RRB NTPC (UG) CBT-I Official Paper (Held On 20 Jun, 2026 Shift 1) (Previous Year Paper)

RRB NTPC • 2026 • 100 questions • 90 minutes • Answer key and solutions

Take this paper as a timed mock test

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

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

5 questions are in Hindi and not printed here. Each one links to the online version, where you can read it.

MATHEMATICS

Q1. When the cost of an article was decreased by 7%, the number of articles sold was increased by 20%. What was the effect (in percentage) on the revenue?

(a) increase of 10.4%
(b) decrease of 9.6%
(c) increase of 11.6%
(d) decrease of 10.6%

Q2. A five-digit number 7549A is divisible by 4 and 3. If it is divided by 12, what will be the remainder?

(a) 4
(b) 1
(c) 0
(d) 2

Q3. Two sisters, Anika and Riya, have a combined present age of 34 years. Five years ago from now, Anika was twice as old as Riya was then. What is Anika's current age in years?

(a) 18
(b) 23
(c) 20
(d) 21

Q4. This question is in Hindi. Read it online.

Q5. A mixture contains milk and water in the ratio 5:3. If 48 liters of water is added, the ratio becomes 5:5. Find the initial quantity of milk.

(a) 115 liters
(b) 125 liters
(c) 110 liters
(d) 120 liters

Q6. A cyclist travels from Town A to Town B, a distance of 78 km, at a speed of 13 km/h. He returns from Town B to Town A at a speed of 26 km/h. What is the total time taken for the round trip, in hours?

(a) 7
(b) 9
(c) 8
(d) 10

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Q7. Of three numbers, the first number is 25 and the third number is 100. If the second number is the mean proportional between the first and the third numbers, find the value of the second number.

(a) 40
(b) 75
(c) 50
(d) 45

Q8. This question is in Hindi. Read it online.

Q9. Simplify: {12/27÷ 12/2}÷(1/11× 22/3+5/9)+2/9÷ 33/22 of 22/9

(a) 9/23
(b) -1/8
(c) 14/41
(d) 4/33

Q10. A tank is full. Pipes A and B can drain the tank in 10 hours and 15 hours, respectively, while pipe C can fill the tank in 12 hours. Pipes A and B run for 2 hours, after which pipe C is also turned on. How many hours will it take to empty the tank completely?

(a) 10 hours
(b) 4 hours
(c) 8 hours
(d) 6 hours

Q11. Simplify: $\sqrt{196} - \sqrt{81} + (\sqrt{16})^2$

(a) 5
(b) 7
(c) 14
(d) 21

Q12. Two equal sums of money are lent out for 2 years each, one at 5% per annum simple interest and the other at 7% per annum simple interest. If the difference in simple interest earned on the two sums is Rs. 40, then what was the principal of each sum (in Rs.)?

(a) 1,400
(b) 1,000
(c) 800
(d) 1,200

Q13. A and B can do a piece of work in 12 days and 24 days, respectively. Both work for 4 days and then A leaves. How long (in days) will B take to complete the remaining work?

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

Q14. A person travels half of a total distance at 30 km/h and the remaining half at 60 km/h. If the total distance is 120 km, how much time does the person take to complete the entire journey?

(a) 2.5 hours
(b) 4 hours
(c) 3 hours
(d) 5 hours

Q15. Which of the following numbers are not divisible by 68?

(i) 17350
(ii) 23800
(iii) 28560
(iv) 35350

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(a) (iii) and (iv)
(b) (i) and (iv)
(c) (ii) and (iii)
(d) (i) and (ii)

Q16. A shopkeeper offers the following schemes on toys of the same marked price.

(A) Successive discounts of 6% and 39% on any number of toys bought.

(B) Successive discounts of 48%, 16% and 11% on any number of toys bought.

(C) 37% discount on the first 2 toys and 29% discount on each toy thereon.

(D) 2 toys free of cost on buying 4 toys.

A customer wants to buy 4 toys. Which of the above schemes is the least beneficial to her?

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

Q17. A company has three branches. Branch A has 40 employees with average monthly sales of Rs. 1,20,000, Branch B has 30 employees with average monthly sales of Rs. 1,80,000, and Branch C has 30 employees with average monthly sales of Rs. 1,50,000. What is the average monthly sales per employee of the company (in Rs.)?

(a) 1,50,000
(b) 1,47,000
(c) 1,20,000
(d) 1,60,000

Q18. In a business, P invests Rs. 2,00,000 for 8 months, Q invests Rs. 1,50,000 for 9 months and R invests Rs. 1,20,000 for some complete months. After a year, out of the profit, R gets a higher profit amount than Q but less than P. If R gets Rs. 72,000 as profit, then the profit of P is Rs. _____.

(a) 1,00,000
(b) 1,20,000
(c) 90,000
(d) 80,000

Q19. During a sale, 50% of the goods are sold at 21% profit, 30% of the remaining goods are sold at 43% profit and the still remaining goods are sold at a loss of 17%. If there is an overall profit of x%, then what is the value of x?

(a) 11.5
(b) 10.5
(c) 11
(d) 12

Q20. A city is planning a new park in the shape of a regular hexagon with each side measuring 10 meters. Which of the following is closest to the area of the park?

(a) 259.8 square meters
(b) 150 square meters
(c) 173.2 square meters
(d) 600 square meters

Q21. Priya invested Rs. 3200 in a bank at a simple interest rate of 12% per annum. If she kept her money in the bank for 5 years, what will be the total interest earned?

(a) Rs. 1910
(b) Rs. 1930
(c) Rs. 1920
(d) Rs. 1940

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Q22. The radius of a spherical balloon is increased by 20%. Find the percentage increase in its surface area.

(a) 22%
(b) 44%
(c) 20%
(d) 40%

Q23. Evaluate $22^3 + (-6)^3 + (-16)^3$

(a) 6147
(b) 6336
(c) 6099
(d) 6127

Q24. Find the greatest number that will divide 186, 321 and 402 so as to leave the same remainder in each case.

(a) 23
(b) 13
(c) 27
(d) 19

Q25. A shopkeeper offers a single discount of 30% on a shirt priced at Rs. 800. Alternatively, he offers two successive discounts of 25% and 5% on the same shirt. What is the difference in the total discount amount between the two offers?

(a) Rs. 16
(b) Rs. 10
(c) Rs. 14
(d) Rs. 20

Q26. If the ratio of two numbers is 6 : 4, and their HCF is 49, then their LCM is:

(a) 287
(b) 294
(c) 295
(d) 298

Q27. 20 note books, 100 pens and 50 pencils were bought for Rs. 3,500. If the average cost of a note book is Rs. 50 and that of a pencil is Rs. 10, find the average cost of a pen.

(a) Rs. 16
(b) Rs. 20
(c) Rs. 25
(d) Rs. 15

Q28. A triangle has sides of lengths 5 cm, 12 cm, and 13 cm. If a perpendicular is drawn from the vertex opposite the longest side to the longest side, what is the length of the perpendicular? (Rounded off to two decimal places)

(a) 5.37 cm
(b) 5.08 cm
(c) 4.62 cm
(d) 6.51 cm

Q29. The monthly charges of a hostel consist of a fixed part and a variable part depending on the number of students. For 25 students, the total bill is Rs. 17,500. For 40 students, the total bill is Rs. 25,000. What is the total bill for 60 students?

(a) Rs. 35,000
(b) Rs. 37,500
(c) Rs. 30,000
(d) Rs. 32,500

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Q30. A shopkeeper buys an article for Rs. 500 and sells it for Rs. 575. What is the percentage profit?

(a) 20%
(b) 15%
(c) 10%
(d) 12.5%

GENERAL AWARENESS

Q31. Which organisation was founded by Raja Ram Mohan Roy in 1828?

(a) Ramakrishna Mission
(b) Brahmo Samaj
(c) Prarthana Samaj
(d) Arya Samaj

Q32. According to Article 39A, the State shall:

(a) provide free legal aid
(b) provide religious freedom
(c) provide clean drinking water
(d) promote international peace and security

Q33. The Confederation of Indian Industry (CII) successfully concluded the 13th edition of EXCON 2025 in which of the following cities?

(a) Jaipur
(b) Bengaluru
(c) New Delhi
(d) Chandigarh

Q34. In which year did the Government of India declare Odia as a classical language?

(a) 2014
(b) 2004
(c) 2017
(d) 2005

Q35. Which one of the following is NOT true in regard to The Waqf (Amendment) Bill, 2025 passed by the Indian government?

(a) The bill also seeks to improve the economic and social status of Muslim women.
(b) The bill retains two Muslim women members in central Waqf council.
(c) The bill retains two Muslim women members in state Waqf board.
(d) Female heirs are not guaranteed their rightful share in family waqf.

Q36. From which year onward does PDL (Parliament Digital Library) have the digitized archives of legislative debates?

(a) 1900
(b) 1947
(c) 1953
(d) 1854

Q37. This question is in Hindi. Read it online.

Q38. Which Amendment added Konkani, Manipuri, and Nepali to the Eighth Schedule?

(a) 63^(rd) Amendment
(b) 71^(st) Amendment
(c) 52^(nd) Amendment
(d) 42^(nd) Amendment

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Q39. This question is in Hindi. Read it online.

Q40. Western Scholar Pishel associated the terms Sutradhar and Sthapak in Sanskrit plays with:

(a) Puppet dance tradition
(b) Classical dance performances
(c) Ancient musical instruments
(d) Ritual ceremonies

Q41. In which Indian state are the renowned Bagh Caves, famous for their ancient murals, located?

(a) Maharashtra
(b) Madhya Pradesh
(c) Chhattisgarh
(d) Odisha

Q42. Which information is essential to perform stoichiometric calculations for a chemical reaction?

(a) Temperature of the reaction
(b) The color of the reactants
(c) Type of apparatus used
(d) A balanced chemical equation

Q43. Which key is used to open the Start Menu in Windows 11?

(a) Ctrl
(b) Shift
(c) Windows Key
(d) Enter

Q44. A game installed on your computer belongs to:

(a) System utilities
(b) Application software
(c) Primary memory
(d) Device drivers

Q45. In May 2025, what operation did India launch, involving missile and drone strikes in Pakistan, that escalated tensions significantly?

(a) Operation Trident
(b) Operation Horizon
(c) Operation Sindoor
(d) Operation Sunrise

Q46. The Dutch lost influence in India mainly due to their defeat by which European power?

(a) Portuguese
(b) Danish
(c) British
(d) French

Q47. Which European country declared its exit from the International Criminal Court in April 2025?

(a) Bulgaria
(b) Hungary
(c) Czech Republic
(d) Slovakia

Q48. Which quantities influence the kinetic energy of a moving body?

(a) Its shape
(b) Only velocity
(c) Both mass and velocity
(d) Only mass

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Q49. As of January 2025, which of the following was India's largest shipbuilding facility in terms of maximum shipbuilding capacity?

(a) Kattupalli Shipyard
(b) Cochin Shipyard Limited (CSL)
(c) Goa Shipyard Limited
(d) Mazagon Dock Shipbuilders Limited

Q50. Which gas is the main contributor to acid rain formation?

(a) Neon
(b) Methane
(c) Hydrogen
(d) Sulphur dioxide

Q51. Who is credited with codifying the method of Carnatic music?

(a) Purandara Dasa
(b) Kanaka Dasa
(c) Jagannatha Dasa
(d) Gopala Dasa

Q52. India, in October 2025, developed its first indigenously discovered antibiotic, effective against resistant respiratory infections. What is its name?

(a) Azithromycin
(b) Nafithromycin
(c) Penicillin-G
(d) Cefixime

Q53. Who among the following appoints judges of Family Courts in India?

(a) Governor
(b) President
(c) State Government
(d) Union Home Minister

Q54. How many Fundamental Duties were finally included in the Constitution in 1976 (based on committee recommendations)?

(a) Nine
(b) Six
(c) Ten
(d) Seven

Q55. What was the main aim of the 1991 economic reforms in India regarding industries?

(a) To promote privatization and competition
(b) To increase government control
(c) To reduce agricultural output
(d) To decrease foreign investment

Q56. Which institute helped carry out the cloud seeding trial in Delhi in October 2025?

(a) IIT Kanpur
(b) IIT Madras
(c) IIT Bombay
(d) IIT Guwahati

Q57. Where did Narendra Modi inaugurate India’s first deepwater transshipment port in May 2025?

(a) Karnataka
(b) Kerala
(c) Maharashtra

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(d) Gujarat

Q58. In Windows 11, what is the purpose of using dir /s /b "syllabus.pdf" inside Command Prompt?

(a) To copy “syllabus.pdf” into a new destination folder
(b) To list full file paths of “syllabus.pdf” from all nested folders
(c) To show the file size and attributes of “report.pdf”
(d) To open “syllabus.pdf” using the default PDF viewer

Q59. What was the installed cement capacity and production of cement, respectively, in the Indian cement industry by 2022-23?

(a) 300 MT and 181 MT
(b) 250 MT and 151 MT
(c) 600 MT and 391 MT
(d) 500 MT and 231 MT

Q60. In which city did the World Health Summit 2024 take place?

(a) Berlin
(b) Paris
(c) Geneva
(d) London

Q61. This question is in Hindi. Read it online.

Q62. Which of the following statements is true for water when it is cooled from 4°C to 0°C?

(a) Volume and density both decrease
(b) Volume increases but density decreases
(c) Volume and density both increase
(d) Volume decreases but density remains same

Q63. Khut, Muqaddam and Patwari during the Delhi Sultanate were _____.

(a) village functionaries
(b) royal court functionaries
(c) provincial functionaries
(d) town functionaries

Q64. DNA and RNA are polymers made of long chains of _____.

(a) Nucleotides
(b) Monosaccharides
(c) Fatty acids
(d) Amino acids

Q65. Which wildlife conservation strategy protects entire ecosystems rather than a single species?

(a) Seed banks
(b) Captive breeding
(c) In-situ conservation
(d) Biodiversity hotspots

Q66. In Windows 11 operating system, what happens when Alt + F4 is pressed while no applications or windows are open?

(a) Opens the Task Manager window
(b) Launches the File Explorer window
(c) Shows the system shutdown dialog
(d) Refreshes the desktop environment

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Q67. What is the maximum loan amount available under PMMY for entrepreneurs who have successfully repaid previous 'Tarun' category loans?

(a) Rs. 10 lakh
(b) Rs. 20 lakh
(c) Rs. 5 lakh
(d) Rs. 50 lakh

Q68. Which Article prohibits judicial inquiry into ministerial advice tendered to President during constitutional functioning?

(a) Article 78
(b) Article 74
(c) Article 72
(d) Article 76

Q69. Which one of the following represents the correct formula for crude birth rate (CBR), where B = live births during the year; P= Estimated mid year population of the area?

(a) (Births × Population) ÷ 1000
(b) (Population ÷ Births) × 100
(c) (Births ÷ Population) × 1000
(d) (Births + Population) × 100

Q70. Which of the following is NOT a pull factor of migration?

(a) Better job opportunities
(b) Socio-economic backwardness
(c) Peace and stability
(d) Security of life

GENERAL INTELLIGENCE AND REASONING

Q71. What should come in place of ? in the given series based on the English alphabetical order?

MQS QUW UYA YCE ?

(a) CHH
(b) CGI
(c) CFH
(d) CDF

Q72. ZACY is related to VWYU in a certain way based on the English alphabetical order. In the same way, QRTP is related to MNPL. To which of the following is CDFB related, following the same logic?

(a) YZAX
(b) YZBX
(c) YYAX
(d) YAAI

Q73. SMAL is related to PIVF in a certain way based on the English alphabetical order. In the same way, GWGN is related to DSBH. To which of the following options is XKRV related, following the same logic?

(a) UPLO
(b) UMPG
(c) UGMP
(d) UGPM

Q74. Read the given statement(s) and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:

All drawings are mountains.

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All mountains are planes.

Conclusions:

(I) Some planes are mountains.

(II) All drawings are planes.

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

Q75. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter cluster.)

(a) SZ - VD
(b) WE - ZJ
(c) OA - RE
(d) BM - EQ

Q76. Ay, Bx, Cu, Dq, Ep, Fv and Gt are sitting around a circular table, facing the centre.

Cu sits second to the left of Fv. Gt sits second to the left of Cu. Dq sits to the immediate left of Ep. Ay sits second to the right of Ep.

How many people sit between Bx and Ep when counted from the left of Bx?

(a) Four
(b) Two
(c) Three
(d) One

Q77. If ‘A’ stands for ‘÷’, ‘B’ stands for ‘×’, ‘C’ stands for ‘+’ and ‘D’ stands for ‘−’, then what will come in place of the question mark (?) in the following equation?

