to the tangent of the circle

Calculation

In triangle OAP

$(OP)^2 = (AP)^2 + (OA)^2$

$\Rightarrow (OP)^2 = 15^2 + 8^2$

$\Rightarrow (OP)^2 = 225 + 64$

$\Rightarrow (OP)^2 = 289$

$\Rightarrow OP = 17$ cm

Therefore The distance of P from the centre of the circle is 17 cm

Q33. Answer: (c) Alauddin Khalji

The correct answer is Alauddin Khalji.

Key Points

• The Sera-i Adl ("Place of Justice") was an exclusive market in Delhi for manufactured and imported goods. The goods sold at Sera-i Adl included cloth, sugar, herbs, dry fruits, butter, and lamp oil.

• Alauddin established the Sera-i Adl on an extensive piece of unused land near the Green Palace (Koshak-i Sabz), on the inner side of the Badaun Gate.

• The market remained open from morning till afternoon prayer. The Sultan ordered every specified commodity to be sold only at the Sera-i Adl at the prices fixed by his administration.

• Any violation of this regulation resulted in confiscation of the commodity, and punishment to the seller.

• Alauddin ordered all the merchants of his empire, both Hindu and Muslim, to be registered with the Ministry of Commerce.

• The merchants of Delhi were required to sign a written agreement promising to bring the imported commodities to Sera-i Adl, and to sell them at the officially fixed rates.

• Alauddin ordered that certain expensive fabrics, which were deemed unnecessary for the general public, could be bought only with a permit. These permits had to be issued personally by specific state-appointed officers.

Additional Information

• Muhammad bin Tughlaq:

• He was the Sultan of Delhi from 1325 to 1351. He was the eldest son of Ghiyas-ud-Din-Tughlaq, the founder of the Tughlaq dynasty.

• During Muhammad's reign, travellers regarded him as a "inhuman eccentric" with a strange personality, and he is alleged to have ordered the massacre of all the people of the Hindu city of Kannauj.

• When Muhammad's father died in 1325, he ascended to the Delhi throne. He was interested in medicine and spoke Persian, Arabic, Turkish, and Sanskrit, among other languages.

• Shershah Suri:

• Shershah Suri founded the Suri Empire in India, which had its capital in Sasaram, Bihar today.

• He introduced the rupee as a currency.

• In 1540, Sher Shah, an ethnic Pashtun prince, assumed control of the Mughal Empire.

• His son Islam Shah succeeded him after his untimely death in 1545.

• The Battle of Chausa was a notable military engagement between the Mughal emperor, Humayun, and the Afghan, Sher Shah Suri. It was fought on 26 June 1539 at Chausa, 10 miles southwest of Buxar in modern-day Bihar, India. Sher Shah was victorious and crowned himself Farid al-Dīn Shēr Shah.

• Qutbuddin Mubarak Shah:

• Qutb-ud-din Mubarak Shah Khilji was Ala-ud-din Khilji's son.

• He escaped Malik Kafur's clutches and rose to become Delhi's third Sultan. He was the Khilji Dynasty's third and final ruler. In 1320, one of his trusted associates, Khusro Khan, assassinated him.

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Q34. Answer: (b) Arunachal Pradesh

The correct answer is Arunachal Pradesh.

Key Points

• The North-East Frontier Agency (NEFA), formerly the North-East Frontier Tracts (NEFT), was a political division of British India and later the Republic of India until 20 January 1972, when it became the Union Territory of Arunachal Pradesh and parts of Assam.

• Shillong was the administrative capital (until 1974, when it was transferred to Itanagar).

• On February 20, 1987, Arunachal Pradesh became a state in India.

• 'Land of the dawn-lit mountains,' Arunachal Pradesh implies.

• Arunachal Pradesh is the largest of the Northeast's seven sister states.

• The state has a total of 1630 kilometres of international border with its neighbours: 1030 km with China, 160 km with Bhutan, and 440 km with Myanmar.

• The state was previously divided into 17 districts, but in 2013, four more districts were added, bringing the total to 21.

• It has a diverse climate, ranging from subtropical in the south to Alpine in the north.

• There are 26 major tribes and approximately 100 sub-tribes in the state.

• In Arunachal Pradesh, Neolithic tools dating back 11,000 years have been discovered.

• The 400-year-old Tawang Monastery in Arunachal Pradesh is India's largest and the world's second-oldest monastery.

Q35. Answer: (b) Either Rohan or Salim

Given:-

Five friends Sohan, Mohan, Rohan, Ali and Salim like 5 different games i.e. Cricket, Kho-Kho, badminton, football and hockey

1) Sohan likes football but does not like playing cricket.

Friends	Games
Sohan	Football
Mohan	
Rohan	
Ali	
Salim	

2) Ali likes badminton and cricket is liked by Mohan.

Friends	Games
Sohan	Football
Mohan	Cricket
Rohan	
Ali	Badminton
Salim	

3) Ali and Rohan are best friends.

Friends	Games
Sohan	Football
Mohan	Cricket
Rohan	Hockey / Kho-Kho
Ali	Badminton
Salim	Kho-Kho / Hockey

• So, Either Rohan or Salim likes Hockey.

Hence, "option 2" is the correct answer.

Q36. Answer: (a) It promotes the development of securities market.

The correct answer is It promotes the development of securities market.

Key Points

• The Reserve Bank of India (RBI) serves as the country's central bank. The RBI Act 1934 established the RBI on April 1, 1935.

• On January 1, 1949, the RBI was nationalized.

• Functions of RBI:

• Issue of Bank Notes: The Reserve Bank of India has sole authority to issue currency notes, with the exception of one rupee note, which is issued by the Ministry of Finance. The Reserve Bank's currency notes have been designated unlimited legal tender throughout the country.

• Banker to Government: It is responsible for maintaining and operating the government's deposit accounts. It is responsible for collecting funds and making payments on behalf of the government. As a member of the IMF and the World Bank, it represents the Indian government.

• Custodian of Cash Reserves of Commercial Banks: The commercial banks hold deposits in the Reserve Bank and the latter has the custody of the cash reserves of the commercial banks.

• Custodian of Country's Foreign Currency Reserves: The Reserve Bank is in charge of the country's international currency reserves, which allows it to deal with crises related to a negative balance of payments position.

• Lender of Last Resort: Commercial banks seek the Reserve Bank in times of financial distress, and the Reserve Bank steps in to help them, even if it means charging a higher rate of interest.

• Central Clearance and Accounts Settlement: Because commercial banks deposit their excess cash reserves with the Reserve Bank, it is easier for them to engage with one another and satisfy their claims on one another through Reserve Bank bookkeeping entries. The Reserve Bank's clearance of accounts has now become a critical role.

• Controller of Credit: Since credit money forms the most important part of the supply of money, and since the supply of money has important implications for economic stability, the importance of the control of credit becomes obvious. Credit is controlled by the Reserve Bank in accordance with the economic priorities of the government.

• SEBI (Securities and Exchange Board of India) promotes the development of securities market.

• Thus, the correct answer is Option 1.

Q37. Answer: (c) Rearing of animals and cultivation of crops together

The correct answer is Rearing of animals and cultivation of crops together.

Key Points

• Mixed farming is a kind of cultivating that includes both the harvesting of crops and raising animals.

• It is carried out across Asia and nations like India, Afghanistan, South Africa, Malaysia, Indonesia, China, Canada, Central Europe, and Russia.

• Features of mixed farming:

• Animal pasture is set aside on some of the property. A portion of the farm is set aside for feeding animals or cultivating animal feed in the event that a farm decides to rear its animals in specially designed structures.

• The size of the farms is moderate.

• Fodder is made from crop residue. The farmer uses the agricultural residue after harvesting to save money for animal feed and to obtain high-quality yearly products such as meat and milk.

• Animal manure is applied to the soil to fertilize it. Animal rearing provides the farmer with manure, which he may use on the farm to improve soil fertility, allowing the farmer to boost his harvest and income.

• Mixed crop and livestock farming is mainly practiced in Odisha and Kerala in India.

Additional Information

• Multiple cropping or multi-cropping is the practice of growing two or more crops in the same piece of land during one growing season instead of just one crop. When multiple crops are grown simultaneously, this is also known as intercropping.

