

17 AUGUST (9 AM) (SOLUTION)

1. (4)

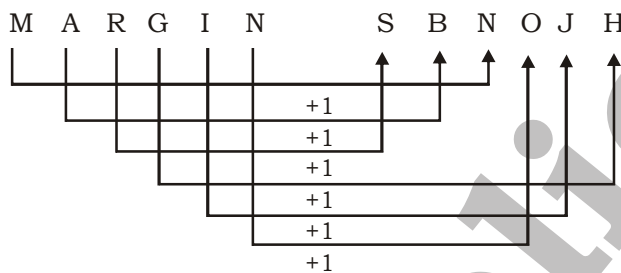
2. (4) 

3. (1)

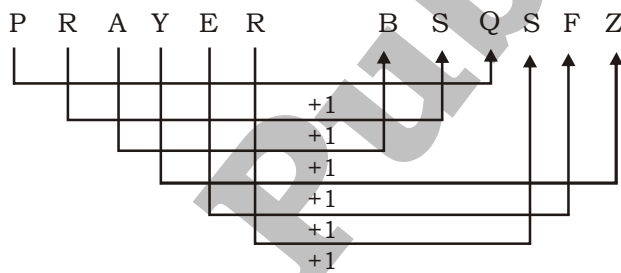
4. (1) $(12 + 1)^2 + 12 = 181 \neq 182$
 (2) $(16 + 1)^2 + 16 = 305$
 (3) $(14 + 1)^2 + 14 = 239$
 (4) $(20 + 1)^2 + 20 = 461$

5. (1) Except Tranquility, other are related to each other.

6. (4) As,



Similarly,



7. (1) As, $(8 + 2)^2 + 8 = 1008$
And, $(6 + 2)^2 + 6 = \mathbf{518}$
Similarly, $(4 + 2)^2 + 4 = 220$

8. (2) $\begin{array}{ccccccc} & P & & N & & J & & H & & D \\ & \downarrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ & -2 & & +4 & & -2 & & -4 & & \end{array}$

9. (2) 3. → Interaction → 4. Interjection → 2. Internship → 6. Interruption → 5. Intervene → 1. Introduce.

10. (4) $24 \rightarrow 48 \rightarrow 51 \rightarrow 204 \rightarrow 209 \rightarrow 1254$
 $\quad \quad \quad \times 2 \quad \times 3 \quad \times 4 \quad +5 \quad \times 6$

11. (2) (1) $\begin{array}{ccc} L & Q & W \\ \downarrow & \uparrow & \downarrow \\ +5 & +6 & \end{array}$ (2) $\begin{array}{ccc} P & U & B \\ \downarrow & \uparrow & \downarrow \\ +5 & +7 & \end{array}$ (3) $\begin{array}{ccc} T & Y & E \\ \downarrow & \uparrow & \downarrow \\ +5 & +6 & \end{array}$ (4) $\begin{array}{ccc} N & S & Y \\ \downarrow & \uparrow & \downarrow \\ +5 & +6 & \end{array}$

12. (3)

13. (1) Shidhar Dhawan plays circket, while Mary Kom plays boxing.

14. (3) 15. (4) 16. (3)

17. (3) Let the cost of 1 mango, 1 banana and 1 guava be $3x$, $2x$ and x .

ATQ,

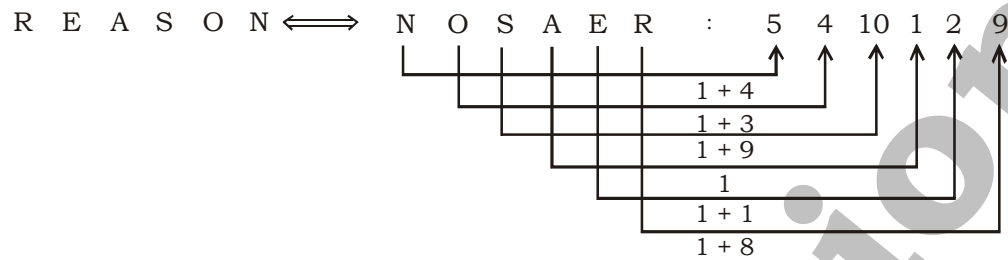
$$6 \times 3x + 3x \times 2x + 10 \times x = 136$$