41 D 44 C 9 A 21 B 7 = ?

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

Q78. Which of the following two numbers should be interchanged to make the given equation correct?

(12 × 8) ÷ 6 + 4 × 13 − (36 ÷ 9) × 15 + 25 = 49

(a) 4 and 8
(b) 12 and 36
(c) 13 and 15
(d) 4 and 6

Q79. What should come in place of the ‘?’ in the given series?

3 ? 90 360 1080 2160 2160

(a) 18
(b) 36
(c) 15
(d) 21

Q80. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

GTXI BXUK WBRM RFOO ?

(a) MKLR
(b) MJLQ
(c) NJKR
(d) NKKQ

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Q81. In a certain code language,

A + B means ‘A is the father of B’,

A - B means ‘A is the sister of B’,

A × B means ‘A is the daughter of B’, and

A ÷ B means ‘A is the mother of B’.

Based on the above, how is P related to T if ‘P ÷ Q - R + S × T’?

(a) Sister’s daughter
(b) Son’s daughter
(c) Husband's mother
(d) Daughter’s daughter

Q82. Mr. Yorly starts from Point A and drives 11 km towards West. He then takes a left turn, drives 13 km, turns left and drives 30 km. He then takes a left turn, drives 26 km, turns left and drives 5 km. He then takes a left turn and drives 8 km. He takes a final right turn, drives 14 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90 degree turns only unless specified.)

(a) 5 km to the South
(b) 6 km to the North
(c) 2 km to the East
(d) 3 km to the East

Q83. BEGH is related to HKMN in a certain way based on the English alphabetical order. In the same way, FIKM is related to LOQS. To which of the following is LNPS related, following the same logic?

(a) KMOR
(b) QSUX
(c) RTVY
(d) MOQT

Q84. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(158, 141, 177)

(164, 147, 183)

(a) (122, 105, 139)
(b) (119, 102, 138)
(c) (146, 129, 163)
(d) (131, 114, 151)

Q85. Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) BD - HJ
(b) EH - KM
(c) HJ - NP
(d) LN - RT

Q86. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

VRX 1, TPV 4, RNT 9, PLR 16, ?

(a) NJP 25
(b) KPR 36
(c) GSP 49
(d) DOP 36

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Q87. What should come in place of '?' in the given series?

152 140 134 122 116 104 ?

(a) 98
(b) 101
(c) 95
(d) 100

Q88. Seven people, T, E, A, R, I, N and G, are sitting in a row, facing north. Only three people sit between N and I. T sits to the immediate left of I. No one sits to the right of E. Only two people sit between E and T. A sits to the immediate right of R. How many people sit between G and A?

(a) Two
(b) One
(c) Four
(d) Three

Q89. Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter cluster.)

(a) VRO
(b) SOP
(c) KGD
(d) QMJ

Q90. In a certain code language,

A = B means 'A is the sister of B',

A $ B means 'A is the brother of B',

A @ B means 'A is the wife of B' and

A * B means 'A is the father of B'.

How is W related to G if 'W * F = K $ L @ G'?

(a) Wife's father
(b) Brother
(c) Wife's brother
(d) Father

Q91. Refer to the following letter series and answer the question that follows. Counting to be done from left to right only.

(Left) D E I V D I J Y T Z A K F Z S M U I Y E Q (Right)

How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a vowel?

(a) Three
(b) Two
(c) One
(d) Four

Q92. In a row of 42 people facing the north, Amala sits 18^(th) from the left end. If only 12 people sit to the right of Sneha, then how many people sit between Amala and Sneha?

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

Q93. Refer to the following letter series and answer the question. (Counting to be done from left to right only.)

(Left) R U U K G S R E W Y P U K Q S T E Q Q U S V (Right)

How many such consonants are there, each of which is immediately preceded by a vowel and also immediately followed by a vowel?

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

Q94. In a certain code language, ‘yak lock zip’ is coded as ' je tc ly' and ‘zip shirt cake’ is coded as ‘rl jg tc’. How is ‘zip’ coded in the given language?

(a) ly
(b) rl
(c) je
(d) tc

Q95. Each letter in the word HARMFUL is arranged in the English alphabetical order. How many letters are there in the English alphabetical order between the letter which is fourth from the left and the one which is second from the right in the new letter cluster thus formed?

(a) 2
(b) 5
(c) 4
(d) 6

Q96. If + means -, - means ×, × means ÷, and ÷ means +, then what will come in place of the question mark (?) in the following equation?

62 - 9 ÷ 94 + 480 × 15 = ?

(a) 606
(b) 611
(c) 620
(d) 629

Q97. In a certain code language, ‘COLD’ is coded as ‘4928’ and ‘CLOG’ is coded as ‘7428’. What is the code for ‘D’ in the given code language?

(a) 4
(b) 8
(c) 2
(d) 9

Q98. Seven boxes, I, J, K, L, Q, R and S, are kept one over the other, but not necessarily in the same order.

Only Q is kept above I. Only two boxes are kept between I and S. R is kept immediately below I. Only K is kept below L.

Which box is kept second above J?

(a) Q
(b) R
(c) I
(d) S

Q99. Read the given statement(s) and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:

All tables are boxes.

Some boxes are desktops.

Conclusions:

(I) Some tables are desktops.

(II) Some boxes are tables.

(a) Both conclusions (I) and (II) follow

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

Q100. In a row of 54 students facing the north, Gagan is 13^(th) from the right end. If Nitin is 17^(th) to the left of Gagan, what is Nitin's position from the left end of the row?
(a) 30^(th)
(b) 25^(th)
(c) 23^(rd)
(d) 27^(th)

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) increase of 11.6%

Shortcut Trick
Apply the Successive Percentage formula: Net Change = a + b + (a × b ÷ 100)
Here, a = −7 (decrease in cost) and b = +20 (increase in sales).
Net Change = −7 + 20 + [(−7 × 20) ÷ 100]
Net Change = 13 − 1.4 = 11.6%
Since the result is positive, it indicates an increase.
Therefore The correct answer is increase of 11.6%.
Alternate Method
Given: Decrease in cost = 7% | Increase in sales = 20%
Formula Used: Revenue = Price × Quantity
=> Let the initial cost of one article be 100 units.
=> Let the initial number of articles sold be 100 units.
=> Initial Revenue = 100 × 100 = 10,000
=> New cost = 100 − 7% of 100 = 93
=> New number of articles sold = 100 + 20% of 100 = 120
=> New Revenue = 93 × 120 = 11,160
=> Increase in Revenue = 11,160 − 10,000 = 1,160
=> Percentage Increase = (1,160 ÷ 10,000) × 100 = 11.6%
Therefore The correct answer is increase of 11.6%.
Additional Information
Net Percentage Change Formula
For any product P = A × B, if A changes by x% and B changes by y%, then P changes by (x + y + xy/100)%.
Revenue Components

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Total Revenue is directly proportional to both Price per unit and Total Sales volume.

Fraction Method

Changes can be expressed as multipliers: 7% decrease = 0.93 multiplier; 20% increase = 1.20 multiplier. Net change = 0.93 × 1.20 = 1.116, which is an 11.6% increase.

Q2. Answer: (c) 0

Shortcut Trick

A number is divisible by 12 if and only if it is divisible by its coprime factors, which are 3 and 4.

The question states that the number 7549A is already divisible by both 4 and 3.

Since it satisfies both conditions, the number must be perfectly divisible by 12 (LCM of 3 and 4).

For any number that is perfectly divisible, the remainder is always 0.

Therefore The correct answer is 0.

Alternate Method

Given: A five-digit number 7549A is divisible by 4 and 3.

=> Step 1: Check Divisibility by 4. The last two digits 9A must be divisible by 4.

=> Multiples of 4 in the 90s are 92 and 96. Thus, A can be 2 or 6.

=> Step 2: Check Divisibility by 3. The sum of digits must be divisible by 3.

=> Sum = 7 + 5 + 4 + 9 + A = 25 + A.

=> If A = 2, Sum = 25 + 2 = 27 (Divisible by 3).

=> If A = 6, Sum = 25 + 6 = 31 (Not divisible by 3).

=> Step 3: Determine the Remainder. The number is 75492.

=> Since 75492 is divisible by both 3 and 4, it is divisible by 12.

=> 75492 ÷ 12 = 6291 with no remainder.

Therefore The correct answer is 0.

Additional Information

Divisibility Rule of 12

A number is divisible by 12 if it is divisible by both 3 and 4. This is because 12 is a composite number and 3 and 4 are its coprime factors.

Coprime Numbers

Two numbers are coprime if their Highest Common Factor (HCF) is 1. If a number is divisible by two coprime numbers x and y, it is also divisible by their product xy.

Divisibility Rule of 3 and 9

For both 3 and 9, the rule depends on the sum of the digits. If the sum is divisible by 3 or 9, the entire number is divisible by 3 or 9 respectively.

Q3. Answer: (d) 21

Shortcut Trick

Total reduction in combined age 5 years ago = 5 years × 2 people = 10 years.

Sum of ages 5 years ago = 34 − 10 = 24 years.

The ratio of Anika's age to Riya's age was 2 : 1.

Anika's age 5 years ago = 24 × (2 / 3) = 16 years.

Anika's present age = 16 + 5 = 21 years.

Therefore The correct answer is 21 years.

Alternate Method

Given: Combined age = 34 years; Age relation 5 years ago = 2 : 1.

Let Riya's age 5 years ago be x and Anika's age be 2x.

=> Present age of Anika = 2x + 5

=> Present age of Riya = x + 5

=> (2x + 5) + (x + 5) = 34

=> 3x + 10 = 34

=> 3x = 34 − 10

=> 3x = 24

=> x = 8

=> Anika's current age = 2(8) + 5 = 16 + 5 = 21

Therefore The correct answer is 21 years.

Additional Information

Constant Age Difference

The difference between the ages of two people always remains constant, regardless of the number of years passed or gone by.

Sum of Ages Shift

If there are n people, the sum of their ages t years ago was (Current Sum − n × t) and t years from now will be (Current Sum + n × t).

Ratio of Ages

When ages are given in a ratio a : b, they can be represented as ax and bx to simplify algebraic equations.

Q4. Answer: (d)

The solution is in Hindi. Read it online.

Q5. Answer: (d) 120 liters

Shortcut Trick

Initial Ratio (Milk : Water) = 5 : 3

Final Ratio (Milk : Water) = 5 : 5

Since only water is added, the milk units remain constant (5 units).

Increase in water = 5 − 3 = 2 units

2 units = 48 liters => 1 unit = 24 liters

Initial Milk = 5 units = 5 × 24 = 120 liters

Therefore The correct answer is 120 liters.

Alternate Method

Given: Initial ratio 5:3, Final ratio 5:5, Water added = 48 liters.

Formula Used: Ratio Proportionality | Quantity = Ratio Part × Scaling Factor (x)

=> Let the initial quantity of milk and water be 5x and 3x respectively.

=> Total quantity of water after adding 48 liters = 3x + 48

=> New ratio of milk to water = 5x / (3x + 48)

=> Given new ratio = 5 / 5 = 1 / 1

=> 5x / (3x + 48) = 1 / 1

=> 5x = 3x + 48

=> 2x = 48

=> x = 24

=> Initial quantity of milk = 5 × 24 = 120 liters.

Therefore The correct answer is 120 liters.

Additional Information

Constant Component Principle

In mixture problems, if only one component is added or removed, the quantity of the other component remains unchanged in absolute terms. Adjust ratios to reflect this.

Ratio Balancing

To balance a ratio when a value is added to only one side, multiply the entire ratio by a factor so that the constant part matches its previous unit count.

Percentage to Ratio

A mixture ratio of 5:5 implies 50% milk and 50% water. This conversion is often useful for solving complex mixture-alligation problems.

Q6. Answer: (b) 9

Shortcut Trick

Total time = (Distance ÷ Speed1) + (Distance ÷ Speed2)

Total time = (78 ÷ 13) + (78 ÷ 26)

Total time = 6 + 3 = 9 hr

Therefore The correct answer is 9 hr.

Alternate Method

Given:

Distance from Town A to Town B = 78 km

Speed during onward journey (A to B) = 13 km/h

Speed during return journey (B to A) = 26 km/h

Formula: Time = Distance ÷ Speed

=> Time taken to travel from Town A to Town B (T1) = 78 ÷ 13 = 6 hr

=> Time taken to travel from Town B to Town A (T2) = 78 ÷ 26 = 3 hr

=> Total time for the round trip = T1 + T2

=> Total time = 6 + 3 = 9 hr

Therefore, the total time taken is 9 hr, which corresponds to Option (2).

Therefore The correct answer is 9 hr.

Additional Information

Average Speed for Round Trip

When the distance covered is the same for both ways, the Average Speed = (2 × S1 × S2) ÷ (S1 + S2). For this trip, Average Speed = (2 × 13 × 26) ÷ (13 + 26) = 17.33 km/h.

Speed-Time Relationship

For a constant distance, Speed is inversely proportional to Time (S prop. to 1/T). Since the return speed is double the onward speed, the return time is half of the onward time.

Q7. Answer: (c) 50

Shortcut Trick

The mean proportional (b) between two numbers a and c is calculated as b = √(a × c).

Given a = 25 and c = 100.

Second number = √(25 × 100) = √2500 = 50.

Therefore The correct answer is 50.

Alternate Method

Given:

First number (a) = 25

Third number (c) = 100

Second number (b) is the mean proportional.

Formula Used:

If three numbers are in continued proportion, then a/b = b/c => $b^2 = ac$

=> $b^2 = 25 \times 100$ => $b^2 = 2500$ => b = √2500 => b = 50

Therefore The correct answer is 50.

Additional Information

Mean Proportional (Geometric Mean)

For two numbers a and b, the mean proportional x is defined such that a:x = x:b, which results in x = √(ab).

Third Proportional

In a continued proportion a:b = b:c, the number c is called the third proportional and is calculated as $c = b^2 / a$.

Fourth Proportional

For four numbers a, b, c, and d, if a:b = c:d, then d is the fourth proportional and d = (b × c) / a.

Q8. Answer: (d)

The solution is in Hindi. Read it online.

Q9. Answer: (d) 4/33

Given:

{(12/27) ÷ (12/2)} ÷ ((1/11) × (22/3) + (5/9)) + (2/9) ÷ (33/22) of (22/9)

Formula used:

The simplification follows the VBODMAS rule:

V: Vinculum, B: Brackets/Braces, O: Of, D: Division, M: Multiplication, A: Addition, S: Subtraction.

Calculations:

Step 1: Simplify the terms inside the first braces:

=> {(12/27) ÷ (12/2)} = (12/27 × 2/12)

=> 2/27

Step 2: Simplify the terms inside the parentheses:

=> ((1/11) × (22/3) + (5/9)) = (2/3 + 5/9)

Taking the LCM of 3 and 9, which is 9:

=> (6/9 + 5/9) = 11/9

Step 3: Simplify the of operator part (which takes priority over division):

=> (33/22) of (22/9) = (33/22 × 22/9)

=> 33/9 = 11/3

Step 4: Substitute these values back into the expression:

=> (2/27 ÷ 11/9) + (2/9 ÷ 11/3)

Step 5: Apply division by multiplying by the reciprocal:

=> (2/27 × 9/11) + (2/9 × 3/11)

=> 2/33 + 2/33

Step 6: Perform the final addition:

=> 4/33

Therefore The correct answer is option (4).

Q10. Answer: (a) 10 hours

Shortcut Trick

Total capacity (LCM of 10, 15, 12) = 60 units.

Efficiencies: Pipe A = 6, Pipe B = 4, Pipe C = 5.

Draining in 2 hours by A and B = (6 + 4) × 2 = 20 units.

Remaining water = 60 − 20 = 40 units.

Net draining speed (A + B − C) = 10 − 5 = 5 units/hr.

Total time = 2 hr + (40 ÷ 5) hr = 10 hours.

Therefore The correct answer is 10 hr.

Alternate Method

Given: Draining time of Pipe A = 10 hr, Pipe B = 15 hr, and Filling time of Pipe C = 12 hr.

Formula Used: Total Work = LCM of time; Efficiency = Work ÷ Time.

Person/Pipe	Time (hr)	Total Work	Efficiency
Pipe A (Drain)	10	60 units	6 (Out)
Pipe B (Drain)	15	4 (Out)	
Pipe C (Fill)	12	5 (In)	

=> Total draining efficiency of A and B = 6 + 4 = 10 units/hr.

=> Water drained by A and B in first 2 hours = 10 × 2 = 20 units.

=> Remaining water in the full tank = 60 − 20 = 40 units.

=> Now, all pipes are open, Net Efficiency = (Efficiency of A + B) − Efficiency of C

=> Net Efficiency = 10 − 5 = 5 units/hr (Draining).