Q38. Answer: (b) Rs. 1,750

Given:

Time = 3 years

Rate = 8%

Amount for CI = Rs. 4,000

Time for CI = 2 years

Rate for CI = 10%

Formula used:

CI = [P(1 + r/100)^t – P]

SI = (P × R × T)/100

Where, P = Principal, R = Rate of interest and T = Time

Calculation:

According to the question:

CI = [P(1 + r/100)t – P]

=> 4,000(1 + 10/100)² – 4,000]

=> 4,000(11/10)² – 4,000]

=> [(4,000 × 121/100) – 4,000]

=> Rs. (4,840 – 4,000)

=> Rs. 840

So,

Simple interest is half of Compound interest,

=> Simple interest = 840/2 = 420

Now,

SI = (P × R × T)/100

=> 420 = (P × 8 × 3)/100

=> 420 = 24P/100

=> 24P = 42,000

=> P = Rs. 1,750

Therefore The sum placed on simple interest is Rs. 1,750.

Q39. Answer: (d) Brother

The family tree is given below:-

Thus Sohan is the brother of Ram's mother.

Hence, "option 4" is the correct answer.

Q40. Answer: (a) Femur

The correct answer is Femur.

Key Points

• The longest bone in the human body is the femur. It's called the thigh bone since it's nearly 19.9 inches long.

• Simply gazing at one's thigh will reveal that the femur is the longest bone. It stretches from the hip to just below the knee.

• It acts as a connection point for all of the muscles that work on the hip and knee joints.

• The femur also gives rise to some biarticular muscles, such as the gastrocnemius and plantaris, which bridge two joints.

• The femur is home to 23 muscles that either originate from or insert onto it.

• As femur is a long bone, it has two ends: proximal and distal.

• The end, which lies on the side of the hip, is called proximal femur, and another on the side of knee is referred to as distal femur. The region between these two ends is called the shaft.

Additional Information

• Patella:

• The patella is a small bone located in front of the knee joint — where the thighbone (femur) and shinbone (tibia) meet. It protects the knee and connects the muscles in the front of the thigh to the tibia.

• The ends of the femur and the undersides of the patella are covered with a smooth substance called articular cartilage. This cartilage helps the bones glide easily along each other as you move your knee.

• Sternum:

• The sternum is a partially T-shaped vertical bone that forms the anterior portion of the chest wall centrally.

• The sternum is divided anatomically into three segments: manubrium, body, and xiphoid process.

• The sternum connects the ribs via the costal cartilages forming the anterior rib cage. The manubrium is the broad superior segment, the body is the middle portion, and the xiphoid process is a narrower distal segment forming the partial T-shape.

• Tibia:

• The tibia is the major bone of the lower leg, which forms the shin.

• It articulates at the knee and ankle joints and expands at its proximal and distal ends. The tibia is the body's second largest bone and a major weight-bearing structure.

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Q41. Answer: (d) 130; 20

The logic followed here is:-

Hence, "Option 4" is the correct answer.

Q42. Answer: (c) Dhanpat Rai

The correct answer is Dhanpat Rai.

Key Points

• Munshi Premchand was born on July 31, 1880, and died on October 8, 1936. He was a modern Hindi and Urdu literature writer.

• Dhanpat Rai Srivastav was his given name, while Nawab Rai was his pen name. He used his pen name for all of his writings. Finally, he adopted the moniker Munshi Premchand.

• Munshi is an honorary prefix bestowed upon him by his admirers in society for his excellent and efficient writings.

• He published almost a dozen novels, 250 short stories, several essays, and translations in Hindi.

• His final novel, Godaan (The Gift of a Cow), is widely regarded as the best Hindi fiction ever written.

Additional Information

• Sachchidanand:

• Swami Sachchidanand, also known as Nanalal Motilal Trivedi, is a Gujarat-based social reformer, philosopher, welfare campaigner, humanitarian, religious ascetic, and writer.

• In 1984, he received the Narmad Suvarna Chandrak for his autobiographical work Mara Anubhavo, and in 2022, he received the Padma Bhushan, India's third-highest civilian award, for his contribution to Literature and Education.

• Atmaram:

• Dr. Atmaram was a scientist from India. The Atmaram Award is granted in his honour by the Central Institute of Hindi, an autonomous institute run by India's Ministry of Human Resource Development.

• On August 21, 1966, he became Director-General of the Council of Scientific and Industrial Research after serving as Director of the Central Glass and Ceramic Research Institute.

• From 1977 until 1983, he served as the Prime Minister's and Union Cabinet's Principal Advisor on Science and Technology.

Q43. Answer: (c) 39

Given:

LCM of two numbers = 78

GCD = 13

one number = 26

Formula used:

LCM × GCD = one number × other number

Calculation:

Let the other number be x

According to the question:

LCM × GCD = one number × other number

=> 78 × 13 = 26 × x

=> x = (13 × 3)

=> x = 39

Therefore The other number is 39.

Q44. Answer: (c) Robert Clive

The correct answer is Robert Clive.

Key Points

• On June 23, 1757, the Battle of Plassey took place in the Palashi region of Bengal in north-eastern India.

• The victory of the British in the Carnatic wars had made Siraj-Ud-Daula fearful about the British's growing influence in India.

• The Company's officials made extensive use of their trade advantages, which harmed the nawab's finances.

• The British built Fort Williams without Nawab's approval, infuriating him even more. He marched to Fort Williams, where he grabbed 146 Britishers and imprisoned them in a cramped room, killing 123 of them. This incident is known as the "Calcutta Black Hole Tragedy."

• As a result, Robert Clive was sent to Bengal to reinforce the British presence there. He bribed some of the Nawab of Bengal's top officials and offered Mir Jafar kinship in exchange for his betrayal of the Nawab.

• The army of Siraj-ud-Daulah, the last Nawab of Bengal, and his French allies were met by British East India Company troops led

by Robert Clive.

• The Nawab of Bengal's army, which numbered 50,000 men and included French forces, outmanned the British army, which totaled roughly 3000 men.

• However, Nawab of Bengal Siraj-ud-daula was defeated in the Battle of Plassey due to Robert Clive's conspiracy and subsequent betrayal by Mir Jafar, Rai Durlabh, and others.

• Following Clive's victory, the British became India's most powerful economic and military force.

Additional Information

• James Alexander:

• James Alexander was an Irish-born British East India Company officer who served in the United Kingdom House of Commons for two terms, from 1812 to 1832.

• Alexander, a native of County Londonderry, joined the East India Company in 1784 and eventually became a partner in a Calcutta commercial bank. During his time in India, he amassed enormous money.

• Neville Chamberlain:

• Sir Neville Francis Fitzgerald Chamberlain was an officer in the British Indian Army.

• He then became Inspector-General of the Royal Irish Constabulary before resigning in the aftermath of Ireland's 1916 Easter Rising. While stationed in Jubbulpore (Jabalpur), India, in 1875, he is credited with inventing the game of snooker.

• Allan Cunningham:

• Allan Cunningham was an English botanist and explorer, primarily known for his travels in Australia to collect plants.

Q45. Answer: (d) 3/7, 2/5, 1/3

Given:

The number = 2/5, 1/3 and 3/7

Concept used:

Descending order - Arrange the number in larger value to lower value.

Calculation:

According to the question:

=> 2/5 = 0.4

=> 1/3 = 0.33

=> 3/7 = 0.42

Therefore The required descending order is 3/7, 2,5, 1/3.

Q46. Answer: (a) Saurav Ghosal

The correct answer is Saurav Ghosal.

Key Points

• The 2019 Men's Asian Individual Squash Championships is the men's version of the Asian Individual Squash Championships, which is the individual Asian squash championship.

• From May 1 to 5, 2019, the event was held at the National Squash Centre in Kuala Lumpur.

• Saurav Ghosal won the tournament by defeating fourth seed Leo Au Chun Ming 11-9, 11-2, 11-8.

• In April 2019, Saurav attained a career-high global ranking of No. 10 for the first time.

• He is from Kolkata, West Bengal.

Additional Information

• Harinder Pal Sandhu:

• Harinder Pal Sandhu, a professional squash player from Chandigarh, represents India.