$$34x = 136$$

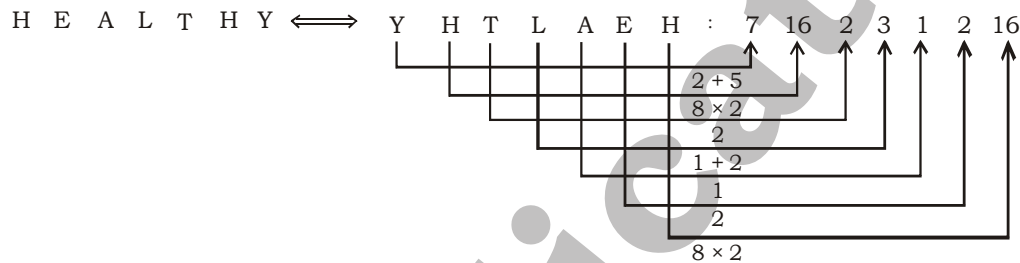
$$x = 4$$

$\therefore$ Total cost of 1 mango, 2 bananas and 3 guavas = $3 \times 4 + 2 \times 2 + 4 \times 3 \times 1 \times 4 = 40$

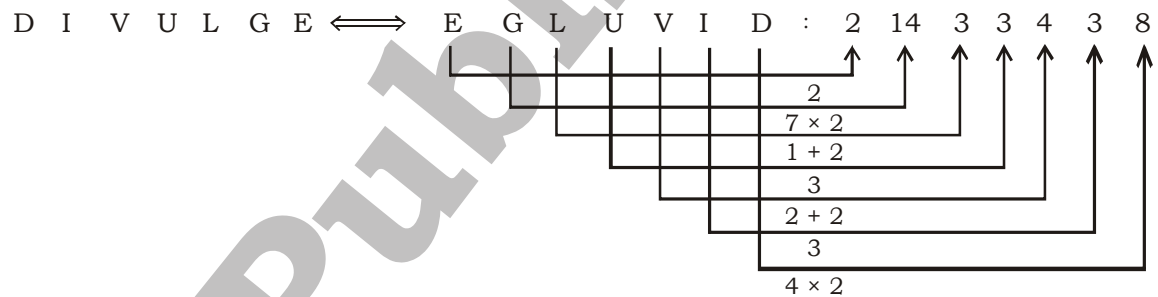
18. (4) As,



And,



Similarly,



19. (4)

20. (1) $1496 * 8 * 13 * 40 * 5 * 0$

After put the signs,

$$1496 \div 8 + 13 - 40 \times 5 = 0$$

$$187 + 13 - 200 = 0$$

$$200 - 200 = 0$$

$$0 = 0$$

21. (3) As,

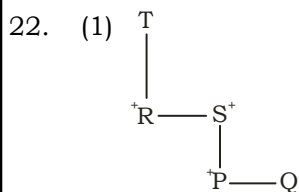
$$\frac{315}{15} = 21$$

$$\frac{21}{7} = 3$$

Similarly

$$\frac{486}{18} = 27$$

$$\frac{27}{9} = 3$$

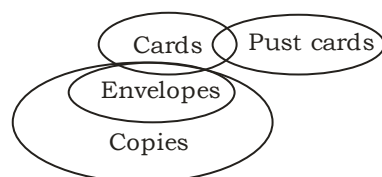


Hence, P is Grandson of T.

23. (1) Cartridge is related to Printer, while Motherboard is related to Central Processing Unit.

24. (1)

25. (1)



I. True II. False III. True

Hence only conclusion I and III follow.

27. (3) Bhitarkanika National Park is a 145 km² (56 sq mi) large national park in northeast Kendrapara district in Odisha in eastern India.

29. (2) The correct answer is Kanada. The Sanskrit philosopher Kanada Kashyapa (2nd-3rd century) expounded its theories and is credited with founding the school.

31. (1) Due to the COVID-19 pandemic, all matches during the 2020-21 season will be played behind-closed-doors across three venues in Goa. The venues will be the Fatorda Stadium in Margao, the GMC Athletic Stadium in Bambolim, and the Tilak Maidan Stadium in Vasco da Gama.