=> Time taken to drain remaining water = 40 ÷ 5 = 8 hours.

=> Total time taken to empty the tank = 2 + 8 = 10 hours.

Therefore The correct answer is 10 hr.

Additional Information

Negative Efficiency Concept

In Pipes and Cisterns, inlet pipes have positive efficiency while outlet/drain pipes have negative efficiency when calculating net flow.

Time to Empty vs Time to Fill

If the net efficiency is positive, the tank will eventually fill. If the net efficiency is negative, the tank will eventually empty.

Pipes and Cisterns Formula

If pipe X fills in 'x' hours and pipe Y empties in 'y' hours, net work in 1 hour = (1/x − 1/y).

Q11. Answer: (d) 21

Shortcut Trick

Directly calculate the perfect squares: √196 = 14 and √81 = 9.

Apply the square of a square root property: $(\sqrt{16})^2 = 16$.

Perform the operations: 14 − 9 + 16 = 5 + 16 = 21.

Therefore The correct answer is 21.

Alternate Method

Given: $\sqrt{196} - \sqrt{81} + (\sqrt{16})^2$

Evaluate the expression using the BODMAS rule and properties of square roots:

=> $14 - 9 + (4)^2$

=> 14 − 9 + 16

=> 5 + 16

=> 21

Therefore The correct answer is 21.

Additional Information

Square Root Properties

The square root of a number is a value that gives the original number when squared. Specifically, $(\sqrt{x})^2 = x$ for any non-negative number x.

BODMAS / PEMDAS

This rule dictates the order of operations: Brackets, Orders (Powers and Roots), Division, Multiplication, Addition, and Subtraction.

Common Perfect Squares

Memorizing perfect squares up to 25 (e.g., $13^2 = 169$, $14^2 = 196$, $15^2 = 225$) is essential for fast simplification calculation.

Q12. Answer: (b) 1,000

Shortcut Trick

The effective interest rate difference is calculated by multiplying the rate difference with the time period.

Difference in Rate per year = 7% − 5% = 2%

Total difference for 2 years = 2% × 2 = 4%

According to the question, 4% of Principal = Rs. 40

=> 1% of Principal = 40 ÷ 4 = Rs. 10

=> 100% (Principal) = 10 × 100 = Rs. 1,000

Therefore The correct answer is Rs. 1,000.

Alternate Method

Given:

Time period (T) = 2 years

Rate 1 (R1) = 5% per annum

Rate 2 (R2) = 7% per annum

Difference in Simple Interest = Rs. 40

Formula Used:

Simple Interest (SI) = (Principal × Rate × Time) ÷ 100

Calculations:

Let the Principal be Rs. P.

=> SI1 = (P × 5 × 2) ÷ 100 = 10P/100

=> SI2 = (P × 7 × 2) ÷ 100 = 14P/100

=> SI2 − SI1 = 40

=> (14P − 10P) ÷ 100 = 40

=> 4P ÷ 100 = 40

=> 4P = 40 × 100

=> P = 4000 ÷ 4

=> P = 1,000

Thus, the Principal of each sum is Rs. 1,000, which corresponds to Option (2).

Therefore The correct answer is Rs. 1,000.

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Additional Information

Simple Interest (SI) Properties

Simple interest is calculated only on the Principal amount and remains constant for every year if the rate and principal are unchanged.

Principal Formula

When the difference in interest (D) is given for two different rates (R1 and R2) over the same time (T), then P = (D × 100) ÷ [T × (R2 − R1)].

Total Amount

The total Amount after interest is calculated as A = Principal + Simple Interest = P × [1 + (R × T ÷ 100)].

Q13. Answer: (b) 12

Shortcut Trick

Assume Total Work = 24 units (LCM of 12 and 24).

Efficiency of A = 2 units/day and B = 1 unit/day.

Combined work in 4 days = 4 × (2 + 1) = 12 units.

Remaining work = 24 − 12 = 12 units.

Time taken by B = 12 ÷ 1 = 12 days.

Therefore The correct answer is 12 days.

Alternate Method

Given:

Time taken by A = 12 days

Time taken by B = 24 days

Formula Used:

Total Work = Time × Efficiency

Person	Days	Total Work	Efficiency
A	12	24 (LCM)	2
B	24	1	

Calculations:

=> Total Work = LCM of 12 and 24 = 24 units

=> Efficiency of A = 24 ÷ 12 = 2 units/day

=> Efficiency of B = 24 ÷ 24 = 1 unit/day

=> Combined efficiency of A and B = 2 + 1 = 3 units/day

=> Work completed by both in 4 days = 4 × 3 = 12 units

=> Remaining work = 24 − 12 = 12 units

=> Days taken by B to finish remaining work = 12 ÷ 1 = 12 days

Therefore The correct answer is 12 days.

Additional Information

Efficiency and Time Relation

Efficiency is inversely proportional to the time taken. If the ratio of time taken by two people is x:y, then the ratio of their efficiencies is y:x.

Work and Wages

Wages are distributed based on the amount of work done. If people work for the same duration, wages are divided in the ratio of their efficiencies.

Pipes and Cisterns Analogy

This concept is identical to Pipes and Cisterns, where filling a tank is positive work and a leak represents negative work (negative efficiency).

Q14. Answer: (c) 3 hours

Shortcut Trick

When two equal halves of a distance are covered at speeds x and y, the Average Speed = (2 × x × y) ÷ (x + y).

Average Speed = (2 × 30 × 60) ÷ (30 + 60) = 3600 ÷ 90 = 40 km/h.

Total Time = Total Distance ÷ Average Speed = 120 ÷ 40 = 3 hr.

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Therefore The correct answer is 3 hr.

Alternate Method

Given:

Total Distance = 120 km

First half distance (D1) = 120 ÷ 2 = 60 km

Second half distance (D2) = 120 ÷ 2 = 60 km

Speed during first half (S1) = 30 km/h

Speed during second half (S2) = 60 km/h

Formula used: Time = Distance ÷ Speed

Calculations:

=> Time taken for the first half (T1) = 60 ÷ 30 = 2 hr

=> Time taken for the second half (T2) = 60 ÷ 60 = 1 hr

=> Total Time taken = T1 + T2 = 2 + 1 = 3 hr

Comparing the result with the options, it corresponds to Option 3.

Therefore The correct answer is 3 hr.

Additional Information

Average Speed Formula

Average Speed = Total Distance ÷ Total Time. It is not the simple arithmetic mean of speeds unless the time intervals are equal.

Equal Distance Case

If a journey is divided into n equal distance parts with speeds v1, v2... v_n, the average speed is the Harmonic Mean of the speeds.

Speed-Time-Distance Relationship

Distance = Speed × Time. If distance is constant, speed is inversely proportional to time (S prop. to 1/T).

Q15. Answer: (b) (i) and (iv)

Shortcut Trick

A number is divisible by 68 if and only if it is divisible by both 4 and 17 (since 68 = 4 × 17).

Check divisibility by 4: The last two digits must be divisible by 4.

For (i) 17350 and (iv) 35350, the last two digits are 50. Since 50 is not divisible by 4 (50 ÷ 4 = 12.5), these numbers cannot be divisible by 68.

Numbers (ii) 23800 and (iii) 28560 end in 00 and 60, both of which are divisible by 4; checking with 17 confirms their divisibility by 68.

Therefore The correct answer is (i) and (iv).

Alternate Method

Given: Numbers (i) 17350, (ii) 23800, (iii) 28560, (iv) 35350. Divisor = 68.

=> Divisibility of (i) 17350: 17350 ÷ 68 = 255.147 (Remainder ≠ 0)

=> Divisibility of (ii) 23800: 23800 ÷ 68 = 350 (Remainder = 0)

=> Divisibility of (iii) 28560: 28560 ÷ 68 = 420 (Remainder = 0)

=> Divisibility of (iv) 35350: 35350 ÷ 68 = 519.852 (Remainder ≠ 0)

Therefore The correct answer is (i) and (iv).

Additional Information

Divisibility Rule for 4

A number is divisible by 4 if its last two digits are 00 or form a number that is exactly divisible by 4.

Divisibility by Composite Numbers

To check divisibility by a composite number L, the number must be divisible by all coprime factors of L. For 68, the coprime factors are 4 and 17.

Divisibility Rule for 17

Multiply the last digit of the number by 5 and subtract it from the rest of the number. If the result is divisible by 17, the whole number is divisible by 17.

Q16. Answer: (a) C

Shortcut Trick

Compare the effective discount percentage of all four schemes for 4 toys:

(A) 6 + 39 − (6 × 39 / 100) = 45 − 2.34 = 42.66%
(B) Successive 48%, 16%, 11% ≈ 61.12%
(C) Average of (37 + 37 + 29 + 29) / 4 = 132 / 4 = 33%
(D) 2 free out of (4 + 2) = 2 / 6 × 100 = 33.33%
The lowest discount (least beneficial) is 33% from Scheme C.
Therefore The correct answer is C.
Alternate Method
Assume the Marked Price (MP) of each toy is Rs. 100. A customer buys 4 toys, so total Marked Price = Rs. 400.
Calculation for Scheme A:
=> Net Discount = x + y − (xy / 100)
=> 6 + 39 − (6 × 39 / 100) = 45 − 2.34 = 42.66%
Calculation for Scheme B:
=> Successive discount of 48% and 16% = 48 + 16 − (48 × 16 / 100) = 64 − 7.68 = 56.32%
=> Now combine 56.32% and 11% = 56.32 + 11 − (56.32 × 11 / 100) = 67.32 − 6.1952 = 61.1248%
Calculation for Scheme C:
=> Total MP for 4 toys = 4 × 100 = Rs. 400
=> Discount on first 2 toys = 2 × 37% of 100 = Rs. 74
=> Discount on next 2 toys = 2 × 29% of 100 = Rs. 58
=> Total Discount = 74 + 58 = Rs. 132
=> Discount % = (132 / 400) × 100 = 33%
Calculation for Scheme D:
=> Customer gets 2 toys free on buying 4 toys (Total = 6 toys)
=> Discount % = (Free Items / Total Items) × 100 = (2 / 6) × 100 = 33.33%
=> Comparing all: 42.66%, 61.12%, 33%, and 33.33%.
Therefore The correct answer is C.
Additional Information
Successive Discount Formula
For two successive discounts of a% and b%, the equivalent single discount is (a + b − ab/100)%.
Buy X Get Y Free
In a 'Buy X Get Y Free' scheme, the effective discount percentage is given by [Y / (X + Y)] × 100.
Marked Price and Selling Price
Discount is always calculated on the Marked Price (MP). SP = MP × (100 − Discount%)/100.

Q17. Answer: (b) 1,47,000

Shortcut Trick
Ratio of employees in Branch A : B : C = 40 : 30 : 30 = 4 : 3 : 3.
Weighted Average = [(1,20,000 × 4) + (1,80,000 × 3) + (1,50,000 × 3)] ÷ (4 + 3 + 3)
Average = (4,80,000 + 5,40,000 + 4,50,000) ÷ 10
Average = 14,70,000 ÷ 10 = 1,47,000.
Therefore The correct answer is Rs. 1,47,000.
Alternate Method
Given:
Branch A: 40 employees, Avg Sales = Rs. 1,20,000
Branch B: 30 employees, Avg Sales = Rs. 1,80,000
Branch C: 30 employees, Avg Sales = Rs. 1,50,000
Formula Used: Average = Total Sales ÷ Total Employees
=> Total Employees = 40 + 30 + 30 = 100
=> Total Sales = (40 × 1,20,000) + (30 × 1,80,000) + (30 × 1,50,000)
=> Total Sales = 48,00,000 + 54,00,000 + 45,00,000
=> Total Sales = Rs. 1,47,00,000
=> Average per employee = 1,47,00,000 ÷ 100 = Rs. 1,47,000
Therefore The correct answer is Rs. 1,47,000.

Additional Information

Weighted Average Formula

It is used when data sets have different levels of importance or quantity. Formula: X_(avg) = (w1x1 + w2x2 + w3x3) ÷ (w1 + w2 + w3).

Combined Mean

The combined mean of two or more groups is the sum of all observations of all groups divided by the total number of observations in all groups.

Average Property

If each value in a set is increased or decreased by a constant k, the average also increases or decreases by k.

Q18. Answer: (d) 80,000

Shortcut Trick

Profit Ratio P : Q : R = (20 × 8) : (15 × 9) : (12 × t) = 160 : 135 : 12t

Given: Q < R < P => 135 < 12t < 160

For complete months within a year (t ≤ 12), only t = 12 satisfies the condition.

R profit (144 units) = Rs. 72,000 => 1 unit = 72,000 ÷ 144 = Rs. 500

P profit (160 units) = 160 × 500 = Rs. 80,000

Therefore The correct answer is Rs. 80,000.

Alternate Method

Given:

Investment of P = Rs. 2,00,000 for 8 months

Investment of Q = Rs. 1,50,000 for 9 months

Investment of R = Rs. 1,20,000 for t months

Profit of R = Rs. 72,000

Formula: Profit Ratio = (Capital1 × Time1) : (Capital2 × Time2) : (Capital3 × Time3)

=> P's Profit Units = 2,00,000 × 8 = 16,00,000

=> Q's Profit Units = 1,50,000 × 9 = 13,50,000

=> R's Profit Units = 1,20,000 × t

=> Since Profit Q < Profit R < Profit P

=> 13,50,000 < 1,20,000 × t < 16,00,000

=> 11.25 < t < 13.33

=> For complete months in a business year, t = 12 months.

=> R's actual units = 1,20,000 × 12 = 14,40,000

=> 14,40,000 units corresponds to Rs. 72,000 profit.

=> 1 unit value = 72,000 ÷ 14,40,000 = 1 ÷ 20

=> Profit of P = 16,00,000 × (1 ÷ 20) = Rs. 80,000

Therefore The correct answer is Rs. 80,000.

Additional Information

Partnership Profit Sharing

Profit is distributed in the ratio of Effective Capital, where Effective Capital = Investment × Time period.

Compound Partnership

When partners invest their capitals for different time periods, it is known as a compound partnership.

Working vs. Sleeping Partner

A working partner manages the business and may receive an additional salary, while a sleeping partner only invests capital.

Q19. Answer: (c) 11

Shortcut Trick

Ratio of goods: 50 : (30% of 50) : (remaining) => 50 : 15 : 35 = 10 : 3 : 7.

Apply Weighted Average Method for overall profit percentage x.

x = [(10 × 21) + (3 × 43) + (7 × −17)] ÷ (10 + 3 + 7)

x = [210 + 129 − 119] ÷ 20 = 220 ÷ 20 = 11.

Therefore The correct answer is 11.

Alternate Method

Given:
Let Total Goods = 100 units at Rs. 1/unit. Total CP = Rs. 100.
Part 1: 50% of the goods = 50 units sold at 21% profit.
Part 2: 30% of the remaining goods = 30% of 50 = 15 units sold at 43% profit.
Part 3: Still remaining goods = 100 − (50 + 15) = 35 units sold at 17% loss.
Formula Used:
Overall Profit/Loss % (x) = [Total Profit or Loss ÷ Total CP] × 100
Calculations:
=> Profit from Part 1 = 50 × (21 ÷ 100) = Rs. 10.5
=> Profit from Part 2 = 15 × (43 ÷ 100) = Rs. 6.45
=> Loss from Part 3 = 35 × (17 ÷ 100) = Rs. 5.95
=> Total Profit = 10.5 + 6.45 − 5.95
=> Total Profit = 16.95 − 5.95 = Rs. 11
=> Overall profit % (x) = (11 ÷ 100) × 100 = 11%
=> x = 11
Therefore The correct answer is 11.
Additional Information
Weighted Average Formula
When a whole is divided into parts n1, n2... with individual changes p1, p2..., the net change is (Σ n_i × p_i) ÷ Σ n_i.
Profit and Loss Percentage
Profit % = (Profit ÷ CP) × 100 and Loss % = (Loss ÷ CP) × 100. Always calculate on Cost Price unless stated otherwise.
Successive Percentage Change
For two successive changes of a% and b%, the effective change is [a + b + (a × b) ÷ 100]%.

Q20. Answer: (a) 259.8 square meters

Shortcut Trick
A regular hexagon is composed of 6 equilateral triangles.
Area of 1 equilateral triangle = (√3 / 4) × (side)²
Total Area = 6 × (1.732 / 4) × 10²
Total Area = 1.5 × 1.732 × 100 = 259.8 m².
Therefore The correct answer is 259.8 m².
Alternate Method
Given:
Side of the regular hexagon (s) = 10 m
Value of √3 ≈ 1.732
Formula Used:
Area of a regular hexagon = [3√3 / 2] × s²
Calculations:
=> Area = [3 × 1.732 / 2] × (10)²
=> Area = [5.196 / 2] × 100
=> Area = 2.598 × 100
=> Area = 259.8 m²
Therefore The correct answer is 259.8 m².
Additional Information
Perimeter of a Regular Hexagon
The perimeter is the total length of the boundary, calculated as P = 6 × side.
Interior Angles
Each interior angle of a regular hexagon is 120°, and the sum of all interior angles is 720°.
Longest Diagonal
The longest diagonal connects two opposite vertices and its length is equal to twice the side (D = 2 × s).