• In April 2018, he attained a career-high world rating of No. 47

• He was a member of the Indian squad that won gold at the 2014 Asian Games in Incheon, South Korea.

• Harinder Pal Singh Sandhu defeated Malaysia's Mohd Azlan Iskandar 11-8, 11-6, 8-11, 11-4 in the opening match, giving India a 1-0 lead. Saurav Ghosal then won the second match, giving India the gold medal in the Men's Team event.

• Mahesh Mangaonkar:

• Mahesh Mangaonkar is a professional squash player from Mumbai who has represented India.

• In January 2015, he attained a career-high world rating of No. 44. In 2009, he won the prestigious British Junior Open Under-15 division.

• In the Slovak capital of Bratislava, Mahesh Mangaonkar won the IMET Open 2013. He is the first Indian to win the IMET Open in squash.

• Ramit Tandon:

• He is a professional squash player from Kolkata.

• He is ranked number 46 in the world and India #2 (April 2019). He’s an Asian Games Bronze Medalist.

Q47. Answer: (a) Mahatma Gandhi

The correct answer is Mahatma Gandhi.

Key Points

• During World War II, Mahatma Gandhi started the Quit India Movement, also known as the August Movement, during the Bombay session of the All India Congress Committee on August 8, 1942, demanding an end to British rule in India.

• After the failure of the Cripps Mission to secure Indian support for the British war effort, Gandhi made a call to Do or Die in his Quit India speech delivered in Bombay on 8 August 1942 at the Gowalia Tank Maidan.

• Yusuf Meherally, a socialist who was also a trade unionist, coined the slogan "Quit India." He was also the Mayor of Mumbai. He also came up with the catchphrase "Simon Go Back."

• The movement was opposed by the Muslim League, the Communist Party of India, and the Hindu Mahasabha.

• There were strikes and demonstrations across the country during the first phase. The Aga Khan Palace in Pune was where Mahatma Gandhi was imprisoned. The British also detained a number of other leaders.

• During the second phase of the Quit India Movement, many peasant uprisings took place, including the destruction of communication systems such as railway tracks and stations, telegraph cables and poles, as well as attacks on government buildings and other obvious symbols of colonial authority.

• In the third and last phase of the Quit India Movement, national governments or parallel governments were formed in isolated enclaves like Ballia, Tamluk, and Satara.

• The British administration in India mercilessly suppressed the Quit India movement. The majority of the movement's popular leaders were arrested.

• To put down the movement, the British used lathi-charge and other harsh methods. Officials who supported the movement were fined heavily and villages were torched. The British deemed the Indian National Congress to be an illegal organisation.

• The Quit India Movement, on the other hand, shifted the direction of negotiations with the British, eventually leading to India's independence.

Additional Information

• B R Ambedkar:

• Bhimrao Ramji Ambedkar was an Indian jurist, economist, social reformer and political leader who headed the committee drafting the Constitution of India from the Constituent Assembly debates.

• He served as Law and Justice Minister in the first cabinet of Jawaharlal Nehru and inspired the Dalit Buddhist movement after renouncing Hinduism.

• Jayaprakash Narayan:

• Popularly referred to as JP or Lok Nayak, he was an Indian independence activist, theorist, socialist and political leader.

• He is remembered for leading the mid-1970s opposition against Prime Minister Indira Gandhi, for whose overthrow he had called for a "total revolution".

• His biography, Jayaprakash, was written by his nationalist friend and the writer of Hindi literature, Rambriksh Benipuri.

• In 1999, he was posthumously awarded the Bharat Ratna, in recognition of his social service. He also received the Magsaysay award for Public Service in 1965.

• Subhash Chandra Bose:

• He is known for his role in India's independence movement. A participant of the non-cooperation movement and a leader of the Indian National Congress, he was part of the more militant wing and known for his advocacy of socialist policies.

• He raised the first Indian National Army (INA), Azad Hind Fauj in 1943 and inspired thousands of Indian youths to join the struggle for independence from the British colonial rule.

• His famous slogans are 'tum mujhe khoon do, main tumhe aazadi dunga', 'Jai Hind', and 'Delhi Chalo'.

Q48. Answer: (d) a positive rational number

Given:

(2^(10) - 3^(10))/(5^(10) - 6^(10))

Calculation:

(2^(10) - 3^(10))/(5^(10) - 6^(10))

=> (2 – 3)^(10)/(5 – 6)^(10)

=> (-1)^(10)/(-1)^(10)

=> 1/1

Therefore a positive rational number.

Q49. Answer: (d) 25

The correct answer is 25.

Key Points

• Every year on November 26th, Constitution Day is commemorated as the day the Constitution was adopted.

• The Indian Constitution is the world's longest constitution.

• It began with 395 articles divided into 22 parts and eight schedules. The Indian Constitution now contains 448 articles divided into 25 parts and 12 schedules, as well as 105 amendments.

• 25 parts of the constitution:

• Part I – The Union and its Territories, Articles 1 – 4

• Part II – Citizenship, Articles 5 -11

• Part III – Fundamental Rights, Articles 12 – 35

• Part IV – Directive Principles of State Policy, Articles 36 – 51

• Part IV A – Fundamental Duties, Articles 51A

• Part V – The Union, Articles 52 – 151

• Part VI – The States, Articles 152 – 237

• Part VII – The States in Part B of First Schedule, Articles 238 [Repealed]

• Part VIII – The Union Territories, Articles 239 – 242

• Part IX – The Panchayats, Articles 243 – 243O

• Part IXA – The Municipalities, Articles 243P – 243ZG

• Part IXB – The Co-operative Societies, Articles 243ZH – 243ZT

• Part X – The Scheduled and Tribal Areas, Articles 244 – 244A

• Part XI – Relation between the Union and the States, Articles 245 – 263

• Part XII – Finance, Property, Contracts and Suits, Articles 264 – 300A

• Part XIII – Trade, Commerce, and Intercourse within the territory of India, Articles 301 – 307

• Part XIV – Services Under the Union and the States, Articles 308 – 323

• Part XIVA – Tribunals, Articles 323A – 323B

• Part XV – Elections, Articles 324 – 329A

• Part XVI – Special provisions relating to certain classes, Articles 330 – 342

• Part XVII – Official language, Articles 343 – 351

• Part XVIII – Emergency Provisions, Articles 352 – 360

• Part XIX – Miscellaneous, Articles 361 – 367

• Part XX – Amendment of the Constitution 368

• Part XXI – Temporary, Transitional and Special Provisions, Articles 369 – 392

• Part XXII – Short Title, Commencement, Authoritative Text in Hindi and Repeals, Articles 393 – 395

Additional Information

• Three parts – 9A Municipalities, 9B Co-operative societies, and 14A tribunals – are added to the original constitution via amendments.

Q50. Answer: (d) Only conclusion I follows

The statement suggests Mukesh Ambani is the richest person in Asia.

• Since he is the richest person in Asia and based in India, it implies he is the richest person of India. Thus, conclusion I follows.

• As conclusion I follows, conclusion II does not follow since it suggests the opposite.

Thus, option 4 is the correct answer.

Q51. Answer: (c) • 28/55

Given:

The given number = 2/11

The reciprocal of -5/14 = -14/5

Calculation:

According to the question:

=> (2/11 × -14/5)

=> -28/55

Therefore The required value is -28/55.

Q52. Answer: (b) (2 + √3, 5)

Given:

The two vertices = (2, 4) and (2, 6)

Calculation:

Let the third vertex of an equilateral triangle be (x, y)

In equilateral triangle, all sides have equal length which is AB = BC = AC

So,

=> AB = √(2 – 2)² + (6 – 4)²

=> √(2)²

=> √4

=> 2 units

And, AC = √(2 – x)² + (4 – y)² = 2 units ....(1)

BC = √(2 – x)² + (6 – y)² = 2 units ....(2)

Also, AC = BC

=> √(2 – x)2 + (4 – y)² = √(2 – x)2 + (6 – y)² ...(3)

On squaring both the sides

=> (2 – x)² + (4 – y)² = (2 – x)² + (6 – y)²

=> 16 + y² – 8y = 36 + y² – 12y

=> 4y = 20

=> y = 5 ...(4)

Now, Putting y = 5 in equation (1)

=> √(2 – x)² + (4 – 5)² = 2

=> √(2 – x)2 + (-1)² = 2

=> √(2 – x)2 + 1 = 2

On squaring both sides

=> (2 – x)² + 1 = 4

=> (2 – x)² = 3

=> (2 – x) = +√3 or -√3

=> x = 2 + √3 or 2 – √3

So,

(x, y) = C = (2 + √3, 5)

Therefore The required value is (2 + √3, 5).