32. (1) Termites are sometimes called "white ants" but the only resemblance to the ants is due to their sociality which is due to convergent evolution with termites being the first social insects to evolve a caste system more than 100 million years ago.

34. (4) Prabhakar Vardhana was the founder of the Vardhana dynasty, with Thaneswar as his capital.

39. (1) The various greenhouse gases are carbon dioxide, methane, chlorofluorocarbon, ozone, nitrous oxide, and water vapor. Hence the gas which is not a greenhouse gas is nitrogen and the correct answer for the given question is option d).

40. (3) However, article 343(1) of the Indian constitution specifically mentions that, "The official language of the Union shall be Hindi in Devanagari script.

41. (2) In physics, work is the energy transferred to or from an object via the application of force along a displacement. In its simplest form, it is often represented as the product of force and displacement.

43. (2) The administrative head was the Advisor to the Governor. In 1972, the NEFA became a Union Territory. Prime Minister Indira Gandhi has acquired the name of Arunachal Pradesh.

46. (3) Totipotency is defined in Wikipedia as the ability of a single cell to divide and produce all the differentiated cells in an organism, including extraembryonic tissues. Totipotent cells formed during sexual and asexual reproduction include spores and zygotes.

47. (2) In its inaugural run on 19 February 1999, the bus carried the then-Indian Prime Minister Atal Bihari Vajpayee, who was to attend a summit in Lahore and was received by his Pakistani counterpart, Nawaz Sharif at Wagah.

48. (1) SBI, ICICI Bank, and HDFC Bank continue to be identified as Domestic Systemically Important Banks (D-SIBs), under the same bucketing structure as in the 2018 list of D-SIBs

49. (2) Founding a political association was on Banerjee's mind. It came true on July 26, 1876. On that day, Banerjee along with Ananda Mohan Bose formed the 'Indian Association' in Kolkata.

50. (4) Premchand, also spelled Prem Chand, pseudonym of Dhanpat Rai Srivastava, (born July 31, 1880, Lamati, near Varanasi, India-died October 8, 1936, Varanasi), Indian author of novels and short stories in Hindi and Urdu who pioneered in adapting Indian themes to Western literary styles.

51. (4) Area of $\triangle ADE = 45\text{cm}^2$

$$\frac{\text{Ar}(\triangle ADE)}{\text{Ar}(\triangle ABC)} = \left(\frac{DE}{AC}\right)^2$$

(The ratio of the area of two similar is equal to the square of the ratio of any pair of the corresponding sides of two similar A)

$$\frac{45}{\text{Ar}(\triangle ABC)} = \left(\frac{5}{8}\right)^2$$

$$\therefore \text{Ar. of } \triangle ABC = \frac{64 \times 45}{25} = 115.2\text{cm}^2$$

52. (3) $32 \div 12$ of $3 \times [5 - (15 - 12) \div 9]$ of $\frac{3}{7} + 4 - 8 \div 2$ of 4

$$= 32 \div 36 \times [5 - 3 \div 9] \text{ of } \frac{3}{7} + 4 - 8 \div 8$$

$$= \frac{32}{36} \times \left[5 - \frac{1}{3}\right] \text{ of } \frac{3}{7} + 4 - 1 = \frac{32}{36} \times \frac{14}{3} \times \frac{3}{7} + 4 - 1$$

$$= \frac{16}{9} + 4 - 1 = 4\frac{7}{9}$$

53. (3) Let two total number of student's in school $\times 100$

No. of students failed = 20

No. of students passed = 80

$$\text{Total no. of student in school \%} = 100 \times \frac{230}{100} = 230$$

$$\text{Total no. of passed in both school x and y} = 330 \times \frac{90}{100} = 297$$

$$\text{Total no of student passed in school y} = 297.80 = 217$$

$$\therefore \text{Requied \%} = \left(\frac{230 - 217}{230} \times 100\right)\% = 5.7\%$$