Q21. Answer: (c) Rs. 1920

Shortcut Trick

Total interest percentage for the entire duration = Rate × Time

Total Interest % = 12% × 5 = 60%

Interest earned = 60% of the Principal (Rs. 3200)

Interest = 0.60 × 3200 = 1920

Therefore The correct answer is Rs. 1920.

Alternate Method

Given:

Principal (P) = Rs. 3200

Rate of Interest (R) = 12% per annum

Time (T) = 5 years

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

Calculations:

=> SI = (3200 × 12 × 5) ÷ 100

=> SI = 32 × 12 × 5

=> SI = 32 × 60

=> SI = 1920

Therefore The correct answer is Rs. 1920.

Additional Information

Total Amount in Simple Interest

The total amount (A) payable after the time period is the sum of the Principal and the Simple Interest: A = P + SI.

Compound Interest (CI)

If the interest was compounded annually, the amount would be calculated as $A = P(1 + R/100)^n$, where n is the number of years.

Rate and Time Consistency

Always ensure the Rate (R) and Time (T) are in the same unit (e.g., if R is per annum, T must be in years).

Q22. Answer: (b) 44%

Shortcut Trick

The surface area of a sphere is proportional to the square of its radius (r^2).

For an increase in radius by x%, the net increase in surface area is calculated using the successive percentage formula: x + x + (x × x)/100.

Given x = 20%, the calculation is 20 + 20 + (20 × 20)/100.

Net increase = 40 + 4 = 44%.

Therefore The correct answer is 44%.

Alternate Method

Given:

Initial radius increase = 20%

Formula Used:

Surface Area of a spherical balloon (S) = $4\pi r^2$

Calculations:

=> Let the initial radius (r1) be 5 units.

=> New radius (r2) = 5 + (20% of 5) = 5 + 1 = 6 units.

=> Initial Surface Area (S1) = $4\pi(5)^2 = 100\pi$ (or simply consider ratio $r^2 = 25$).

=> New Surface Area (S2) = $4\pi(6)^2 = 144\pi$ (or ratio $r^2 = 36$).

=> Increase in Surface Area = S2 − S1 = $144\pi - 100\pi = 44\pi$.

=> Percentage Increase = (Increase / Original) × 100

=> Percentage Increase = $(44\pi / 100\pi) \times 100 = 44\%$.

Therefore The correct answer is 44%.

Additional Information

Volume Change of a Sphere

The volume of a sphere is $4/3\pi r^3$. If the radius increases by 20%, the volume increases by $(1.2)^3 - 1 = 1.728 - 1 = 72.8\%$.

Successive Percentage Rule

For any product based relation $Z = A \times B$, if A changes by a% and B by b%, the net change in Z is $[a + b + (ab/100)]\%$.

Hemisphere Properties

For a hemisphere, Curved Surface Area = $2\pi r^2$ and Total Surface Area = $3\pi r^2$. The percentage change logic for radius remains the same as a sphere.

Q23. Answer: (b) 6336

Shortcut Trick

Identify the bases: a = 22, b = −6, and c = −16.

Check the sum of bases: 22 + (−6) + (−16) = 22 − 22 = 0.

Apply the Algebraic Identity: If $a + b + c = 0$, then $a^3 + b^3 + c^3 = 3abc$.

Calculate the result: $3 \times 22 \times (-6) \times (-16) = 66 \times 96 = 6336$.

Therefore The correct answer is 6336.

Alternate Method

Given: $22^3 + (-6)^3 + (-16)^3$

Formula Used: $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

=> Let a = 22, b = −6, and c = −16.

=> First, evaluate the sum $(a + b + c) = 22 + (-6) + (-16) = 0$.

=> Substituting $(a + b + c) = 0$ into the identity: $a^3 + b^3 + c^3 - 3abc = 0 \times (a^2 + b^2 + c^2 - ab - bc - ca)$.

=> This simplifies to $a^3 + b^3 + c^3 = 3abc$.

=> Required Value = $3 \times 22 \times (-6) \times (-16)$.

=> Required Value = $66 \times 96 = 6336$.

Therefore The correct answer is 6336.

Additional Information

Special Case of Cubic Identity

When the sum of three terms is zero ($a + b + c = 0$), the sum of their cubes is always equal to three times their product (3abc). This is frequently used in competitive exams to avoid long cubic calculations.

Sum of Squares Transformation

The term $(a^2 + b^2 + c^2 - ab - bc - ca)$ can also be written as $1/2[(a - b)^2 + (b - c)^2 + (c - a)^2]$, which is always non-negative for real numbers.

Common Cubic Values

Memorizing cubes up to 25 is helpful: $22^3 = 10648$, $16^3 = 4096$, and $6^3 = 216$.

Q24. Answer: (c) 27

Shortcut Trick

To find the greatest number leaving the same remainder, calculate the HCF of the differences.

Difference 1 = 321 − 186 = 135

Difference 2 = 402 − 321 = 81

The HCF of 135 and 81 is 27 since $135 = 27 \times 5$ and $81 = 27 \times 3$.

Therefore The correct answer is 27.

Alternate Method

Given: The numbers are 186, 321, and 402.

Formula Used: The greatest number that divides x, y, and z leaving the same remainder in each case is HCF(|x − y|, |y − z|, |z − x|).

=> Difference (d1) = 321 − 186 = 135

=> Difference (d2) = 402 − 321 = 81

=> Difference (d3) = 402 − 186 = 216

=> Prime factorization of $135 = 3 \times 3 \times 3 \times 5 = 3^3 \times 5$

=> Prime factorization of 81 = 3 × 3 × 3 × 3 = 3^4

=> Prime factorization of $216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 2^3 \times 3^3$

=> Highest Common Factor (HCF) = $3^3 = 27$

Therefore The correct answer is 27.

Additional Information

HCF with Given Remainders

To find the greatest number that divides x, y, and z leaving remainders a, b, and c respectively, find the HCF of (x−a), (y−b), and (z−c).

LCM with Same Remainder

The smallest number which when divided by x, y, and z leaves the same remainder r in each case is given by [LCM(x, y, z) + r].

Property of HCF

The HCF of any two or more numbers must also divide the difference between those numbers.

Q25. Answer: (b) Rs. 10

Shortcut Trick

When a single discount (D) equals the sum of two successive discounts (x + y), the difference in discount amount is always (x × y / 100)% of the Marked Price.

Here, D = 30%, x = 25%, and y = 5%. Note that 30 = 25 + 5.

Difference % = (25 × 5) / 100 = 1.25%.

Difference amount = 1.25% of Rs. 800 = 1.25 × 8 = Rs. 10.

Therefore The correct answer is Rs. 10.

Alternate Method

Given:

Marked Price (MP) = Rs. 800

Offer 1: Single Discount = 30%

Offer 2: Successive Discounts = 25% and 5%

Formula Used:

Total Discount = MP × Discount%

Effective Discount for x% and y% successive = x + y − (xy / 100)

Calculations:

=> Offer 1 Discount amount = 30% of 800 = (30/100) × 800 = Rs. 240

=> Offer 2 Effective Discount% = 25 + 5 − (25 × 5 / 100)

=> Offer 2 Effective Discount% = 30 − 1.25 = 28.75%

=> Offer 2 Discount amount = 28.75% of 800 = (28.75 / 100) × 800 = 28.75 × 8 = Rs. 230

=> Difference in Discount amount = 240 − 230 = Rs. 10

Therefore The correct answer is Rs. 10.

Additional Information

Successive Discount Formula

For two successive discounts of a% and b%, the net discount is (a + b − ab/100)%. For three discounts a, b, and c, apply the formula twice.

Marked Price and Selling Price

Selling Price = Marked Price × (100 − Discount%)/100. The discount is always calculated on the Marked Price (MP) unless specified otherwise.

Single vs Successive Discount

A single discount of (x + y)% is always greater than two successive discounts of x% and y% because in the successive case, the second discount is applied to a reduced amount.

Q26. Answer: (b) 294

Shortcut Trick

Simplify the ratio of the numbers: 6 : 4 → 3 : 2 (co-prime terms).

For co-prime ratio parts 3 and 2, and HCF = 49:

LCM = Product of ratio terms × HCF

LCM = 3 × 2 × 49 = 6 × 49 = 294.

Therefore The correct answer is 294.

Alternate Method

Given:

Ratio of the two numbers = 6 : 4

HCF of the numbers = 49

Formula used:

If two numbers are in the ratio a : b, then the numbers can be written as ax and bx, where x is the HCF of the numbers.

LCM of ax and bx = a × b × x

Q27. Answer: (b) Rs. 20

Shortcut Trick

Total cost of Notebooks and Pencils = (20 × 50) + (50 × 10) = 1000 + 500 = Rs. 1500.

Remaining amount for Pens = 3500 − 1500 = Rs. 2000.

Average cost of one Pen = Total Pen cost ÷ Number of Pens = 2000 ÷ 100 = Rs. 20.

Therefore The correct answer is Rs. 20.

Alternate Method

Given:

Total quantity: 20 Notebooks, 100 Pens, and 50 Pencils.

Total Expenditure = Rs. 3,500.

Average cost of Notebook = Rs. 50 | Average cost of Pencil = Rs. 10.

Calculations:

=> Total cost of 20 Notebooks = 20 × 50 = Rs. 1,000

=> Total cost of 50 Pencils = 50 × 10 = Rs. 500

=> Combined cost of Notebooks and Pencils = 1000 + 500 = Rs. 1,500

=> Total cost for 100 Pens = Total Expenditure − Combined cost

=> Total cost for 100 Pens = 3500 − 1500 = Rs. 2,000

=> Average cost of a Pen = Total cost of Pens ÷ Total number of Pens

=> Average cost of a Pen = 2000 ÷ 100 = Rs. 20

Therefore The correct answer is Rs. 20.

Additional Information

Fundamental Average Formula

The Average of a set of values is the sum of the values divided by the number of values: Average = Total Sum ÷ Number of Items.

Total Value Derivation

To find the Total Value when the average is known, use the formula: Total Value = Average × Number of Items.

Weighted Average Concept

When multiple groups are combined, the Overall Average is calculated as: (n1×a1 + n2×a2 + ...) ÷ (n1 + n2 + ...).

Q28. Answer: (c) 4.62 cm

Shortcut Trick

Identify the triangle type: Since $5^2 + 12^2 = 13^2$ (25 + 144 = 169), it is a right-angled triangle.

In a right-angled triangle, the perpendicular from the right-angle vertex to the hypotenuse (h) is given by:

h = (Product of legs) ÷ Hypotenuse

h = (5 × 12) ÷ 13 = 60 ÷ 13 ≈ 4.615...

Therefore The correct answer is 4.62 cm.

Alternate Method

Given: Sides of the triangle are 5 cm, 12 cm, and 13 cm.

Formula: Area of triangle = 1/2 × base × height

=> First, calculate Area using the two legs: Area = 1/2 × 5 × 12

=> Area = 30 cm^2

=> Now, consider the longest side (13 cm) as the base and 'h' as the perpendicular height.

=> Area = 1/2 × 13 × h

=> 30 = 1/2 × 13 × h

=> 60 = 13 × h

=> h = 60 ÷ 13 ≈ 4.6153... cm

=> Rounding to two decimal places, h = 4.62 cm.

Therefore The correct answer is 4.62 cm.

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Additional Information

Pythagorean Triplet

A set of three positive integers a, b, and c such that $a^2 + b^2 = c^2$. Common triplets include (3, 4, 5), (5, 12, 13), and (8, 15, 17).

Altitude of a Right Triangle

The altitude (h) to the hypotenuse (c) of a right triangle with legs a and b is given by h = (a × b) ÷ c.

Right Triangle Area

Area can be calculated either as (1/2 × leg1 × leg2) or (1/2 × hypotenuse × altitude to hypotenuse).

Q29. Answer: (a) Rs. 35,000

Shortcut Trick

Change in students = 40 − 25 = 15; Change in bill = 25,000 − 17,500 = Rs. 7,500.

Variable charge per student = 7,500 ÷ 15 = Rs. 500.

To find the bill for 60 students, add the cost of 20 more students to the 40-student bill.

Total bill for 60 students = 25,000 + (20 × 500) = 25,000 + 10,000 = Rs. 35,000.

Therefore The correct answer is Rs. 35,000.

Alternate Method

Given: Total bill for 25 students = Rs. 17,500 and for 40 students = Rs. 25,000.

Formula Used: Total Charge = Fixed Part (F) + (Number of Students (n) × Variable Part per student (v))

=> Let Fixed Charge be F and Variable Charge per student be v.

=> F + 25v = 17,500 ... (i)

=> F + 40v = 25,000 ... (ii)

=> Subtracting (i) from (ii): (40v − 25v) = 25,000 − 17,500

=> 15v = 7,500 => v = 500

=> Substituting v in (i): F + 25(500) = 17,500 => F + 12,500 = 17,500

=> Fixed Charge (F) = 17,500 − 12,500 = Rs. 5,000

=> Total bill for 60 students = F + 60v = 5,000 + (60 × 500)

=> Total bill = 5,000 + 30,000 = Rs. 35,000

Therefore The correct answer is Rs. 35,000.

Additional Information

Linear Variation

This problem follows a linear equation pattern y = mx + c, where 'c' is the fixed cost and 'm' is the variable rate per unit.

Fixed and Variable Costs

Fixed costs remain constant regardless of student count, while variable costs increase proportionally with the number of students.

System of Linear Equations

Problems involving two unknowns (Fixed and Variable) are typically solved using the Elimination method or Substitution method.

Q30. Answer: (b) 15%

Shortcut Trick

Profit = 575 − 500 = 75

Profit % = (Profit ÷ CP) × 100

Profit % = (75 ÷ 500) × 100 = 15%

Therefore The correct answer is 15%.

Alternate Method

Given: Cost Price (CP) of the article = Rs. 500 and Selling Price (SP) = Rs. 575.

Formula used: Profit Percentage = [(Selling Price − Cost Price) ÷ Cost Price] × 100

=> Profit = Selling Price − Cost Price

=> Profit = 575 − 500 = Rs. 75

=> Profit Percentage = (75 ÷ 500) × 100

=> Profit Percentage = 15%

Therefore The correct answer is 15%.

Additional Information

Loss Percentage

If Selling Price is less than Cost Price, then Loss % = [(CP − SP) ÷ CP] × 100.

Selling Price Calculation

To find Selling Price when Profit % is given: SP = CP × (100 + Profit %) ÷ 100.

Cost Price Calculation

To find Cost Price when Profit % is given: CP = [SP × 100] ÷ (100 + Profit %).

Q31. Answer: (b) Brahmo Samaj

The correct answer is Brahmo Samaj.

Key Points

• Raja Ram Mohan Roy, widely regarded as the 'Father of Modern India' and the pioneer of the Indian Renaissance, founded the Brahmo Sabha on 20th August 1828 in Calcutta.

• The organization was later renamed the Brahmo Samaj and functioned as a socio-religious reform movement aimed at purging Hindu society of superstitions and dogmas.

• The Brahmo Samaj advocated for monotheism, the worship of one formless God, and strongly opposed idol worship, polytheism, and animal sacrifice.

• It played a monumental role in the abolition of the Sati system in 1829, through Roy's persistent advocacy and collaboration with Lord William Bentinck.

• The movement emphasized the rational interpretation of the Vedas and the Upanishads, promoting a synthesis of Western rationalism and Eastern spirituality.

• Roy's efforts through the Samaj also focused on women's rights, including the promotion of widow remarriage and access to modern education.

Additional Information

• Ramakrishna Mission:

• Founded by Swami Vivekananda in 1897 at Belur Math near Kolkata.

• It is named after his guru, Ramakrishna Paramhansa, and focuses on humanitarian relief and social service as a form of worship.

• Prarthana Samaj:

• Established by Atmaram Pandurang in 1867 in Bombay.

• It was influenced by the Brahmo Samaj and led by prominent figures like Mahadev Govind Ranade, focusing on caste reform and education for women.

• Arya Samaj:

• Founded by Swami Dayanand Saraswati in 1875 in Bombay.

• The movement promoted the authority of the Vedas (with the slogan 'Go Back to the Vedas') and rejected priesthood and idol worship.

Q32. Answer: (a) provide free legal aid

The correct answer is provide free legal aid.