Q53. Answer: (b) Data Definition Language

The correct answer is Data Definition Language.

Key Points

• A data definition language (DDL) is a computer language that is used to build and alter database object structures.

• Views, schemas, tables, and indexes are examples of database objects.

• It is also referred to as data description language because it specifies the fields and records in a database table.

• CREATE, ALTER, and DROP are all examples of DDL statements.

Q54. Answer: (b) 486 cm²

Given:

Radius of circle = 36 cm

4l = 3r

Formula used:

Area of sector = 1/2 × Length of arc × radius

Calculation:

4l = 3r

=> 4l = (3 × 36)

=> 4l = 108

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=> l = 27 cm

Now,

Area of sector = 1/2 × Length of arc × radius

=> (1/2 × 27 × 36) cm²

=> (27 × 18) cm²

=> 486 cm²

Therefore The required area of the sector is 486 cm².

Q55. Answer: (c) 1

Given:

78/9 is converted into an improper fraction and its numerator is 70 + x

Calculation:

According to the question:

=> 78/9 = 71/9

Improper fraction: When the numerator is greater than or equal to the denominator then the fraction is called an Improper fraction

Now, Numerator = 70 + x

=> 70 + x = 71

=> x = (71 – 70)

=> x = 1

Therefore The value of x is 1.

Q56. Answer: (c) 1

Given:

A, B, C, and D are four persons in a group who have to choose one number from 1 to 10

No two persons can take the same number.

The Cube of the number chosen by A and the Square of the number chosen by C are both within the permitted number range

B has chosen a number that is just one greater than the number chosen by C and D has chosen the smallest number amongst the four persons.

Calculation:

Since, the number choose between 1 to 10 by all the four persons.

Hence, the selected number are chosen by them are as follows

Person Chosen number

A 2 [$2^3 = 8$]

B 4

C 3 [$3^2 = 9$]

D 1

The cube of the number 2 chosen by A is 8 and the square of the number 3 chosen by C is a within the range of numbers (1 to 10)

Therefore The required number chosen by D is 1.

Q57. Answer: (c) Trans fat

The correct answer is Trans fat.

Key Points

• Trans fat, also called the worst form of fat in food, is responsible for over 5,00,000 deaths globally from coronary heart disease each year.

• They not only raise bad cholesterol (LDL) levels but also lower good cholesterol (HDL) levels. This increases the risk of developing coronary heart disease and stroke. It also makes individuals prone to a higher risk of developing type 2 diabetes.

• The World Health Organization (WHO) has teamed up with the International Food and Beverage Alliance (IFBA) to achieve the 'REPLACE Strategy' objective of eradicating trans-fat from the global food supply by 2023.

• By 2023, IFBA members have committed to not exceeding the worldwide trans-fat industrial limit of 2 gramme per 100 g fat/oil in their products.

• REPLACE is an abbreviation for WHO’s six strategic actions:

• Review (dietary sources of industrially-produced trans fats),

• Promote (replacement of industrially-produced trans fats with healthier fats,

• Legislate (enact regulatory actions to eliminate industrially-produced trans fats),

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• Assess (trans fats content in the food supply),

• Create awareness (about negative health impact of trans fats) and

• Enforce (compliance with policies and regulations).

Additional Information

• Gluten:

• Gluten is a structural protein that occurs naturally in several cereal grains. It is found in the highest concentration in wheat-based foods.

• This includes rolls, buns, bagels, biscuits, and flour tortillas (unless they are labelled "gluten-free").

• Gluten does not include any vital nutrients.

• Celiac disease causes an immunological reaction that is induced by gluten consumption. When they consume gluten-containing meals, their digestive tracts and other body components become inflamed and damaged.

• Saturated fat:

• Saturated fat is a type of fat found in foods. Along with trans fat, it is one of the harmful fats.

• At room temperature, these fats are usually solid.

• Saturated fat is found in foods such as butter, palm and coconut oils, cheese, and red meat.

• Saturated fat consumption can enhance LDL cholesterol levels in the blood. A high LDL cholesterol level in the blood raises your risk of heart disease and stroke.

• Carotenoids:

• Carotenoids are a class of more than 750 naturally occurring pigments synthesized by plants, algae, and photosynthetic bacteria.

• Many plants' yellow, orange, and red colours come from these brightly coloured molecules.

• The majority of the 40 to 50 carotenoids contained in the human diet come from fruits and vegetables.

• Carotenoids are antioxidants that can help your immune system and protect you from disease.

• Vitamin A, which is required for growth, immune system function, and eye health, can be produced from provitamin A carotenoids.

Q58. Answer: (a) Ministry of Education

The correct answer is Ministry of Education.

Key Points

• Mid-day Meal Scheme was started in 1995 throughout India by the Ministry of Education.

• Mid-day Meal Scheme is a school meal program of the Government of India.

• The Midday Meal Scheme is now covered under the National Food Security Act, 2013.

• Objectives of the Mid Day Meal Scheme:

• Boost student enrolment.

• It helps to promote students' attendance.

• Serves as an incentive not only for the children but also for the parents as it has an implicit subsidy.

• The attraction for children who are otherwise reluctant to go to school.

Q59. Answer: (b) 44th

The correct answer is 44th

Key Points

• Articles 19 and 31 of the Constitution originally established the right to property.

• All citizens have the right to acquire, keep, and dispose of property under Article 19.

• "No individual shall be deprived of his property unless by authority of law," according to Article 31. It further stated that a person whose property was taken for public reasons would be compensated.

• The 44th Amendment of 1978 removed the right to property from the list of fundamental rights.

• A new provision, Article 300-A, was added to the constitution, which provided that "no person shall be deprived of his property save by authority of law".

• Thus, if a legislator made a law depriving a person of his property, there would be no obligation on the part of the State to pay anything as compensation.

• Furthermore, the aggrieved person would also have no right to move the court under Article 32 due to the right to property no longer being a fundamental right.

Additional Information

• 40^(th) amendment:

• The Constitution (40^(th) Amendment) Act of 1976 empowered Parliament to specify the territorial waters, continental shelf, Exclusive Economic Zone (EEZ), and marine zones of India from time to time.

• It Included 64 more Central and state laws, mostly relating to land reforms, in the 9th Schedule.

• 42^(nd) amendment:

• The Amendment established without a doubt Parliament's primacy over the other branches of government, gave Directive Principles precedence over Fundamental Rights, and enumerated 10 Fundamental Duties for the first time.

• It was implemented during a time of national emergency. Parliament passed it on November 11, 1976, and the President signed it on December 18, 1976.

• It also limited the judiciary's power and jurisdiction, increased the term of the Lok Sabha and Vidhan Sabha from five to six years, authorised the use of Central armed forces in any State to deal with law and order issues, bound the President to the advice of the Council of Ministers, and envisaged the establishment of administrative tribunals for government employees' service matters as well as other tribunals for economic offences.

• The Act also made it plain that no constitutional amendment could be challenged in court.

• 37^(th) amendment:

• Parliament passed it on April 26, 1975, to give Arunachal Pradesh, the country's north-easternmost Union Territory, a Legislative Assembly and a Council of Ministers.

Q60. Answer: (a) Y

Given that:- 8 students P, Q, R, S, T, X, Y and Z are sitting in a row facing towards south.

• T is sitting at one of the ends of the row

• Z is fourth to the left of S.

• T is sitting second to the left of Z.

• Thus, T is sitting at the left end of the row.

• P is sitting to the right of T.

• Only four students are sitting between P and T.

• R is the neighbour of Q.

• T is not the neighbour of X.

• If T is sitting at one of the ends of the row.

Then Y will sit the seventh place from the other end.

Hence, "option 1" is the correct answer.