54. (4) $\frac{3}{4} \cot^2 30^\circ + \cos^2 30^\circ - 3 \operatorname{cosec}^2 60^\circ + \tan^2 60^\circ$

$$= \frac{3}{4} \times (\sqrt{3})^2 + \left(\frac{\sqrt{3}}{2}\right)^2 - 3 \times \left(\frac{2}{\sqrt{3}}\right)^2 + (\sqrt{3})^2$$

$$= \frac{3}{4} \times 3 + \frac{3}{4} - 4 + 3 = 3 - 4 + 3 = 2$$

55. (4) $x + y + z = 7$

$$(x + y + z)^2 = 49$$

$$x^2 + y^2 + z^2 + 2(xy + yz + xz) = 49$$

$$85 + 2(xy + yz + xz) = 49$$

$$xy + yz + zx = \frac{36}{2} = -18$$

$$x^3 + y^3 + z^3 - 3xyz = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$$

$$913 - 3xyz = 7[85 - (-18)]$$

$$913 - 721 = 3xyz$$

$$xyz = \frac{192}{3} = 64$$

$$\therefore \sqrt[3]{xyz} = \sqrt[3]{64} = 4$$

56. (3) $\cos(A - B) = \frac{\sqrt{3}}{2}$

$$\cos(A - B) = \cos 30^\circ$$

$$A - B = 30^\circ \dots (i)$$

$$\cot(A + B) = \frac{1}{\sqrt{3}}$$

$$\cot(A + B) = \cot 60^\circ$$

$$A + B = 60^\circ \dots (ii)$$

Solves equation (i) and (ii)

$$2A = 90^\circ$$

$$A = 45^\circ$$

Put the value of (i) in equa (ii)

$$45 - B = 30^\circ$$

$$B = 15^\circ$$

$$\therefore 2A - 3B = 2 \times 45 - 3 \times 15^\circ \\ = 90^\circ - 45^\circ = 45^\circ$$

57. (4) Let the first no. be x.

ATQ,

$$\frac{x+x+2+x+4+x+6+x+8+x+10+x+12+x+14}{8} = 17$$

$$81 + 56 = 136$$

$$8x = 80$$

$$x = 10$$

$$\therefore \text{Required average} = \frac{20 + 22 + 24 + 36 + 53}{5} = \frac{155}{5} = 31$$

58. (4) Now, putting the value of y = 1, 2, 4, 5, 6, 8 and 9, we can't divide the last 3 digit of seven-digit number by 8.

Only value of y will be 3 and 7

Now, if we take value of y as 3. Total sum of numbers should be divided by 9.

$$\text{So, } 9 + 4 + x + 2 + 9 + 3 + 6 = 33 + x$$

For sum to be divided by 9, the sum should be 36. So, value of x = 3

Now, value of both x and y = 3 which should not be the condition

So, value of y should be 7

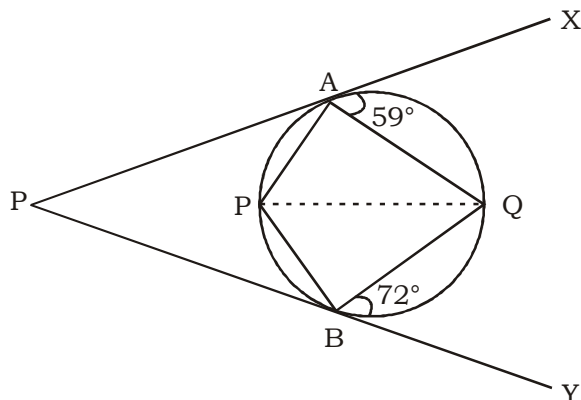
$$\text{Now, } 9 + 4 + x + 2 + 9 + 7 + 6 = 37 + x$$