Key Points

• Article 39A was inserted into the Constitution of India by the 42nd Amendment Act, 1976, to ensure that the legal system promotes justice on the basis of equal opportunity.

• The article mandates that the State shall provide free legal aid through suitable legislation or schemes to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities.

• It is categorized under the Directive Principles of State Policy (DPSP) in Part IV, which serves as a constitutional guide for the government to establish social and economic democracy.

• The provision emphasizes that the judiciary and the legal system must be accessible to the marginalized sections of society, reinforcing the concept of Equal Justice.

Additional Information

• Legal Services Authorities Act, 1987:

• This act was passed to give a statutory base to the legal aid programs and to provide free and competent legal services to the weaker sections.

• It led to the constitution of the National Legal Services Authority (NALSA) at the national level and State Legal Services Authorities at the state levels.

• Other Articles mentioned in options:

• Religious Freedom: Guaranteed under Articles 25 to 28 of the Constitution as Fundamental Rights in Part III.

• Clean Drinking Water: Often interpreted as a part of the Right to Life under Article 21 and the State duty to improve public health

under Article 47.

• International Peace and Security: Explicitly mentioned under Article 51, which directs the State to maintain just and honorable relations between nations.

Q33. Answer: (b) Bengaluru

The correct answer is Bengaluru.

Key Points

• EXCON 2025 represents the 13th edition of South Asia's largest trade fair dedicated to construction equipment and construction technology, held biennially in Bengaluru.

• The event is organized by the Confederation of Indian Industry (CII), which serves as the lead industry body facilitating this massive global gathering of infrastructure stakeholders.

• The primary venue for the exhibition is the Bangalore International Exhibition Centre (BIEC), a premier facility capable of accommodating the heavy machinery and large-scale displays characteristic of this sector.

• This edition focuses on promoting sustainable infrastructure, technological innovation, and global competitiveness, aligning with the Make in India and Atmanirbhar Bharat initiatives.

Additional Information

• Confederation of Indian Industry (CII):

• Founded in 1895, it is a non-government, not-for-profit, and industry-led organization headquartered in New Delhi.

• It works closely with the government on policy issues to enhance the efficiency and growth of the Indian industry across various sectors.

• EXCON Significance:

• It serves as a platform for Product Launches and provides networking opportunities for over 1,000 exhibitors from across the globe.

• The exhibition supports the implementation of the National Infrastructure Pipeline (NIP) and the PM Gati Shakti project by showcasing modern machinery that speeds up project execution.

• Participating nations often include Germany, Italy, South Korea, and Turkey, emphasizing India's role as a major market for global construction equipment manufacturers.

Q34. Answer: (a) 2014

The correct answer is 2014.

Key Points

• The Union Cabinet of India officially approved the classification of Odia as a Classical Language on February 20, 2014.

• It became the sixth language in India to be accorded this status, following the recommendations of a committee of experts constituted by the Ministry of Culture.

• Odia is the first language from the Indo-Aryan group to be recognized as classical, primarily because its literary tradition is distinct and has existed for over 1,500 to 2,000 years.

• The criteria for this status involve high antiquity of early texts, a body of ancient literature considered a heritage by generations, and a literary tradition that is original and not borrowed from another speech community.

• The declaration followed a long-standing demand by the state government of Odisha and various linguistic experts who provided evidence of the language's ancient roots, such as the Kalinga inscriptions and the Mahabharata by Sarala Das.

Additional Information

• The Government of India has recognized several other languages as classical over the years:

• Tamil: The first language to be designated as classical in 2004.

• Sanskrit: Awarded the status in 2005 due to its vast and ancient religious and philosophical texts.

• Kannada and Telugu: Both were officially recognized in the year 2008.

• Malayalam: Designated as a classical language in 2013.

• Benefits of Classical Status:

• Establishment of a Centre of Excellence for Studies in Classical Languages to promote research and preservation.

• The University Grants Commission (UGC) creates professional chairs for these languages in Central Universities.

• Two major international awards are presented annually to scholars of eminence who have made significant contributions to the language.

Q35. Answer: (d) Female heirs are not guaranteed their rightful share in family waqf.

The correct answer is Female heirs are not guaranteed their rightful share in family waqf..

Key Points

• The Waqf (Amendment) Bill, 2024 (referred to as 2025 in legislative context) explicitly aims to reform the management of waqf assets to improve the social and economic status of Muslim women by providing them with greater roles in administration and safeguarding their rights. Hence, statement 1 is correct.

• One of the primary structural changes proposed in the Bill is the mandatory inclusion of two Muslim women as members of the Central Waqf Council, ensuring gender representation at the national level. Hence, statement 2 is correct.

• The Bill also mandates that every State Waqf Board must have two Muslim women members, thereby institutionalizing women's participation in the governance of waqf properties at the state level. Hence, statement 3 is correct.

• In a significant legal shift regarding Waqf-alal-aulad (family waqf), the Bill introduces a proviso stating that the creation of a family waqf must not result in the denial of inheritance rights to any heir, including female heirs. This means the Bill guarantees their rightful share rather than denying it. Hence, statement 4 is incorrect.

Additional Information

• Waqf-alal-aulad:

• It refers to a Waqf created for the maintenance and support of the waqif's (dedicator's) own family, children, and descendants.

• Historically, there were concerns that such endowments were used to bypass the standard Islamic Law of Inheritance, often at the expense of women; the new amendment explicitly addresses this loophole.

• Governance Reforms:

• The Bill seeks to replace the Waqf Act, 1995, and introduces the District Collector as the primary authority to determine whether a property is Waqf property or government land.

• It also proposes the establishment of a separate Board of Auqaf for Bohras and Aghakhanis to ensure specialized representation for these communities.

• The Bill was referred to a Joint Parliamentary Committee (JPC) in August 2024 for detailed scrutiny following debates in the Lok Sabha.

Q36. Answer: (d) 1854

The correct answer is 1854.

Key Points

• The Parliament Digital Library (PDL) is an integrated digital repository developed to preserve the legislative history of India and provide easy access to the proceedings of the Indian Parliament.

• The digitized archives of the Legislative Debates available on the portal officially begin from the year 1854, capturing the earliest structured legislative discussions in colonial India.

• The inclusion of documents starting from 1854 stems from the Charter Act of 1853, which provided for the expansion of the Governor-General's Council for legislative purposes, effectively creating the first Legislative Council.

• The PDL hosts a massive collection of debates from several historical periods, including the Imperial Legislative Council (1862–1920), the Central Legislative Assembly (1921–1947), and the Council of State.

• It also includes the monumental discussions of the Constituent Assembly of India (1946–1950) and the Provisional Parliament (1950–1952) before the first general elections.

Additional Information

• Parliament Digital Library (PDL) Infrastructure:

• The library is maintained by the Parliament Library, which is the second-largest library in India, after the National Library in Kolkata.

• It utilizes advanced Optical Character Recognition (OCR) technology to ensure that historical manuscripts and printed debates are searchable in PDF format.

• The repository serves as a vital resource for Parliamentarians, research scholars, and the general public to track the evolution of laws and democratic traditions in India.

• Constituent Assembly Debates:

• One of the most accessed sections of the PDL is the Constituent Assembly Debates (CAD), which document the framing of the Constitution of India under the presidency of Dr. Rajendra Prasad.

• These debates are crucial for legal interpretations by the Supreme Court and High Courts regarding the Basic Structure Doctrine and the intent of the Founding Fathers.

• Post-Independence Archives:

• The PDL also covers all sessions of the Lok Sabha (House of the People) from the First Lok Sabha (1952) to the present day.

• It includes Committee Reports, Presidential Addresses, and Budget Speeches, making it a comprehensive Institutional Repository of the Indian legislature.

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Q37. Answer: (a)

The solution is in Hindi. Read it online.

Q38. Answer: (b) 71^(st) Amendment

The correct answer is 71^(st) Amendment.

Key Points

• The 71^(st) Amendment Act was enacted in 1992 to amend the Eighth Schedule of the Constitution of India.

• This amendment officially included three regional languages: Konkani, Manipuri, and Nepali into the list of scheduled languages.

• Prior to this amendment, the Eighth Schedule contained 15 languages; the addition of these three languages increased the total count to 18.

• The Eighth Schedule provides a list of languages that enjoy official status and constitutional recognition, influencing the composition of the Official Languages Commission.

• Including a language in this schedule entitles it to various forms of state support for its promotion and development across the Indian Union.

Additional Information

• 63^(rd) Amendment Act, 1989:

• This amendment repealed the 59^(th) Amendment Act, which had empowered the government to impose Emergency in Punjab based on internal disturbances.

• 52^(nd) Amendment Act, 1985:

• Commonly referred to as the Anti-Defection Law, it inserted the Tenth Schedule to prevent elected members from switching political parties after elections.

• 42^(nd) Amendment Act, 1976:

• Often called the Mini-Constitution, it brought massive changes including the addition of Socialist, Secular, and Integrity to the Preamble and established Fundamental Duties.

• Language Evolution in Eighth Schedule:

• The schedule initially had 14 languages. Sindhi was added by the 21^(st) Amendment in 1967.

• Later, the 92^(nd) Amendment in 2003 added Bodo, Dogri, Maithili, and Santhali, bringing the current total to 22 languages.

Q39. Answer: (a)

The solution is in Hindi. Read it online.

Q40. Answer: (a) Puppet dance tradition

The correct answer is Puppet dance tradition.

Key Points

• Richard Pischel, a distinguished German Indologist, was a primary advocate of the theory that Sanskrit drama originated from the puppet theater (known as Puttalika or Puttika-nritya) of ancient India.

• The term Sutradhara, which refers to the stage manager or director in Classical Sanskrit plays, literally translates to 'string-holder' or 'thread-puller' (from Sutra meaning thread and Dhara meaning holder). Pischel argued that this nomenclature is a direct vestige of the puppeteer who manipulated the strings of marionettes.

• The Sthapak (meaning 'the establisher' or 'the one who places') was a character who followed the Sutradhara in early dramatic traditions to introduce the play's prologue. Pischel linked this role to the assistant who physically arranged the puppets on the stage before the narrative began.

• Pischel detailed his findings in his influential work 'Die Heimat des Puppenspiels' (The Home of the Puppet Play, 1900), where he contended that shadow plays and puppet shows provided the technical and structural foundation for human actors to later adopt.

Additional Information

• Richard Pischel (1849–1908):

• He was a leading specialist in Prakrit languages and Buddhist studies.

• His research suggested that India was the original home of puppet theater, which eventually spread to other parts of Asia and the Middle East.

• Sanskrit Drama Roles:

• Sutradhara: Responsible for performing the Purvaranga (preliminaries) and the Nandi (benedictory prayer). He essentially 'holds the thread' of the entire performance.

• Classical Dance Performances: While related to the Natyashastra, these are primarily based on Abhinaya (expression) and Nritya (dance), whereas Pischel specifically focused on the mechanical etymology of Sutradhara.

• Ancient Musical Instruments and Ritual Ceremonies: Other scholars, like Sylvain Levi and Hillebrandt, proposed that drama

originated from Vedic rituals and religious festivals, but they did not utilize the Sutradhara-Puppet etymological link as Pischel did.

Q41. Answer: (b) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• The Bagh Caves are a group of nine rock-cut monuments located on the southern slopes of the Vindhya Range in the Dhar district of Madhya Pradesh.

• These caves are situated on the banks of the Baghini River and are celebrated for their mural paintings, which represent the Golden Age of Indian classical art during the Gupta Period (5th–6th Century AD).

• Structurally, these caves are Buddhist Viharas (monasteries), featuring a residential layout with a central pillared hall and a stupa housed in a small chamber at the back.

• The paintings in Bagh are executed in Tempera style, involving the use of a thick mud plaster base topped with lime prime, similar to the techniques seen at the Ajanta Caves.

• Out of the original nine caves, only five have survived significant decay, with Cave 4, known as the Rang Mahal (Palace of Colors), containing the most vivid and extensive remains of ancient murals.

Additional Information

• Maharashtra:

• Famous for the Ajanta and Ellora Caves, which are UNESCO World Heritage Sites. While they also feature murals, they are geographically and geologically distinct from the Bagh group.

• Chhattisgarh:

• Home to the Jogimara Caves in the Surguja district, which contain some of the oldest surviving fresco paintings in India, dating back to the Mauryan period.

• Odisha:

• Known for the Udayagiri and Khandagiri Caves near Bhubaneswar, which were primarily Jain residential blocks carved during the reign of King Kharavela in the 1st or 2nd Century BC.

Q42. Answer: (d) A balanced chemical equation

The correct answer is A balanced chemical equation.

Key Points

• Stoichiometry is a section of chemistry that involves calculating the quantitative relationships or ratios between reactants and products in a chemical reaction.

• The fundamental basis for all stoichiometric calculations is a balanced chemical equation, which serves as a mathematical statement of the Law of Conservation of Mass.

• In a balanced equation, the stoichiometric coefficients (the numbers in front of the chemical formulas) represent the mole ratios of the substances; for example, in the reaction $2H_2 + O_2 \rightarrow 2H_2O$, the ratio of hydrogen to oxygen is 2:1.

• These molar ratios are essential for converting between mass, moles, and particles (atoms or molecules) using Avogadro's number (6.022×10^{23}) and molar mass.

• Without a balanced equation, it is impossible to determine how much of one reactant is needed to react completely with another or to predict the theoretical yield of a product.

Additional Information

• Variables in Chemical Reactions:

• Temperature and Pressure: While these are vital for determining the volume of gases using the Ideal Gas Law ($PV = nRT$) or influencing reaction rates (kinetics), they do not provide the fundamental ratio of atoms required for stoichiometry.

• Physical Attributes: Factors like the color of reactants or the type of apparatus (flasks, beakers, or calorimeters) used are experimental details and have no impact on the mathematical stoichiometry of the reaction.

• Limiting Reagents: Stoichiometry is also used to identify the limiting reactant, which is the reactant that is completely consumed first, thereby limiting the amount of product formed.

Therefore, a balanced chemical equation is the correct answer.

Q43. Answer: (c) Windows Key

The correct answer is Windows Key.

Key Points

• In the Windows 11 operating system, the Start Menu serves as the primary gateway for accessing pinned applications, recommended files, and the All Apps list.

• The Windows Key (also referred to as the Windows Logo Key or Winkey) is the dedicated hardware shortcut designed to toggle the Start Menu visibility instantly.

• Unlike previous iterations where the menu was fixed to the bottom-left, Windows 11 defaults the Start Menu to a centered alignment on the Taskbar to improve focus and ergonomics.

• The key functions as a toggle mechanism; a single press triggers the Start Menu API to open the interface, while a second press dismisses it, returning focus to the active window.

Additional Information

• System Shortcuts and Keys:

• Ctrl + Esc: This is a legacy keyboard combination that functions identically to the Windows Key, particularly useful if the specific logo key is absent or malfunctioning.

• Ctrl (Control): A modifier key used in conjunction with other keys to perform specific commands, such as Ctrl + C for copy or Ctrl + Alt + Del for system options.

• Shift: Primarily used to type capital letters or the top symbols on keys; it does not interact with the Start Menu on its own.

• Enter Key: Also known as the Return key, it is utilized to execute a selected command or confirm an entry within a dialog box or text field.

• Win + X: Known as the Quick Link menu, this shortcut opens a specialized menu providing direct access to Device Manager, Terminal, and Disk Management in Windows 11.

Q44. Answer: (b) Application software

The correct answer is Application software.

Key Points

• Application software is a type of computer program that performs a specific personal, educational, or business function. Each program is designed to assist users with a particular process, which may be related to productivity, creativity, or communication.

• A Video Game is considered application software because its primary purpose is to provide entertainment and interactive functionality directly to the end-user. It runs on top of the Operating System (OS) and requires the system's resources to execute its specific logic.

• Unlike system software, application software is not required for the computer to function; instead, it is installed by the user to expand the computer's capabilities. Common examples include Word Processors, Web Browsers, and Media Players.

• Games utilize Application Programming Interfaces (APIs) like DirectX or OpenGL to communicate with the hardware via the operating system, but the game files themselves are categorized strictly as Application Layer software.

Additional Information

• System Utilities:

• These are programs designed to maintain, configure, and optimize the computer system. Examples include Disk Cleaners, Antivirus software, and File Compression tools like WinZip.

• Primary Memory:

• This refers to Hardware components like RAM (Random Access Memory) and ROM (Read-Only Memory). It is not software, but rather the physical space where data is stored for quick access by the CPU.

• Device Drivers:

• These are specialized programs that allow the Operating System to communicate with specific hardware devices. For example, a Printer Driver or a Graphics Driver acts as a translator between the device and the software.

Q45. Answer: (c) Operation Sindoor

The correct answer is Operation Sindoor.