Q61. Answer: (c) North

• Its half past one and the hour hand is pointing towards the north-east is given below:-

• Assuming that there is no change in Nihaal's position, after 30 minutes the position of the minute hand:-

• North direction the minute hand point after 30 minutes.

Hence, "North" is the correct answer.

Q62. Answer: (c) Ohm

The correct answer is Ohm.

Key Points

• The unit of the electrical resistance, measured with direct current, is the ohm (Ω), named after the German physicist and mathematician Georg Simon Ohm.

• According to ohm’s law, the resistance R is the ratio of the voltage U across a conductor and the current I flowing through it: R = U / I.

• Hence it follows: 1 Ω = 1 V/A.

• The ohm is defined as an electrical resistance between two points of a conductor when a constant potential difference of one volt, applied to these points, produces in the conductor a current of one ampere, the conductor not being the seat of any electromotive force.

Additional Information

• Coulomb:

• The coulomb (C) is the standard unit of electric charge in the International System of Units (SI).

• It is a dimensionless quantity, sharing this aspect with the mole.

• A quantity of 1 C is equal to approximately 6.24 x 1018, or 6.24 quintillion.

• Seimens:

• The siemens (S) is the SI-derived unit of electric conductance and admittance, also known as the mho (ohm spelled backward,

?); it is the reciprocal of resistance in ohms (Ω).

• The related property, electrical conductivity, is measured in units of siemens per metre (S/m).

Q63. Answer: (d) 300°

Given:

(sin θ + cos θ)/(sin θ - cos θ) = (√3 - 1)/(√3 + 1)

Formula used:

tanθ = sinθ/cosθ

tan 60° = √3

Calculation:

(sin θ + cos θ)/(sin θ - cos θ) = (√3 - 1)/(√3 + 1)

Dividing cosθ in numerator and denominator

=> (sinθ/cosθ + cosθ/cosθ)/(sinθ/cosθ – cosθ/cosθ) = √3 – 1/√3 + 1

=> (tanθ + 1)/(tanθ – 1) = √3 – 1/√3 + 1

=> √3tanθ + √3 + tanθ + 1 = √3tanθ – tanθ – √3 + 1

=> √3 + tanθ + 1 + tanθ + √3 – 1 = 0

=> 2tanθ + 2√3 = 0

=> 2tanθ = -2√3

=> tanθ = -√3

=> tanθ = -tan 60°

=> tanθ = -tan(360° – 60°)

=> tanθ = tan 300°

=> θ = 300°

Therefore The angle θ is 300°.

Q64. Answer: (a) 1 + sec A cosec A

Shortcut Trick

Put a specific value for angle A where the expression is defined.

Let A = 45° is not possible as denominators become zero. Let A = 30°.

Expression = [tan 30° / (1 − cot 30°)] + [cot 30° / (1 − tan 30°)] = [(1/√3) / (1 − √3)] + [√3 / (1 − 1/√3)]

= [1 / (√3 − 3)] + [3 / (√3 − 1)] = 1 + 2/√3 + 1 = 1 + sec 30° cosec 30°.

Therefore The correct answer is 1 + sec A cosec A.

Alternate Method

Given: (tan A)/(1 - cot A) + (cot A)/(1 - tan A)

Formula Used: tan A = sin A / cos A; cot A = cos A / sin A; $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

=> [(sin A / cos A) / (1 − cos A / sin A)] + [(cos A / sin A) / (1 − sin A / cos A)]

=> [$\sin^2$ A / (cos A(sin A − cos A))] + [$\cos^2$ A / (sin A(cos A − sin A))]

=> [$\sin^2$ A / (cos A(sin A − cos A))] − [$\cos^2$ A / (sin A(sin A − cos A))]

=> ($\sin^3$ A − $\cos^3$ A) / [sin A cos A (sin A − cos A)]

=> [(sin A − cos A)($\sin^2$ A + $\cos^2$ A + sin A cos A)] / [sin A cos A (sin A − cos A)]

=> (1 + sin A cos A) / (sin A cos A)

=> (1 / sin A cos A) + (sin A cos A / sin A cos A) = sec A cosec A + 1

Therefore The correct answer is 1 + sec A cosec A.

Additional Information

Fundamental Identities

$\sin^2$ A + $\cos^2$ A = 1 | 1 + $\tan^2$ A = $\sec^2$ A | 1 + $\cot^2$ A = cosec^2 A.

Reciprocal Relations

cosec A = 1 / sin A | sec A = 1 / cos A | cot A = 1 / tan A.

Q65. Answer: (c) Kamini

The correct answer is Kamini.

Key Points

• KAMINI (Kalpakkam Mini reactor) is a research reactor at Kalpakkam's Indira Gandhi Center for Atomic Research.

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• On October 29, 1996, it reached criticality.

The Bhabha Atomic Research Centre (BARC) and the Indira Gandhi Centre for Atomic Research collaborated on its design and construction (IGCAR).

• At full capacity, it generates 30 KW of heat energy.

• KAMINI is cooled and moderated by light water and powered by uranium-233 metal produced by the nearby FBTR reactor's thorium fuel cycle.

• It is the world's sole thorium-based experimental reactor as of 2006.

• KAMINI was the first and remains the world's only reactor constructed particularly for Uranium-233 fuel.

• A primary aim of India's nuclear energy programme is to use its enormous thorium stockpiles to create nuclear fuel.

Additional Information

• Dhruva:

• India's largest nuclear research reactor is the Dhruva reactor. It was the first nuclear power plant in Asia.

• Hanul:

• Hanul Nuclear Power Plant is a big nuclear power plant in South Korea's Gyeongsangbuk-do region.

• In 2013, the name of the plant was changed from Uljin to Hanul.

• Apsara:

• Apsara was created in August 1956 and is a highly adaptable swimming pool-type reactor. In 2009, it was closed for renovations.

• Apsara, Asia's oldest research reactor, has been recommissioned with double its former capacity at India's nuclear weapons plant at the Bhabha Atomic Research Center (BARC) in Mumbai.

Q66. Answer: (c) P

The logic followed here is:-

Hence, "Option 3" is the correct answer.

Q67. Answer: (d) 60

Given:

√(1+3+5)(1+3+5+7)(1+3+5+7+9)

Calculation:

√(1+3+5)(1+3+5+7)(1+3+5+7+9)

=> √(9 × 16 × 25)

=> 3 × 4 × 5

=> 60

Therefore Required answer is 60

Q68. Answer: (c) Control unit, ALU, memory

The correct answer is Control unit, ALU, memory.

Key Points

• A central processing unit (CPU), also called a central processor, main processor, or just processor, is the electronic circuitry that executes instructions comprising a computer program. The CPU performs basic arithmetic, logic, controlling, and input/output (I/O) operations specified by the instructions in the program.

• The three constituents of CPU in a computer are the Control unit, ALU, and memory.

• The arithmetic and logical unit (ALU) is a component that performs arithmetic and logic operations in all computers.

• The ALU is used to perform operations such as addition, subtraction, multiplication, division, number comparison, and Boolean operations.

• It does not deal with instruction sequencing or memory directly.

• A smaller ALU will produce faster results but not always accurate results, whereas a larger one will produce slower but more accurate results.

• ALU is like a bridge between the computer’s primary memory and the secondary memory. All the data and instructions that are exchanged between the primary and secondary memory pass through the Arithmetic and Logic Unit (ALU).

• The Control Unit reads the instructions that are stored in its memory and send out electrical signals to each component of the computer, telling them what to do with the data they've been given.

• Control Unit (CU) controls the functioning of other hardware components of the CPU like ALU and Registers,.

• A memory or storage unit in a computer is an electronic device that stores data, programs, and other information.

• The two main types of memory are RAM and Hard Drive. RAM stands for Random Access Memory.

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• It is a volatile type of storage because it requires power to maintain its contents.

• It is mostly used for temporarily storing data while the computer is on.

• The Hard Drive is non-volatile, meaning it retains stored data even when power isn't applied to it.

• It can be used to store large amounts of data permanently, so it is important for you to back up your files regularly.

Q69. Answer: (b) Analytical Engine

The correct answer is Analytical Engine.

Key Points

• Charles Babbage, an English mathematician and computer pioneer, proposed the Analytical Engine, a mechanical general-purpose computer.

• It was first described in 1837 as the successor to Babbage's difference engine, a simpler mechanical calculator concept.

• The Analytical Engine was the first general-purpose computer to have an arithmetic logic unit, control flow in the form of conditional branching and loops, and integrated memory, making it the first Turing-complete design.

• The machine was designed to consist of four components: the mill, the store, the reader, and the printer.

Additional Information

• Abacus:

• The abacus, also known as a counting frame, is a calculating device that has been in use since ancient times.

• It was used millennia before the Hindu-Arabic numeral system was adopted in the ancient Near East, Europe, China, and Russia.

• It consists of a wire strung with rows of moveable beads or similar things.

• They represent digits. The beads are manipulated to execute an operation such as addition, or even a square or cubic root, on one of the two numbers.

• Calculator:

• A portable electronic calculator is a gadget that can conduct calculations ranging from fundamental arithmetic to sophisticated mathematics. In the early 1960s, the first solid-state electronic calculator was developed.

• Processor:

• The electronic equipment that executes instructions in a computer programme is known as a central processing unit, often known as a central processor, main processor, or simply processor.

• Basic arithmetic, logic, controlling, and input/output tasks are performed by the CPU according to the instructions in the programme.

Q70. Answer: (c) fisheries

The correct answer is fisheries.

Key Points

• The vision of the Blue Revolution, the Neel Kranti Mission, is to achieve economic prosperity for the country and its fishers and fish farmers, as well as to contribute to food and nutritional security, by maximizing the potential of water resources for sustainable fisheries development while keeping bio-security and environmental concerns in mind.

• In India, the Blue Revolution started with the implementation of the Fish Farmers Development Agency (FFDA) during the Seventh Five-year plan (1985-1990).

• Hiralal Chaudhari and Dr. Arun Krishnan are considered the Fathers of the Blue Revolution in India.

• The revised Blue Revolution Plan Scheme for Integrated Development and Management of Fisheries has been authorized for a five-year implementation period with a total central investment of Rs 3000 crore (2015-16 to 2019-20).

• The Government of India approved the "Pradhan Mantri Matsya Sampada Yojana (PMMSY) – A scheme to bring about Blue Revolution through sustainable and responsible development of the fisheries sector in India" in May 2020, with an estimated investment of Rs. 20050 crores, consisting of central share of Rs. 9407 crores, state share of Rs 4880 crores, and Beneficiaries contribution of Rs. 5763 crores for its implementation for a period of 5 years from FY 2020-21 to FY 2024-25 in all States/Union Territories.

• The scheme has been restructured by the Ministry of Agriculture and Farmers Welfare's Department of Animal Husbandry, Dairy & Fisheries, which has merged all existing schemes under the umbrella of Blue Revolution.

Q71. Answer: (d) 6%

Given:

Principal = Rs. 1200

Amount = Rs. 1348.32

Time period = 2 years

Concept used:

Amount = Principal $(1 + Rate/100)^n$

n = time

Calculation:

Let the rate of interest be x%

$1348.32 = 1200 (1 + x/100)^2$

$\Rightarrow (106/100)^2 = (1 + x/100)^2$

$\Rightarrow 106/100 = 1 + x/100$

$\Rightarrow x = 6\%$

Therefore The rate should be 6%

Q72. Answer: (d) sound energy into electrical energy

The correct answer is sound energy into electrical energy.

Key Points

• Microphones are a type of transducer - a device which converts energy from one form to another. Microphones convert acoustical energy (sound waves) into electrical energy (the audio signal).

• Sound waves strike a vibrating diaphragm, which moves a magnet near a coil. The coil moves within a magnet in some designs.

• Condenser microphones operate on the capacitance concept.

• Capacitors are made up of parallel conducting plates that retain charge and are used to smooth out signals in a power supply such as voltage changes. The incoming sound vibrates one plate of a capacitor in a condenser microphone. A corresponding electrical signal is generated.

Additional Information

• Mechanical energy into sound energy:

• Mechanical energy is converted into sound by musical instruments.

• The bowing of a violin, plucking of a guitar, striking of a piano, bell, or drum, the air movement in a wind instrument are all example of mechanical energy which is converted into sound.

• Electrical energy into sound energy:

• Electrical energy is converted to sound energy by loudspeakers and headphones.

• A coil receives the electrical signal and acts against a permanent magnet.

• The coil is in contact with a diaphragm or light sound cone, which pulses the air.

• Suspension components guide the coil end and diaphragm.

• Sound energy into mechanical energy:

• Sound waves enter the ear through the pinna and auditory canal, where they are transformed into mechanical vibrations by the tympanum or eardrum.

Q73. Answer: (b) 20%

Shortcut Trick

Let initial Cost Price (CP) = 100. Since initial profit is 140%, initial Selling Price (SP1) = 240.

New Selling Price (SP2) = 50% of 240 = 120.

New Profit = SP2 − CP = 120 − 100 = 20.

New Profit % = (20 ÷ 100) × 100 = 20%.

Therefore The correct answer is 20%.

Alternate Method

Given: Initial Profit = 140%. SP reduction = 50%.

=> Let CP = 100 units.

=> Initial SP = CP + Profit = 100 + 140 = 240 units.

=> New SP = 240 × (100 − 50)/100 = 240 × 0.5 = 120 units.

=> New Profit = New SP − CP = 120 − 100 = 20 units.

=> New Profit Percentage = (New Profit ÷ CP) × 100

=> New Profit Percentage = (20 ÷ 100) × 100 = 20%.

Note: The 700% increase in sales affects total revenue and total profit, but the profit percentage per unit remains dependent only on the per-unit CP and SP.

Therefore The correct answer is 20%.

Additional Information

Profit Percentage Formula

Profit % = [(SP − CP) ÷ CP] × 100. It is always calculated on the Cost Price unless stated otherwise.

Per Unit vs. Total Profit

Profit percentage per unit is independent of the volume of sales. Volume only affects the absolute total profit (Total Profit = Profit per unit × Number of units sold).

Effect of SP reduction

When SP is reduced by x%, the new SP = Original SP × (100 − x)/100.

Q74. Answer: (d) 78%

Given:

The ratio of the number of boys and girls in a school = 3 : 2

Percentage of boys who are scholarship holders = 20%

Percentage of girls who are scholarship holders = 25%

Calculation:

Let the number of boys & girls be 3a and 2a respectively.

No of scholarship holder boys = 3a × 20/100 = 3a/5

No of scholarship holder girls = 2a × 25/100 = a/2

Number of students who did not get a scholarship = 5a - (3a/5 + a/2)

=> 5a - 11a/10

=> 39a/10

Percentage of students who got scholarships = (39a/10)/5a × 100

=> 78%

Therefore The percentage of those who are NOT scholarship holders is 78%

Q75. Answer: (c) D343

The logic followed here is:-

Hence, "Option 3" is the correct answer.

Q76. Answer: (c) 27 cm

Given:

Side of a cube is 9√3 cm,

Concept used:

Diagonal of a cube = side√3

Calculation:

Side = 9√3 cm

Diagonal = 9√3 × √3

=> 27 cm

Therefore Required answer is 27 cm

Q77. Answer: (a) State's Chief Minister

The correct answer is State's Chief Minister.

Key Points

• According to article 164, the Chief Minister shall be appointed by the Governor and the other Ministers shall be appointed by the Governor on the advice of the Chief Minister, and the Ministers shall hold office during the pleasure of the Governor:

• Provided that in the States of Chhattisgarh, Jharkhand, Madhya Pradesh, and Orissa, there shall be a Minister in charge of tribal welfare who may in addition be in charge of the welfare of the Scheduled Castes and backward classes or any other work.

Additional Information

• Judges of High Court:

• The Chief Justice and Judges of the High Courts are to be appointed by the President under clause (1) of Article 217 of the Constitution.

• The Judges of the Jammu & Kashmir High Court are to be appointed by the President under section 95 of the Constitution of Jammu & Kashmir.

• State's Governor:

• The Governor of a State is appointed by the President for a term of five years and holds office during his pleasure.

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• Only Indian citizens above 35 years of age are eligible for appointment to this office. Executive power of the State is vested in Governor.