Key Points

• Operation Sindoor was a high-intensity military offensive launched by the Indian Armed Forces in May 2025. The operation was specifically designed to target deep-seated insurgent infrastructure and strategic assets across the border in Pakistan through a combination of kinetic strikes.

• The mission involved the sophisticated use of missile systems and indigenous drone swarms, marking a significant escalation in the use of unmanned aerial technology for cross-border operations. This technological integration allowed for precision targeting while reducing the risk to manned aircraft.

• The execution of these strikes led to an immediate and significant rise in geopolitical tensions in South Asia, necessitating diplomatic interventions from global powers. The operation served as a major shift in India’s national security policy and deterrence posture.

• The scale and nature of the strikes under Operation Sindoor resulted in international discourse regarding sovereignty and the right to self-defense in the context of modern hybrid warfare. Therefore, Operation Sindoor is the correct answer.

Additional Information

• Operation Trident:

• Launched during the Indo-Pakistani War of 1971.

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• It was an offensive operation by the Indian Navy against the port city of Karachi.

• Significant for the first use of anti-ship missiles in the region, sinking several Pakistani vessels.

• Operation Sunrise:

• A joint military operation conducted in 2019.

• Carried out by the Indian Army and the Myanmar Army.

• Aimed at eliminating insurgent camps along the Indo-Myanmar border to secure the Kaladan Multi-Modal Transit Transport Project.

• Operation Horizon:

• Generally refers to strategic surveillance and long-term defense planning initiatives.

• In various contexts, it represents maritime security or outer-space monitoring programs aimed at expanding a nation's tactical awareness.

Q46. Answer: (c) British

The correct answer is British.

Key Points

• The Dutch East India Company (Verenigde Oost-Indische Compagnie or VOC), established in 1602, initially established a strong presence in India with factories at Masulipatnam, Pulicat, Surat, and Chinsura.

• The decline of Dutch influence in the Indian subcontinent was primarily triggered by the Battle of Bedara (also known as the Battle of Binsura or Battle of Hooghly) in November 1759.

• In this decisive engagement, the British East India Company forces, led by Colonel Forde, defeated the Dutch military expedition that had been sent from Batavia (modern-day Jakarta) to reinforce their settlement at Chinsura in Bengal.

• The British victory effectively crippled Dutch military power in India, forcing them to sign a treaty that restricted their activities solely to trade, thereby ending their political and colonial aspirations on the mainland.

• Following this defeat, the Dutch shifted their focus almost entirely to the Malay Archipelago and the Spice Islands (Indonesia), where they maintained a lucrative monopoly.

• The final withdrawal of the Dutch from India was formalized through the Anglo-Dutch Treaty of 1824, under which they ceded all their Indian possessions, including Nagapattinam and Chinsura, to the British in exchange for British territories in Sumatra.

Additional Information

• Portuguese:

• They were the first Europeans to reach India via the sea route in 1498 under Vasco da Gama.

• While the Dutch successfully challenged the Portuguese in the 17th century, seizing Ceylon (Sri Lanka) and Malacca, it was not the Portuguese who caused the final loss of Dutch influence in India.

• French:

• The French East India Company (established in 1664) was the last major European power to enter India and became the primary rival to the British.

• Their struggle for supremacy culminated in the Carnatic Wars, but by the time of the major Anglo-French conflicts, Dutch influence had already begun to wane.

• Danish:

• The Danish East India Company held small settlements like Tranquebar and Serampore.

• They were never a dominant political or military force in India and eventually sold their holdings to the British in 1845.

Q47. Answer: (b) Hungary

The correct answer is Hungary.

Key Points

• In April 2025, Hungary formally announced its decision to withdraw from the International Criminal Court (ICC), marking a significant shift in its international legal commitments.

• The Hungarian government, under the leadership of Prime Minister Viktor Orban, cited the politicization of the court as the primary reason for the exit, arguing that the tribunal interfered with national sovereignty.

• Tensions between Budapest and the ICC had been mounting since 2023, specifically regarding the court's issuance of arrest warrants for high-ranking officials of non-member states with whom Hungary maintained close diplomatic ties.

• By submitting its notification to the United Nations Secretary-General, Hungary utilized the provision under Article 127 of the Rome Statute, which governs the formal process of withdrawal for any state party.

• This move made Hungary the first European Union (EU) member state to initiate a departure from the Rome Statute, sparking intense debate within the European Parliament regarding the international rule of law.

Additional Information

• International Criminal Court (ICC):

• Founding Treaty: It was established by the Rome Statute, which was adopted in 1998 and entered into force on July 1, 2002.

• Jurisdiction: The court is authorized to prosecute individuals for genocide, crimes against humanity, war crimes, and the crime of aggression.

• Location: The permanent seat of the court is located in The Hague, Netherlands.

• Withdrawal Mechanism:

• A withdrawal takes effect one year after the date of receipt of the notification, during which the state is still obligated to cooperate with ongoing investigations.

• The exit does not affect any cooperation with the court in connection with criminal investigations and proceedings which were commenced prior to the date on which the withdrawal became effective.

Q48. Answer: (c) Both mass and velocity

The correct answer is Both mass and velocity.

Key Points

• Kinetic Energy (K.E.) is the energy possessed by an object due to its motion. It represents the amount of work required to accelerate an object of a specific mass from a state of rest to its current velocity.

• The mathematical formula for calculating kinetic energy is K.E. = 1/2 × m × v^2. In this equation, m denotes the mass of the body and v represents its velocity or speed.

• The influence of mass is linear; if the mass of a moving object is doubled while keeping its speed constant, its kinetic energy will exactly double.

• The influence of velocity is exponential; because the velocity term is squared in the formula, doubling the speed of an object results in a fourfold increase in its kinetic energy.

• Since both variables appear in the numerator of the energy equation, it is established that the total energy of motion depends simultaneously on how much matter is moving and how fast it is traveling.

Additional Information

• Scalar Property:

• Kinetic energy is a scalar quantity, meaning it has magnitude but no specific direction. Even if the direction of velocity changes, the energy remains the same as long as the speed and mass are constant.

• SI Unit:

• The standard unit for measuring kinetic energy is the Joule (J). One Joule is defined as 1 kg·m^2/s^2.

• Incorrect Factor Breakdown:

• Shape: The physical geometric shape of an object does not determine its translational kinetic energy, though it can influence air resistance or rotational inertia in specific dynamics.

• Only Velocity/Mass: These options are incomplete because kinetic energy cannot exist without both an inertial component (mass) and a dynamic component (velocity).

Q49. Answer: (b) Cochin Shipyard Limited (CSL)

The correct answer is Cochin Shipyard Limited (CSL).

Key Points

• Cochin Shipyard Limited (CSL), located in Kochi, Kerala, is officially the largest shipbuilding and maintenance facility in India in terms of installed capacity and docking dimensions.

• As of early 2024 and continuing into 2025, the facility's capacity was significantly bolstered by the inauguration of the New Dry Dock (NDD) and the International Ship Repair Facility (ISRF).

• The New Dry Dock is a 310-meter-long structure built with an investment of nearly 1,800 crore, capable of handling Strategic Assets like future aircraft carriers and large commercial vessels like Suezmax tankers.

• CSL is a Miniratna Category-I public sector undertaking under the Ministry of Ports, Shipping and Waterways, and it successfully delivered India's first Indigenous Aircraft Carrier (IAC), the INS Vikrant.

• The International Ship Repair Facility (ISRF), built at a cost of 970 crore, features a 6,000-tonne ship lift, positioning Kochi as a global ship repair hub.

Additional Information

• Mazagon Dock Shipbuilders Limited (MDL)

• Located in Mumbai, it is primarily focused on defense production, including Destroyers, Frigates, and Scorpene-class submarines.

• Kattupalli Shipyard

• Operated by L&T Shipbuilding in Tamil Nadu, it is one of the most modern private shipyards featuring a large Shiplift system and modular construction capabilities.

• Goa Shipyard Limited (GSL)

• Situated in Vasco da Gama, it specializes in building medium-sized high-technology vessels like Offshore Patrol Vessels (OPVs) and Missile Boats for the Indian Coast Guard.

Q50. Answer: (d) Sulphur dioxide

The correct answer is Sulphur dioxide.

Key Points

• Sulphur dioxide (SO2) is the primary gaseous contributor to the formation of acid rain, predominantly released through the combustion of fossil fuels like coal and oil in power plants and industrial boilers.

• Once emitted into the atmosphere, SO2 reacts with water vapor, oxygen, and other trace chemicals to undergo oxidation, eventually forming Sulphuric acid (H2SO4).

• This acid is highly soluble in water and falls to the Earth as wet deposition, significantly reducing the pH level of precipitation from the normal 5.6 to as low as 4.0 or 4.2.

• Natural sources, including volcanic eruptions and the decomposition of organic matter in wetlands, also contribute significant amounts of sulphur compounds to the global sulphur cycle.

• The presence of high concentrations of SO2 in the air leads to the acidification of soil, which leaches essential nutrients like calcium and releases toxic aluminum into groundwater and aquatic ecosystems.

Additional Information

• Neon

• It is a noble gas that is chemically inert and exists in the atmosphere in trace amounts (approx. 0.0018%).

• Due to its stable electronic configuration, it does not participate in the chemical reactions that lead to acid rain.

• Methane

• A potent greenhouse gas (CH4) with a high capacity to trap heat in the atmosphere, contributing to global warming.

• Unlike sulphur or nitrogen oxides, it does not form acidic compounds when interacting with moisture in the troposphere.

• Hydrogen

• As a diatomic molecule (H2), it is highly flammable but does not possess the acid-forming properties required to create acid rain.

• It is currently being explored as a clean energy source because its combustion only produces water vapor.

• Nitrogen Oxides (NO_x)

• Along with SO2, gases like nitrogen dioxide (NO2) from vehicular emissions are the other major contributors to acid rain, forming Nitric acid (HNO3) in the atmosphere.

Q51. Answer: (a) Purandara Dasa

The correct answer is Purandara Dasa.

Key Points

• Purandara Dasa (1484−1564) is universally revered as the Sangeeta Pitamaha (the Grandfather of Carnatic Music) for his monumental work in systematizing the foundation of the South Indian classical music tradition.

• He is credited with creating a structured pedagogical curriculum that is still strictly followed by students today, which includes graded exercises such as Sarali Varisai, Janti Varisai, Dhatu Varisai, and Alankaras.

• He introduced the Mayamalavagowla raga as the standard foundational scale for beginners, replacing the older practice of using Kharaharapriya, due to its symmetrical intervals which aid in voice stabilization.

• He formalized the Suladi Sapta Tala system, which consists of seven basic rhythmic cycles that serve as the rhythmic cornerstone for thousands of Carnatic compositions.

• His vast body of work includes thousands of Devarnamas and Kirtanas composed in the Kannada language, which successfully integrated complex musical structures with the Bhakti movement's philosophy.

Additional Information

• Kanaka Dasa:

• A major Haridasa saint and contemporary of Purandara Dasa, known for his compositions emphasizing social equality and devotion to Lord Krishna (Adikeshava).

• His famous works include Nala Charitre, Haribhakti Sara, and Ramadhanya Charitre.

• Jagannatha Dasa:

• An 18th-century scholar and saint of the Haridasa lineage, best known for the philosophical treatise Harikathamritasara.

• He contributed significantly to the spread of Madhva philosophy through lyrical Dasa Sahitya.

• Gopala Dasa:

• An influential 18th-century poet-saint from Karnataka who is regarded as the disciple of Vijaya Dasa.

• He was instrumental in the spiritual initiation of Jagannatha Dasa and is celebrated for his deep mystical insights in his Suladis.

Q52. Answer: (b) Nafithromycin

The correct answer is Nafithromycin.

Key Points

• Nafithromycin, also known by its research code WCK 4873, is the first antibiotic discovered and developed entirely in India by the pharmaceutical company Wockhardt Limited.

• In October 2025, it reached a significant milestone in its deployment and recognition as a breakthrough indigenous New Chemical Entity (NCE) designed to combat the rising threat of Antimicrobial Resistance (AMR).

• The drug belongs to the ketolide class of antibiotics, which is a structural derivative of macrolides specifically engineered to bypass the resistance mechanisms that bacteria have developed against older drugs.

• It is primarily indicated for treating Community-Acquired Bacterial Pneumonia (CABP) and other acute respiratory tract infections caused by highly resistant pathogens.

• Nafithromycin is particularly effective against Streptococcus pneumoniae, including strains that are resistant to multiple drugs, providing a life-saving alternative to traditional treatments.

• The development of this antibiotic aligns with the Aatmanirbhar Bharat initiative, marking India's transition from a manufacturer of generic medicines to a leader in innovative drug discovery.

Additional Information

• Azithromycin:

• A widely used macrolide antibiotic that has been around for decades; while effective for common infections, it faces high levels of resistance in respiratory pathogens.

• Penicillin-G:

• The first true antibiotic discovered by Alexander Fleming in 1928, belonging to the beta-lactam family; it is used for syphilis and certain streptococcal infections but is not a modern indigenous Indian discovery.

• Cefixime:

• A third-generation cephalosporin antibiotic used to treat various bacterial infections, including gonorrhea and urinary tract infections, but it does not represent the 2025 indigenous breakthrough.

• Ketolide Mechanism:

• Unlike standard macrolides, ketolides like Nafithromycin bind to two different sites on the bacterial ribosome, significantly reducing the chance of bacteria developing resistance through ribosomal methylation.

• Wockhardt:

• An Indian multinational pharmaceutical and biotechnology company headquartered in Mumbai, which spent nearly 20 years on the research and development of this molecule.

Q53. Answer: (c) State Government

The correct answer is State Government.

Key Points

• The appointment of judges to the Family Courts in India is governed by the statutory provisions of the Family Courts Act, 1984, which was enacted to promote conciliation and speedy settlement of matrimonial disputes.

• According to Section 4 of the Family Courts Act, 1984, the State Government is the competent authority empowered to appoint one or more persons as judges of the Family Court.

• The State Government must exercise this power only with the concurrence of the High Court of the respective state to ensure judicial independence and merit.

• The Act specifies that the State Government should provide preference to women in the appointment of judges to ensure a more sensitive approach to family matters, as mentioned under Section 4(4).

• Judges are typically chosen from the State Judicial Service or individuals who have held a judicial office or practiced as an advocate for at least seven years.

Additional Information

• Governor:

• Under Article 233 of the Indian Constitution, the Governor appoints District Judges in consultation with the High Court. While the Governor handles regular judicial service appointments, the specific statutory power for Family Court judges is vested in the State Government.

• President:

• The President of India is responsible for the appointment of judges to the Supreme Court under Article 124 and the High Courts under Article 217, acting on the advice of the Collegium.

• Union Home Minister:

• The Union Home Minister or the Ministry of Home Affairs does not have the constitutional or statutory authority to appoint judges

within the Indian Judiciary.

Q54. Answer: (c) Ten

The correct answer is Ten.

Key Points

• The Fundamental Duties of citizens were not part of the original Constitution of India that came into force in 1950.

• They were incorporated into the Constitution via the 42nd Constitutional Amendment Act, 1976, during the period of National Emergency.

• The amendment followed the recommendations of the Sardar Swaran Singh Committee, which was tasked with suggesting duties that citizens should perform in exchange for their rights.

• While the Swaran Singh Committee originally suggested the inclusion of eight duties, the Union Government decided to include a total of ten Fundamental Duties at the time of the amendment.

• These duties were consolidated into a new Part IV-A of the Constitution, specifically under Article 51A.

• The list included duties such as abiding by the Constitution, cherishing the noble ideals of the national struggle for freedom, and safeguarding public property.

Additional Information

• 86th Constitutional Amendment Act, 2002:

• The total count of Fundamental Duties increased from ten to eleven through this amendment.

• It added the duty of a parent or guardian to provide opportunities for education to their child or ward between the age of 6 and 14 years.

• Source and Nature:

• The idea of Fundamental Duties was inspired by the Constitution of the USSR (Union of Soviet Socialist Republics).

• Unlike Fundamental Rights, these duties are non-justiciable, meaning citizens cannot be punished by the courts for not following them unless a specific Parliamentary law (like the Prevention of Insults to National Honour Act) is enacted for that purpose.

• Verma Committee (1999):

• This committee identified the existence of legal provisions for the implementation of some of the Fundamental Duties, emphasizing that the state can enforce them through legislative action.

Q55. Answer: (a) To promote privatization and competition

The correct answer is To promote privatization and competition.

Key Points

• The New Economic Policy (NEP) of 1991 was launched by the P.V. Narasimha Rao government, with Dr. Manmohan Singh as Finance Minister, to tackle a severe Balance of Payments (BoP) crisis.