• Chief Justice of India:

• The Chief Justice of India and the Judges of the Supreme Court are appointed by the President under clause (2) of Article 124 of the Constitution.

Q78. Answer: (a) Vande Bharat Express

The correct answer is Vande Bharat Express.

Key Points

• The Vande Bharat Express, also known as Train 18, is an Indian semi-high-speed intercity EMU train that runs only on two major routes, one from New Delhi (NDLS) to Shri Mata Vaishno Devi Katra (SVDK) and the other from New Delhi (NDLS) to Varanasi (BSB).

• Integral Coach Factory (ICF) in Perambur, Chennai, designed and produced it over an 18-month period as part of the Indian government's Make in India project.

• The train was launched on 15 February 2019. The service was named 'Vande Bharat Express' on 27 January 2019.

• The Vande Bharat Express is designed to travel at a top speed of 200 km/h (120 mph), but the tracks on which it travels are not capable of supporting such high speeds, hence the train travels at a top speed of 130 km/h (81 mph).

• During the trials, it set a new speed record of 180 km/h (110 mph). This made it India's fastest train and the second fastest train in operation, behind the Gatimaan Express, which travels at 160 km/h (99 mph).

Additional Information

• Rajdhani Express:

• It is a series of passenger train services in India operated by Indian Railways connecting the national capital New Delhi with the capitals or largest cities of various states.

• This series of trains regularly gets the highest priority in the Indian Railways network and is considered its most premium train.

• on 1 March 1969, the first Rajdhani Express left from New Delhi to Howrah, completing 1450 km in a record time of 17 hours 20 minutes.

• Mahamana Express:

• It is a Model Rake-based superfast express series train operated by Indian Railways in India.

• This train is named after and in honor of Pt. Shri Madan Mohan Malaviya (Mahamana), a freedom fighter & an educationist who established Banaras Hindu University, Varanasi.

Q79. Answer: (c) 1/5

Given:

200 g

Calculation:

1kg = 1000 g

So, fraction = 200/1000

1/5

Therefore The required answer is 1/5

Q80. Answer: (c) Antarctica

The correct answer is Antarctica.

Key Points

• The ozone hole is formed each year when there is a sharp decline (currently up to 60%) in the total ozone over most of Antarctica for a period of about three months (September-November) during spring in the Southern Hemisphere.

• The ozone hole isn't actually a "hole", but rather more of a wearing thin of the normal ozone levels.

• It is defined by the scientific community as anywhere in which the amount of column ozone in the atmosphere is under 220 Dobson Units.

• Late-summer (January-March) ozone amounts showed no such sharp decline in the 1980s and 1990s.

• The ozone hole has been shown as a result of the destruction of stratospheric ozone by gases containing chlorine and bromine, whose sources are mainly human-produced halocarbon gases.

• The ozone layer is very important for life on earth because it has the property of absorbing the most damaging form of UV radiation, UV-B radiation which has a wavelength of between 280 and 315 nanometres.

• As UV radiation is absorbed by ozone in the stratosphere, it heats up the surrounding air to produce the stratospheric temperature inversion.

Q81. Answer: (b) Intergovernmental Panel on Climate Change

The correct answer is Intergovernmental Panel on Climate Change.

Key Points

• The Intergovernmental Panel on Climate Change (IPCC) is a United Nations intergovernmental group charged with developing understanding about human-caused climate change.

• The World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) founded it in 1988, and the UN General Assembly later approved it.

• It has 195 member states and is headquartered in Geneva, Switzerland.

• The IPCC provides objective and complete scientific information on anthropogenic climate change, encompassing environmental, political, and economic impacts and dangers, as well as viable mitigation strategies.

• Its reports play a key role in the United Nations Framework Convention on Climate Change (UNFCCC), with the Fifth Assessment Report heavily informing the landmark Paris Agreement in 2015.

• In August 2021, the Physical Science working group of the IPCC published its contribution the Sixth Assessment Report.

• During this period of the Sixth Assessment Report, the IPCC has released several special reports, including the Special Report on Global Warming of 1.5 °C in 2018, the Special Report on Climate Change and Land (SRCCL), and the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC), both in 2019.

• The sixth assessment cycle has been described as the most ambitious in the IPCC's history.

Additional Information

• International Union for Conservation of Nature:

• The International Union for Conservation of Nature (IUCN) is a non-profit organisation dedicated to environmental protection and sustainable resource management.

• It works on data collection and analysis, as well as research, field projects, advocacy, and education.

• Gland, Switzerland is the headquarters. It was founded in Fontainebleau, France on 5 October 1948.

• Bruno Oberle is the CEO. Its Motto is "United for Life and Livelihoods".

• United Nations Environment Program:

• The United Nations Environment Programme is responsible for coordinating responses to environmental issues within the United Nations system. It was established by Maurice Strong, its first director, after the United Nations Conference on the Human Environment in Stockholm in June 1972.

• Nairobi, Kenya is the headquarters location.

• Inger Andersen is the CEO.

• The Climate Project:

• The Climate Reality Project is a non-profit organization involved in education and advocacy related to climate change.

• The Climate Reality Project came into being in July 2011 as the consolidation of two environmental groups, the Alliance for Climate Protection and The Climate Project, both of which were founded by Al Gore.

• The Climate Reality Project hosts an annual event called 24 Hours of Reality.

Q82. Answer: (c) Ranveer Singh

The correct answer is Ranveer Singh.

Key Points

• The Times Group hosted the 65th Filmfare Awards, which recognized the best Indian Hindi-language films of 2019

• The event took place in Guwahati on February 15, 2020. This is the first time a Filmfare ceremony has been hosted outside of Mumbai in over six decades.

• Ranveer Singh won the Best Actor in a Leading Role (Male) award for his outstanding performance in the film Gully Boy.

• Some of the winners of the 65th Filmfare Awards:

• Best Film- Gully Boy

• Best Director- Zoya Akhtar for Gully Boy

• Best Film (Critics) - Article 15 (Anubhav Sinha) and Sonchiriya (Abhishek Chaubey)

• Best Actor In A Leading Role (Male) - Ranveer Singh for Gully Boy

• Best Actor (Critics) - Ayushmann Khurrana for Article 15

• Best Actor In A Leading Role (Female) - Alia Bhatt for Gully Boy

• Best Actress (Critics) - Bhumi Pednekar and Taapsee Pannu for Saand Ki Aankh.

Additional Information

• Ayushmann Khurrana:

• Ayushmann Khurrana is a Bollywood actor, singer, and television host from India.

• He has won multiple honours for his representations of regular folks often defying social standards, including a National Film Award and four Filmfare Awards.

• Gajraj Rao:

• Gajraj Rao is an Indian actor who appears predominantly in Hindi films. He is known most for his award-winning performance in Badhaai Ho.

• Ishaan Khattar:

• Ishaan Khattar is an Indian actor. He had his first movie appearance as a child in the 2005 film Vaah! Life Ho Toh Aisi!, which also starred his half-brother Shahid Kapoor.

Q83. Answer: (a) 36

Given:

A works twice as fast as B.

If both of them together can finish a job in 12 days

Concept used:

If a person can complete work alone in x days, then the efficiency (part of the work completed in one day) = 1/x

Calculation:

Let B's 1 day's work be x

Then A's 1 day's work = 2x

A and B's 1 day's work = 1/12

x + 2x = 1/12

=> 3x = 1/12

=> x = 1/36

So, B will take 36 days if he works alone

Therefore B will take 36 days to finish the job alone

Q84. Answer: (d) The respective bank

The correct answer is The respective bank.

Key Points

• The rate of interest on a saving bank account is decided by the individual bank, subject to:-

• A uniform interest rate shall be set on balance up to Rupees one lakh, irrespective of the amount in the account within this limit.

• Differential rates of interest may be provided for any end-of-day savings bank balance exceeding Rupees one lakh.

• DCB Bank offers the highest interest rate of 6.75 percent among private sector banks.

• RBL Bank is giving up to 6.25 percent interest rate, and Bandhan Bank is offering 6%.

Additional Information

• RBI:

• The Reserve Bank of India (RBI) is the central bank of India, which began operations on April 1, 1935, under the Reserve Bank of India Act.