• A central objective for industries was Liberalization, which resulted in the abolition of Industrial Licensing for most sectors, effectively ending the restrictive 'License-Permit Raj'.

• The reforms aimed to foster Privatization by reducing the dominance of Public Sector Undertakings (PSUs) and encouraging private investment through disinvestment strategies.

• To enhance Competition, the policy removed entry barriers for domestic private firms and exposed the Indian market to international competition to drive efficiency and technological Upgradation.

• The Industrial Policy Statement of 1991 drastically reduced the number of industries reserved exclusively for the public sector from 17 to 8, and later to just two (Atomic Energy and Railway Transport).

Additional Information

• LPG Framework:

• Liberalization: Focuses on removing government-imposed restrictions on trade and industry to grant businesses greater autonomy in production and pricing.

• Globalization: Involves integrating the domestic economy with the world economy by lowering import tariffs and removing barriers to the international flow of goods and capital.

• Foreign Direct Investment (FDI):

• The 1991 reforms allowed for automatic approval of FDI up to 51% in high-priority industries, aiming to attract global capital and modern technology.

• MRTP Act Amendment:

• The Monopolies and Restrictive Trade Practices (MRTP) Act was amended to remove the requirement for large industrial houses to seek prior government approval for expansion, facilitating rapid industrial growth.

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Q56. Answer: (a) IIT Kanpur

The correct answer is IIT Kanpur.

Key Points

• The Delhi government, in collaboration with the Indian Institute of Technology (IIT) Kanpur, conducted the first set of cloud seeding trials in the national capital in October 2025 to combat hazardous air pollution levels. Hence, the statement is correct.

• A formal Memorandum of Understanding (MoU) was signed between the Delhi Environment Department and IIT Kanpur on September 25, 2025, for a pilot project costing approximately 3.2 crore. Hence, the statement is correct.

• The Directorate General of Civil Aviation (DGCA) granted the necessary flight permissions in late September 2025, allowing a specially equipped Cessna 206H aircraft to operate over the Delhi-NCR region. Hence, the statement is correct.

• During the trials held on October 28, 2025, the aircraft dispersed a mixture of silver iodide, common salt (sodium chloride), and rock salt into the clouds to induce artificial rain. Hence, the statement is correct.

• The experiment faced technical challenges as the relative humidity in the atmosphere was recorded at only 15−20%, whereas successful seeding typically requires at least 50% moisture. Hence, the statement is correct.

• Despite the lack of significant rainfall, IIT Kanpur directors noted that the trials yielded vital data showing a 6−10% reduction in PM 2.5 and PM 10 concentrations at targeted locations like Burari and Mayur Vihar. Hence, the statement is correct.

Additional Information

• Cloud Seeding Technology:

• It is a weather modification technique that introduces nucleating agents into clouds to enhance precipitation.

• IIT Kanpur is a pioneer in this field in India, having previously conducted successful trials in Kanpur and Lucknow using their Department of Aerospace Engineering facilities.

• The process depends heavily on hygroscopic or glaciogenic materials acting as Cloud Condensation Nuclei (CCN).

• Other Institutes:

• IIT Madras: While active in climate research and ocean technology, it was not the primary technical partner for the 2025 Delhi artificial rain project.

• IIT Bombay: Known for environmental engineering and aerosol research, but does not operate the specialized aircraft fleet used for these specific seeding operations.

• IIT Guwahati: Focuses on water resources and hydro-power in the Northeast but was not involved in the Delhi-NCR pilot trials.

Q57. Answer: (b) Kerala

The correct answer is Kerala.

Key Points

• Prime Minister Narendra Modi inaugurated the Vizhinjam International Seaport in Kerala in May 2025, marking the operational commencement of India’s first deepwater transshipment port.

• Located near Thiruvananthapuram, the port is uniquely positioned to handle Ultra Large Container Vessels (ULCVs) due to its natural draft of 18 to 20 meters, which requires minimal dredging compared to other major Indian ports.

• The port is a Public-Private Partnership (PPP) project between the Government of Kerala and Adani Vizhinjam Port Private Limited (AVPPL), designed to compete with international hubs like Colombo and Singapore.

• Its strategic location is just 10 nautical miles from the International Shipping Route, which carries a massive volume of global maritime trade between the East and the West.

• The facility is India’s first fully automated port, utilizing advanced Ship-to-Shore (STS) cranes and automated rail-mounted gantry cranes to ensure high turnaround efficiency.

Additional Information

• Strategic Importance of Transshipment:

• A transshipment hub serves as a central node where cargo from large mother ships is transferred to smaller feeder vessels for distribution to regional ports.

• The establishment of Vizhinjam is expected to save India approximately 1,500 crore rupees in foreign exchange annually by reducing dependence on foreign ports.

• Maritime India Vision 2030:

• The inauguration aligns with the Maritime India Vision 2030, which aims to enhance port capacity, promote coastal shipping, and generate significant employment in the maritime sector.

• It supports the Sagarmala Programme, which focuses on port-led development and improving logistics efficiency across the country’s 7,500 km coastline.

Q58. Answer: (b) To list full file paths of “syllabus.pdf” from all nested folders

The correct answer is To list full file paths of ‘syllabus.pdf’ from all nested folders.

Key Points

• The dir command is a fundamental Command Line Interface (CLI) utility in Windows 11 used to list the contents of a directory, including files and subfolders.

• The /s switch is a recursive parameter that instructs the Command Prompt to search not only the current directory but also every nested subdirectory within the specified path.

• The /b switch activates the bare format, which strips away metadata such as file size, timestamps, and the summary footer, leaving only the names of the files.

• When /s and /b are combined, the output behavior changes to display the fully qualified path (the absolute location starting from the drive letter) for every matching file found in the hierarchy.

• By specifying the filename 'syllabus.pdf', the command acts as a precise search tool that scans the entire drive or folder tree to find every instance of that specific document and reports its exact location.

Additional Information

• Comparison with other Windows commands:

• copy command: This is used to replicate a file from a source to a destination. It does not simply list paths; it performs a data transfer operation.

• start command: This utility is used to execute a file. For a PDF, it would trigger the default PDF viewer (like Microsoft Edge or Adobe Acrobat) to open the file.

• attrib command: This command is used to display or change file attributes, such as Read-only (R), Archive (A), System (S), and Hidden (H), rather than just searching for filenames.

• Advanced usage of dir:

• Wildcards: Users can search for all files of a specific type by using an asterisk (*), such as dir /s /b *.pdf to list every PDF on the system.

• Output Redirection: The results of this search can be saved to a text file by appending > results.txt to the end of the command.

Q59. Answer: (c) 600 MT and 391 MT

The correct answer is 600 MT and 391 MT.

Key Points

• India is the second-largest producer of cement in the world, accounting for more than 7% of the global installed capacity. The industry is a significant contributor to the national GDP and provides employment to over a million people.

• The installed capacity of the Indian cement industry reached approximately 600 Million Tonnes (MT) by the end of the financial year 2022-23. This represents the total potential output if all manufacturing units operate at full capacity.

• The actual production of cement during the 2022-23 period was recorded at 391 Million Tonnes (MT). This figure reflects the total volume of cement manufactured and supplied to meet the domestic and export demands.

• The gap between installed capacity and actual production indicates a capacity utilization rate of roughly 65%, which is standard for heavy industries that expand capacity in anticipation of future infrastructure needs.

• The growth in both capacity and production is driven by the Government of India's focus on infrastructure development and affordable housing schemes. Therefore, the correct option is 3.

Additional Information

• Cement Industry Dynamics:

• Major Consumers: The housing and real estate sector is the largest consumer of cement in India, accounting for nearly 65% of the total consumption, followed by public infrastructure at 20%.

• Government Initiatives: Schemes such as PM Gati Shakti, Pradhan Mantri Awas Yojana (PMAY), and the National Infrastructure Pipeline (NIP) have acted as primary catalysts for the sustained demand for cement.

• Geographical Distribution: Most cement plants in India are concentrated in states like Andhra Pradesh, Rajasthan, and Tamil Nadu due to the vast availability of limestone, which is the primary raw material.

• Sustainability: The industry is increasingly adopting green cement technologies and utilizing alternative fuels like biomass and municipal waste to reduce its carbon footprint and achieve net-zero targets.

Q60. Answer: (a) Berlin

The correct answer is Berlin.

Key Points

• The World Health Summit 2024 was held from October 13 to 15, 2024, in Berlin, Germany, as well as virtually for digital participants across the globe.

• The central theme for the 2024 summit was Building Trust for a Healthier World, focusing on the critical role of international collaboration in tackling global health challenges.

• The event served as a major platform for the WHO Investment Round, an initiative led by the World Health Organization to

secure sustainable financing for global health priorities over the next four years.

• Prominent leaders and speakers at the event included German Chancellor Olaf Scholz, WHO Director-General Tedros Adhanom Ghebreyesus, and various heads of state and health ministers.

• Key agenda items included Pandemic Preparedness, the impact of Climate Change on public health, Antimicrobial Resistance (AMR), and the digital transformation of healthcare systems.

Additional Information

• World Health Summit (WHS) Overview:

• Established in 2009 on the occasion of the 300th anniversary of the Charite - Universitätsmedizin Berlin, it has since become the world's leading global health conference.

• The summit is organized under the high patronage of the German Chancellor, the President of the French Republic, and the President of the European Commission.

• Its academic foundation is the M8 Alliance of Academic Health Centers, Universities, and National Academies, which provides the scientific framework for the discussions.

• While Geneva is the permanent headquarters of the World Health Organization (WHO), the World Health Summit specifically is traditionally hosted in the German capital, Berlin.

• Other cities mentioned, such as Paris and London, host significant international summits like the One Planet Summit or the Global Food Security Summit, but they were not the venues for the 2024 World Health Summit.

Q61. Answer: (d)

The solution is in Hindi. Read it online.

Q62. Answer: (b) Volume increases but density decreases

The correct answer is Volume increases but density decreases.

Key Points

• Water exhibits a unique physical phenomenon known as Anomalous Expansion when cooled or heated within the specific temperature range of 0°C to 4°C.

• Under normal conditions, most liquids contract upon cooling; however, water reaches its maximum density (1 g/cm³ or 1000 kg/m³) and minimum volume precisely at 4°C.

• As water is cooled from 4°C down to 0°C, the hydrogen bonds between water molecules begin to arrange themselves into a rigid, open-cage hexagonal crystalline structure.

• This molecular orientation causes the molecules to push further apart compared to their state at 4°C, which results in a measurable increase in volume.

• Since Density is defined as mass per unit volume, and the mass of the water remains constant, the increase in volume leads to a corresponding decrease in density as the temperature approaches the freezing point.

Additional Information

• Ecological Significance:

• The decrease in density as water nears 0°C ensures that ice floats on the surface of lakes and ponds.

• This floating ice layer acts as a thermal insulator, maintaining the liquid water below at 4°C, which is vital for the survival of aquatic life during extreme winters.

• Physical Impact:

• When water freezes into ice at 0°C, its volume expands by approximately 9%.

• This expansion generates immense pressure, often leading to the weathering of rocks in geology or the bursting of water pipes in cold climates.

Q63. Answer: (a) village functionaries

The correct answer is village functionaries.

Key Points

• The village (referred to as Deh or Mauza) was the smallest unit of administration during the Delhi Sultanate, and its management relied on local traditional authorities.

• Khuts and Muqaddams were hereditary village headmen or rural aristocrats who acted as intermediaries between the state and the peasantry for the collection of land revenue.

• The Muqaddam was primarily responsible for maintaining law and order within the village and ensuring that the designated taxes were collected from the cultivators.

• The Patwari served as the village accountant whose primary duty was to maintain meticulous records of land holdings, crop production, and the Kharaj (land tax) owed by the peasants.

• During the reign of Sultan Alauddin Khalji, the privileges of these village functionaries were strictly curtailed, and they were

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forced to pay taxes like ordinary peasants to prevent them from becoming too powerful or wealthy at the expense of the state treasury.

Additional Information

• Administrative Hierarchy:

• Iqta (Province): Managed by Muqtis or Walis, who were high-ranking provincial functionaries responsible for law, order, and military supply.

• Shiq (District): Governed by a Shiqdar, who oversaw the administration of several parganas.

• Pargana (Group of Villages): The unit between the Shiq and the village, headed by an Amil (revenue officer) and a Mushrif (accountant).

• Town Administration: Managed by the Kotwal, who was the chief town functionary responsible for municipal duties and policing.

• Revenue System: The Sultanate primarily relied on land revenue, and officials like the Mushrif-i-Mamalik (Accountant General) at the center oversaw the overall financial health of the empire, while the local village functionaries ensured grassroots implementation.

Q64. Answer: (a) Nucleotides

The correct answer is Nucleotides.

Key Points

• Deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) are essential biological macromolecules found in all living organisms.

• These structures are biopolymers composed of repeating monomeric units called nucleotides.

• Each individual nucleotide is chemically structured with three primary components: a pentose sugar (deoxyribose in DNA and ribose in RNA), a phosphate group, and a nitrogen-containing nitrogenous base.

• The nucleotides are covalently joined together by phosphodiester bonds, which form between the phosphate group of one nucleotide and the sugar of the next, creating a stable sugar-phosphate backbone.

• DNA contains the nitrogenous bases adenine (A), guanine (G), cytosine (C), and thymine (T), whereas RNA replaces thymine with uracil (U).

Additional Information

• Monosaccharides:

• These are the simplest units of carbohydrates (simple sugars) like glucose and fructose.

• They serve as the building blocks for complex polysaccharides such as cellulose, starch, and glycogen.

• Fatty acids:

• These consist of a carboxylic acid with a long aliphatic chain.

• They are the fundamental components of lipids, which play a crucial role in forming cell membranes (phospholipids) and storing energy (triglycerides).

• Amino acids:

• These are organic molecules consisting of a basic amino group, an acidic carboxyl group, and an organic R group.

• They are the monomers that polymerize via peptide bonds to form proteins, which carry out cellular structure and enzymatic functions.

Q65. Answer: (c) In-situ conservation

The correct answer is In-situ conservation.

Key Points

• In-situ conservation is the strategy of protecting a species in its natural habitat. Instead of focusing on a single organism, this method aims to preserve the entire ecosystem and the complex interactions between various species.

• By safeguarding the natural environment, all organisms within that ecosystem—including plants, animals, and microbes—are protected simultaneously, ensuring the maintenance of ecological processes.

• This strategy is often described as on-site conservation. It is the most effective way to maintain genetic diversity and allow for the ongoing evolution of species within their native ranges.

• Common examples of this strategy include the establishment of National Parks, Wildlife Sanctuaries, Biosphere Reserves, and Sacred Groves.

• In the context of India, there are currently 18 Biosphere Reserves, over 100 National Parks, and more than 500 Wildlife Sanctuaries dedicated to this holistic protection approach.

Additional Information

• Ex-situ Conservation: This involves the protection of components of biological diversity outside their natural habitats.

• Seed Banks: These are facilities where seeds are stored at very low temperatures to preserve genetic variety for the long term. This is a species-specific or crop-specific approach.

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• Captive Breeding: This refers to the process of breeding animals in controlled environments like zoos or specialized facilities to increase population numbers of endangered species.

• Biodiversity Hotspots:

• These are specific geographical regions that host extremely high levels of species richness and endemism (species found nowhere else).

• To qualify as a hotspot, a region must contain at least 1,500 species of vascular plants as endemics and have lost at least 70 percent of its original native vegetation.

• There are currently 36 biodiversity hotspots globally, which are prioritized for in-situ conservation efforts.

Q66. Answer: (c) Shows the system shutdown dialog

The correct answer is Shows the system shutdown dialog.

Key Points

• In the Windows 11 operating system, the Alt + F4 keyboard shortcut is primarily designed to close the active application window currently in focus.

• When no applications are open, or when the user has clicked on the Desktop (making it the active interface), pressing Alt + F4 triggers the Shut Down Windows dialog box.

• The resulting dialog box provides a drop-down menu with various power management options, including Shut down, Restart, Sleep, Hibernate, and Sign out.

• This functionality is a legacy feature of the Windows Graphical User Interface (GUI) that allows users to quickly power off the system without navigating through the Start Menu.

Additional Information

• Task Manager:

• The primary shortcut to open the Task Manager is Ctrl + Shift + Esc.

• It is used to monitor system performance, manage startup apps, and terminate unresponsive background processes.

• File Explorer:

• The standard keyboard shortcut to launch File Explorer in Windows is Windows Key + E.

• It serves as the main file management application for accessing folders, drives, and network locations.

• Refresh Function:

• The F5 key or Ctrl + R is typically used to refresh the active window or the Desktop environment.

• Refreshing updates the display to reflect recent changes in file metadata or icon arrangements.