• It uses monetary policy to create financial stability in India, and it is charged with regulating the country’s currency and credit systems

• The governor of RBI is Mr. Shaktikanta Das.

• Finance Ministry:

• The Ministry of Finance, often known as the Indian Treasury, is a ministry within the Indian government that is responsible for the country's economy.

• It focuses on taxation, financial legislation, financial institutions, capital markets, federal and state budgets, and the Union Budget in particular.

• Nirmala Sitharaman is India's current Finance Minister.

• Banks' Association:

• Indian Banks' Association (IBA), formed on 26 September 1946, as a representative body of management of banking in India operating in India - an association of Indian banks and financial institutions based in Mumbai.

• Current CEO of Indian Banks Association is Sunil Mehta.

Q85. Answer: (b) Daksh

The correct answer is Daksh.

Key Points

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• Daksh is a remotely operated vehicle (ROV) that is powered by electricity.

• It is designed and developed by the Defence Research and Development Organisation (DRDO) at the Research and Development Establishment (Engineers), Pune, India.

• It is used for detecting, handling and destroying hazardous materials securely.

• Its main purpose is to recover bombs. If the object is a bomb, Daksh can defuse it with its Water Jet Disrupter.

• ROV Daksh is based on a motorised pan-tilt platform.

• It can be controlled remotely from a distance of 500 metres.

• The manipulator arm on the vehicle can handle hazardous objects weighing up to 20kg from a distance of 2.5m and 9kg from a distance of 4m.

• Daksh can navigate steep slopes and climb stairs.

• Multiple cameras, IED handling devices, nuclear biological chemical (NBC) reconnaissance systems, a master control station (MCS), and a shotgun are all within ROV Daksh.

Additional Information

• PackBot:

• PackBot is a series of military robots by Endeavor Robotics, an international robotics company founded in 2016, created from iRobot, which previously produced military robots since 1990.

• In Iraq and Afghanistan, almost 2000 were deployed.

• They were also employed to assist in the search for the World Trade Center's wreckage after 9/11 in 2001.

• Another instance of the PackBot technology being implemented was to the damaged Fukushima nuclear plant after the 2011 Tōhoku earthquake and tsunami where they were the first to assess the site.

• Rustom:

• The DRDO Rustom is a Medium Altitude Long Endurance unmanned air vehicle (UAV) being developed by the Defence Research and Development Organisation for the Indian Armed Forces' three services: the Indian Army, Indian Navy, and Indian Air Force.

• Rustom is based on the NAL's LCRA (Light Canard Research Aircraft), which was built in the 1980s by a team led by late Prof Rustom Damania.

• Rustom will replace or enhance the Indian armed forces' Heron unmanned aerial vehicles.

Q86. Answer: (c) 33%

Calculation:

Initial:

Total expenditure = 4000 + 2500 + 1500 + 400 + 1600

=> 10000

% of expenditure on food = (4000/10000) × 100

=> 40%

If changes happened:

Total expenditure = 4000 × 2 + (2500 + 1500 + 400 + 1600)/2

=> 8000 + 3000

=> 11000

% of expenditure on food = (8000/11000) × 100

=> 73% (approx)

So, change in % of food expense = 73 - 40 = 33%

Therefore Required answer is 33%

Q87. Answer: (d) 3

Given:

The marks obtained in a test by students of a class are:

23, 2, 15, 38, 21, 19, 24, 26

Concept used:

Average = Sum of elements/No. of elements

Calculation:

Total of the numbers = 23 + 2 + 15 + 38 + 21 + 19 + 24 + 26 = 168

Average = 168/8 = 21

Now,

+2/-2 range of the average score:
lower value = 21 - 2 = 19
higher value = 21 + 2 = 23
Thus, we have to check the score of how many students are lies between 19 and 23.
So, There are 3 students whose scores are in the range of 19 and 23 (23, 21 and 19).
Thus, the required number of students = 3
Therefore The correct answer is option (4).

Q88. Answer: (d) Product I

Calculation:
% of defective in Product G = (402/750) × 100
=> 53.6%
% of defective in Product F = (402/760) × 100
=> 52.89%
% of defective in Product S = (408/720) × 100
=> 56.67%
% of defective in Product I = (404/800) × 100
=> 50.5%
Therefore Required answer is Product I

Q89. Answer: (d) Group B

Calculation:
Ratio of females and males in group R = 405 : 740
=> 81 : 148
% = 81/148 × 100 = 54.72%
Ratio of females and males in group C = 414 : 950
=> 207 : 475
% = 207/475 × 100 = 43.578%
Ratio of females and males in group S = 408 : 720
=> 17 : 30
% = 17/30 × 100 = 56.667%
Ratio of females and males in group B = 414 : 650
=> 207 : 325
% = 207/325 × 100 = 63.69%
Therefore Required answer is Group B

Q90. Answer: (c) x

The logic followed here is:
a <=> z (a is opposite to z)
b <=> y (b is opposite to y)
c <=> x (c is opposite to x)
Hence, the correct answer is "x".
Alternate Method
The logic followed here is:
Hence, the correct answer is "x".

Q91. Answer: (c) Petrol

The logic followed here is:-
• The pen works with the help of ink.
Similarly,
• The car runs with the help of petrol.
Hence, "option 3" is the correct answer.

Q92. Answer: (b) A

Given that:- Six persons- A, B, C, D, E and F.

• Two persons are sitting between B and E.

• A is sitting second to the right of B.

• D is sitting second to the left of E.

• A is sitting between D and E.

Hence, "option 2" is the correct answer.

Q93. Answer: (b) 852

The logic followed here is:-

So, "Capital" is coded as "852".

Hence, "option 2" is the correct answer.

Q94. Answer: (a) 9

The logic followed here is:

The total number of letters is the code of that word.

• JUNIOR is written as 6.

• the total number of letters in JUNIOR is 6.

And,

• LABOURER is written as 8.

• Here, the total number of letters is the code of that word.

Similarly,

• JOSEPHINE is written as 9.

• the total number of letters in JOSEPHINE is 9.

Hence, "option 1" is the correct answer.

Q95. Answer: (b) Only assumption I is implied

The statement suggests that pollution causes weather imbalance and requires combined efforts to resolve.

• It is safe to assume that weather imbalances affect everyone since it requires combined efforts of all to solve and the statement claims it to be throughout the world. So, assumption I is implicit.

• Water pollution is a form of pollution but its relation to diseases is not suggested in the given statement. So, assumption II is not implicit.

Hence, the correct answer is option 2.

Q96. Answer: (a) RGNQS

The logic followed here is:-

Similarly,

Hence, "Option 1" is the correct answer.

Q97. Answer: (b) 33

The logic followed here is:-

Sum of letters in a word = Number code.

And,

Similarly,

• The difference between SMART and GOLD coded as = 71 - 38 = 33

Hence, "option 2" is the correct answer.

Q98. Answer: (c) Thursday

Given that:-

In a workshop, there are five workers - A, V, N, J, and S, who each go to work only once in a week.

1) N goes on Monday.

2) A goes the next day to that of N.

Days	Workers

Monday	N
Tuesday	A
Wednesday	
Thursday	
Friday	

3) A and V go on consecutive days.

Days	Workers
Monday	N
Tuesday	A
Wednesday	V
Thursday	
Friday	

4) There is a gap of two days between the days on which A and J go to work.

Days	Workers
Monday	N
Tuesday	A
Wednesday	V
Thursday	S
Friday	J

• Thus, S going to the workshop on Thursday.

Hence, "Thursday" is the correct answer.

Q99. Answer: (c) hik = 181715

The logic followed here is:-

And,

Similarly,

From option 1:-

• The given value is qpr = 24587 but the coded form is 9108, which is wrong.

From option 2:-

• The given value is xyz = 2156 but the coded form is 2126, which is wrong.

From option 3:-

• The given value is hik = 181715 but the coded form is 181715, which is correct.

From option 4:-

• The given value is abc = 222324 but the coded form is 252423, which is wrong.

Hence, "Option 3" is the correct answer.

Q100. Answer: (d) 108

The logic followed here is:-

Similarly,

Hence, "Option 4" is the correct answer.

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