Q67. Answer: (b) Rs. 20 lakh

The correct answer is Rs. 20 lakh.

Key Points

• The Pradhan Mantri Mudra Yojana (PMMY) is a flagship scheme of the Government of India launched on April 8, 2015, to provide collateral-free institutional credit to small/micro-enterprises.

• In the Union Budget 2024-25, the Finance Minister announced a significant enhancement to the loan limits under the scheme to support maturing businesses.

• The loan limit for the Tarun category was increased from the previous maximum of Rs. 10 lakh to Rs. 20 lakh.

• This enhanced limit of Rs. 20 lakh is specifically available for those entrepreneurs who have successfully repaid their previous loans under the Tarun category, demonstrating high creditworthiness.

• This move aims to provide larger financial buffers to small business owners, enabling them to scale up their operations and transition into larger industrial or service units.

Additional Information

• The PMMY classifies loans into three distinct categories based on the stage of growth and funding requirements of the micro-unit:

• Shishu: Covers loans up to Rs. 50,000, intended for entrepreneurs who are either in their first stage of business or require very small capital.

• Kishore: Covers loans above Rs. 50,000 and up to Rs. 5 lakh, targeting units that have already started and need funds for expansion.

• Tarun: Originally covered loans above Rs. 5 lakh and up to Rs. 10 lakh, representing the highest tier for established enterprises.

• MUDRA stands for Micro Units Development & Refinance Agency Ltd., which acts as a refinancing body for Public Sector Banks, Regional Rural Banks (RRBs), and Non-Banking Financial Companies (NBFCs).

• The scheme focuses on the Non-Corporate Small Business Sector (NCSB), which includes small manufacturing units, service sector units, and shopkeepers.

Q68. Answer: (b) Article 74

The correct answer is Article 74.

Key Points

• Article 74(1) of the Indian Constitution provides for a Council of Ministers with the Prime Minister at the head to aid and advise the President, who shall, in the exercise of his functions, act in accordance with such advice.

• Article 74(2) explicitly states that the question of whether any, and if so what, advice was tendered by Ministers to the President shall not be inquired into in any court.

• This provision serves to protect the confidentiality of the deliberations between the President and the Council of Ministers, ensuring the executive branch can function without judicial interference in its internal advisory process.

• The 42nd Constitutional Amendment Act of 1976 made the advice of the Council of Ministers binding on the President, while the 44th Constitutional Amendment Act of 1978 allowed the President to require the Council to reconsider such advice once.

• In the landmark S.R. Bommai v. Union of India (1994) case, the Supreme Court clarified that while the advice itself is immune from judicial inquiry, the material on which the advice is based is subject to judicial review.

Additional Information

• Article 78:

• It defines the duties of the Prime Minister as a bridge between the Council of Ministers and the President.

• The Prime Minister must communicate all administrative decisions and proposals for legislation to the President.

• Article 72:

• This article empowers the President to grant pardons, reprieves, respites, or remissions of punishment.

• It allows for the suspension, remission, or commutation of sentences in cases involving Court Martials, death sentences, or offenses against Union laws.

• Article 76:

• It provides for the Attorney-General for India, who is appointed by the President and holds office during their pleasure.

• The Attorney-General is the chief legal advisor to the Government of India and has the right of audience in all courts within India.

Q69. Answer: (c) (Births ÷ Population) × 1000

The correct answer is (Births div Population) times 1000.

Key Points

• The Crude Birth Rate (CBR) is a primary demographic indicator used to quantify the frequency of live births within a specific population over a defined period, typically one calendar year.

• The numerator B represents the total number of live births recorded in a specific geographical area during the year, excluding stillbirths or other non-live deliveries.

• The denominator P represents the estimated mid-year population of that area, which serves as the conventional standard to account for population changes occurring throughout the year.

• The ratio of births to population is multiplied by a constant factor of 1,000 to express the rate as the number of births per thousand inhabitants, facilitating easier cross-regional comparisons.

• It is designated as crude because it considers the total population as the denominator, without adjusting for age-specific or sex-specific structures, such as the proportion of women in reproductive age groups.

Additional Information

• Demographic Metrics:

• Crude Death Rate (CDR): Calculated using a similar methodology, where the number of deaths in a year is divided by the mid-year population and multiplied by 1,000.

• Rate of Natural Increase: Derived by subtracting the Crude Death Rate from the Crude Birth Rate (CBR − CDR), representing population growth excluding migration effects.

• General Fertility Rate (GFR): A more refined measure than CBR, as it relates the number of births specifically to the number of women of childbearing age (usually 15−49 years).

• Total Fertility Rate (TFR): The average number of children a woman would have if she survived to the end of her reproductive years and bore children according to current age-specific fertility rates.

• Socio-Economic Importance:

• High Crude Birth Rates are typically observed in developing nations with limited access to family planning and lower levels of female literacy.

• Data regarding CBR is vital for urban planning, forecasting educational infrastructure needs, and formulating public health policies.

Q70. Answer: (b) Socio-economic backwardness

The correct answer is Socio-economic backwardness.

Key Points

• Migration is generally influenced by two sets of factors: Push factors and Pull factors.

• Pull factors are positive conditions at a destination that attract people to move there. They include factors like better job opportunities, higher wages, peace and stability, security of life, and pleasant climate.

• Push factors are negative conditions at the place of origin that compel or force people to leave. Examples include unemployment, poverty, political turmoil, natural disasters, and socio-economic backwardness.

• Socio-economic backwardness refers to a lack of development, poor educational infrastructure, inadequate healthcare, and low standards of living in a region. These conditions make a place less desirable to live in, thereby acting as a Push factor rather than a pull factor.

• Better job opportunities act as a magnet for migrants seeking economic advancement and are a primary Pull factor in urban and industrial centers.

• Peace and stability along with the security of life pull individuals away from regions affected by conflict, war, or high crime rates toward safer and more predictable environments.

Additional Information

• Push Factors:

• Unemployment: Lack of local livelihood options forces individuals to seek work elsewhere.

• Political Turmoil: Civil unrest, persecution, or unstable governments drive people out of their homelands.

• Poor Living Conditions: Includes lack of basic amenities like clean water, electricity, and sanitation.

• Pull Factors:

• Economic Growth: Regions with high GDP growth and industrialization attract labor.

• Social Services: Access to prestigious educational institutions and advanced medical facilities acts as a major pull for families.

• Climatic Comfort: Destinations with moderate or favorable weather conditions are often preferred by retirees and migrants.

Q71. Answer: (b) CGI

The logic follows here,

The missing term is CGI.

Hence, the correct answer is "option 2"

Q72. Answer: (b) YZBX

The logic followed in this pattern is,

For 'ZACY' related to 'VWYU':

For 'QRTP' related to 'MNPL':

Applying the same logic to 'CDFB':

Thus, CDFB is related to YZBX.

Hence, the correct answer is 'Option 2'.

Q73. Answer: (c) UGMP

The logic followed in this pattern is a progressive numerical subtraction based on the positional values of the letters in the English alphabetical order.

For 'SMAL' related to 'PIVF':

For 'GWGN' related to 'DSBH':

Applying the same logic to 'XKRV':

Thus, XKRV is related to UGMP.

Hence, the correct answer is 'Option 3'.

Q74. Answer: (a) Both conclusions (I) and (II) follow

The least possible Venn diagram for the given statements is:

(I) Some planes are mountains. Follows

(All Mountains are planes; that means some planes are mountain and some mountain are plains.)

(II) All drawings are planes - Follows

(All drawing are mountains, and all mountains are plains.All drawings are planes)

Both conclusions (I) and (II) follow.

Hence, the correct answer is " Option 1"

Q75. Answer: (b) WE - ZJ

The logic follows here,
SZ - VD,
WE - ZJ,
OA - RE,
BM - EQ,
Therefore, the letter-cluster pair that is different from the others is WE - ZJ.
Hence, the correct answer is 'Option 2'.

Q76. Answer: (c) Three

Given: Ay, Bx, Cu, Dq, Ep, Fv and Gt are sitting around a circular table, facing the centre.
1. Cu sits second to the left of Fv.
2. Gt sits second to the left of Cu.
3. Dq sits to the immediate left of Ep.
4. Ay sits second to the right of Ep.
The Final Arrangement is,
Three people sit between Bx and Ep when counted from the left of Bx
Hence, the correct answer is "Option 3"

Q77. Answer: (b) 0

BODMAS Table:

A	B	C	D
÷	×	•	−

Given equation: 41 D 44 C 9 A 21 B 7
Replace the letters with their respective mathematical signs and using the BODMAS rule
= 41 − 44 + 9 ÷ 21 × 7
=41 − 44 + (9/21) × 7
= 41 − 44 + (3/7) × 7
= 41 − 44 + 3
= 41 + 3 − 44
=44 − 44
= 0
Hence, the correct answer is "option 2"

Q78. Answer: (c) 13 and 15

BODMAS Table:
Given Equation: (12 × 8) ÷ 6 + 4 × 13 − (36 ÷ 9) × 15 + 25 = 49
By interchanging numbers 13 and 15 and applying BODMAS rule:
=>(12 × 8) ÷ 6 + 4 × 15 − (36 ÷ 9) × 13 + 25 = 49
=> 96 ÷ 6 + 4 × 15 − 4 × 13 + 25 = 49
=> 96 ÷ 6 + 4 × 15 − 4 × 13 + 25 = 49
=>16 + 60 + 25 − 52 = 49
=>101 − 52 = 49
=> 49 = 49
Hence, the correct answer is "Option 3"

Q79. Answer: (a) 18

The logic follows here,
• 3 × 6 = 18
• 18 × 5 = 90

• 90 × 4 = 360
• 360 × 3 = 1080
• 1080 × 2 = 2160
• 2160 × 1 = 2160
Hence, the correct answer is "option 1"

Q80. Answer: (b) MJLQ

The logic follows here,
Combining all the letters, we get the term MJLQ.
Hence, the correct answer is "option 2"

Q81. Answer: (c) Husband's mother

Let us first decode the given symbols and then draw a family tree.

A is				
Symbol	•	−	times	div
Meaning	Father	Sister	Daughter	Mother
of B				

Given: 'P ÷ Q - R + S × T'
Based on the family tree, P is the mother of R, and R is the husband of T. Therefore, P is the Husband's mother of T.
Hence, the correct answer is 'Option 3'.

Q82. Answer: (a) 5 km to the South

1. Mr. Yorly starts from Point A and drives 11 km towards West. He then takes a left turn, drives 13 km, turns left and drives 30 km.
2. He then takes a left turn, drives 26 km, turns left and drives 5 km.
3. He then takes a left turn and drives 8 km.
4. He takes a final right turn, drives 14 km and stops at Point P.

The Final Diagram,
He drive 5 km in south to reach Point A
Hence, the correct answer is "option 1"

Q83. Answer: (c) RTVY

The logic follows here,
For 'BEGH' related to 'HKMN':
For 'FIKM' related to 'LOQS':
Applying the same logic to 'LNPS':
Thus, LNPS is related to RTVY.
Hence, the correct answer is 'Option 3'.

Q84. Answer: (b) (119, 102, 138)

The logic followed here is:
Logic: Second Number = First Number − 17; Third Number = First Number + 19
For the first set (158, 141, 177)
=> 158 − 17 = 141
=> 158 + 19 = 177
For the second set (164, 147, 183)
=> 164 − 17 = 147
=> 164 + 19 = 183
Applying the same logic to the option (119, 102, 138)
=> 119 − 17 = 102
=> 119 + 19 = 138
Hence, the correct answer is 'Option 2'.

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Q85. Answer: (b) EH - KM

The logic follows here,

BD - HJ,

HJ - NP,

LN - RT,

EH - KM,

Therefore, the letter-cluster pair that is different from the others is EH - KM.

Hence, the correct answer is "Option 2".

Q86. Answer: (a) NJP 25

The logic follows here,

Combining the results, the missing cluster is NJP 25.

Hence, the correct answer is "option 1".

Q87. Answer: (a) 98

The logic followed here is:

• 152 − 12 = 140

• 140 − 6 = 134

• 134 − 12 = 122

• 122 − 6 = 116

• 116 − 12 = 104

• 104 − 6 = 98

Thus, the missing term in the series is 98.

Hence, the correct answer is 'Option 1';

Q88. Answer: (a) Two

Given: Seven people, T, E, A, R, I, N and G, are sitting in a row, facing north.

1. Only three people sit between N and I.

2. T sits to the immediate left of I.

3. No one sits to the right of E.

4. Only two people sit between E and T.

5. A sits to the immediate right of R

The Final Arrangement is,

Hence, correct answer is "option 1"

Q89. Answer: (b) SOP

The logic follows here,

VRO,

SOP,

KGD,

QMJ,

Therefore, the letter cluster that is different from the others is SOP.

Hence, the correct answer is 'Option 2'.

Q90. Answer: (a) Wife's father

Let us first decode the given symbols and then draw a family tree.

A is				
Symbol	=	$	@	•
Meaning	Sister	Brother	Wife	Father
of B				

Given: W * F = K $ L @ G’

Based on the tree, W is the father of F, K, and L. Since L is the wife of G, W is the Wife's father of G.

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Hence, the correct answer is 'Option 1'.

Q91. Answer: (b) Two

The logic followed here is,

Required pattern: Consonant → Vowel → Vowel.

Given Letter Series:

(Left) D E I V D I J Y T Z A K F Z S M U I Y E Q (Right)

There are only two such vowels that satisfy the required conditions.

Hence, the correct answer is "option 2"

Q92. Answer: (d) 11

The logic followed here is:

• Total number of people in the row = 42

• Position of Amala from the left end = 18^(th)

• Number of people sitting to the right of Sneha = 12

Position of Sneha from the left end = Total number of people − Number of people to her right

= 42 − 12

= 30^(th)

Number of people between Amala and Sneha = (Position of Sneha from the left − Position of Amala from the left) − 1

= (30 − 18) − 1

= 12 − 1

= 11

Hence, the correct answer is 'Option 4'.

Q93. Answer: (d) 0

The logic followed here is.

Required pattern: Vowel → Consonant → Vowel

(Left) R U U K G S R E W Y P U K Q S T E Q Q U S V (Right)

There are no occurrences in the series where a consonant is both immediately preceded and immediately followed by a vowel.

Hence, the correct answer is "option 4"

Q94. Answer: (d) tc

The logic follows here,

Hence, the correct answer is "option 4"

Q95. Answer: (b) 5

Given word : HARMFUL

Original Word	H	A	R	M	F	U	L
Alphabetical Order	A	F	H	L	M	R	U

• The letter which is fourth from the left is: L

• The letter which is second from the right is: R

• The letters between L and R is 5

Hence, the correct answer is "Option 2."

Q96. Answer: (c) 620

BODMAS Table:

Signs and their coded meanings:

Original Sign	•	−	×	÷
Coded Sign	−	×	÷	•

The given equation is:62 − 9 ÷ 94 + 480 × 15 = ?

After replacing the signs according to the table and applying BODMAS rule:

= 62 × 9 + 94 − 480 ÷ 15

= 62 × 9 + 94 − 32

= 558 + 94 − 32

= 652 − 32

= 620

Hence, the correct answer is " Option 3"

Q97. Answer: (d) 9

The logic follows here,

Hence, the correct answer is "Option 4"

Q98. Answer: (c) I

Given: Seven boxes, I, J, K, L, Q, R, and S, are kept one over the other, but not necessarily in the same order.

1. Only Q is kept above I.

2. R is kept immediately below I.

3. Only two boxes are kept between I and S.

Position	Box
7	Q
6	I
5	R
4	
3	S
2	
1	

1. Only K is kept below L.

2. J is the only box left and occupies the remaining position.

Final Arrangement:

7	Q
6	I
5	R
4	J
3	S
2	L
1	K

Thus, the box kept second above J is I.

Hence, the correct answer is 'Option 3'.

Q99. Answer: (d) Only conclusion (II) follows

The least possible Venn diagram for the given statements is:

(I) Some tables are desktops - Doesn't follow

(All tables are Boxes and some boxes are desktop. Hence some tables are desktops is false)

(II) Some boxes are tables - Follow

All tables are boxes. Some tables are boxes and some boxes are tables.

Only conclusion (II) follows.

Hence, the correct answer is "Option 4"

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Q100. Answer: (b) 25^(th)

The logic followed here is:

Total number of students in the row = 54

Position of Gagan from the right end = 13^(th)

Position of Nitin from the right end = Position of Gagan from the right + 17

= 13 + 17

= 30^(th)

Position of Nitin from the left end = (Total number of students − Position of Nitin from the right end) + 1

= (54 − 30) + 1

= 24 + 1

= 25^(th)

So, Nitin is 25^(th) from the left end of the row.

Hence, the correct answer is "Option 2"

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