For sum to be divided by 9, the sum should be 45. So, value of x = 8

$$\text{Now, Value of } (2x + 3y) = (2 \times 8 + 3 \times 7) = 16 + 21 = 37$$

59. (3) Required ratio = $(150 + 220 + 200) : (200 + 180) = 570 : 380 = 3 : 2$

60. (4)



$$\angle QAX = 59^\circ \text{ and } \angle QBY = 72^\circ$$

From alternate segment theorem

$$\angle APQ = \angle QAX = 59^\circ$$

$$\text{And } \angle BPQ = \angle QBY = 72^\circ$$

$$\angle APQ + \angle BPQ = 59^\circ + 72^\circ = 131^\circ$$

$$\angle APB = 131^\circ$$

We know that in cyclic quadrilateral the sum of opposite angle is 180°

$$\angle AQB + \angle APB = 180^\circ$$

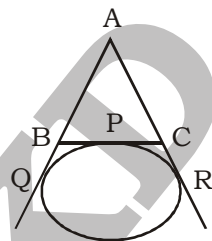
$$\angle AQB + 131^\circ = 180^\circ$$

$$\angle AQB = 180^\circ - 131^\circ = 49^\circ$$

$$\begin{aligned} 61. \quad (2) \quad & \left(\sqrt{\sec^2 \theta + \operatorname{cosec}^2 \theta} \right) \left(\frac{\sin \theta (1 + \cos \theta)}{1 + \cos \theta - \sin^2 \theta} \right) \\ &= \left(\sqrt{\frac{1}{\cos^2 \theta} + \frac{1}{\sin^2 \theta}} \right) \left(\frac{\sin \theta (1 + \cos \theta)}{1 + \cos \theta - \sin^2 \theta} \right) \\ &= \left(\sqrt{\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta \cos^2 \theta}} \right) \left(\frac{\sin \theta (1 + \cos \theta)}{1 + \cos \theta - 1 + \cos^2 \theta} \right) \\ &= \left(\frac{1}{\cos^2 \theta \sin^2 \theta} \right) \left(\frac{\sin \theta}{\cos \theta} \right) = \sec^2 \theta \end{aligned}$$

$$62. \quad (4) \quad \text{Required \%} = \left(\frac{105 - 100}{100} \times 100 \right) \% = 5\%$$

63. (1)



$$AQ = AR \text{ [Tangents]}$$

$$BP = BQ \text{ [Tangents]}$$

$$CP = CR \text{ [Tangents]}$$

$$\text{Perimeter of triangle } ABC = AB + BP + PC + AC$$

$$18 = AB + BQ + CR + AC$$

$$18 = AQ + AR$$

$$18 = AQ + AQ$$

$$18 = 2AQ$$

$$AQ = \frac{18}{2} = 9 \text{ cm}$$

64. (1) Required value of $x = \left(\frac{600 - 540}{540} \times 100 \right) \% = 11.1\%$

65. (4) $(2M + 7W) \times 28 = (6M + 16W) \times 11$

$$56M + 196W = 66M + 176W$$

$$10M = 20W$$

$$\frac{M}{W} = \frac{20}{10} = \frac{2}{1}$$

$$6M + 16W = 6M + 8M = 14M$$

$$\therefore \text{Required number of days} = \frac{14 \times 11}{7} = 22 \text{ days}$$

66. (4) SP = 640

Now

$$SP = \frac{640}{100} \times 145 \times \frac{115}{100} = 846.40$$

67. (2) $a^2 + c^2 + 17 = 2(a - 8b - 2b^2)$

$$a^2 + c^2 + 17 - 2a + 16b + 4b^2 = 0$$

$$a^2 + 1^2 - 2a + (2b)^2 + 4^2 + 16b + c^2 = 0$$

$$(a - 1)^2 + (2b + 4)^2 + c^2 = 0$$

$$a = 1, b = -2 \text{ and } c = 0$$

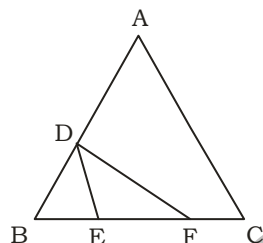
$$\therefore a^3 + b^3 + c^3 = 1 - 8 + 0 = -7$$

68. (2) Required number of persons = $(26 - 12) + (34 - 26) = 12$

69. (3) Ratio of A, B and C = 36 : 32 : 45

$$\text{Share of B} = \frac{31866}{113} \times 32 = 9024$$

70. (2)

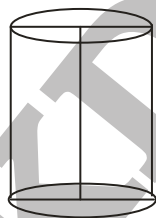


$$BF^2 = BE \times BC \quad (\text{Basic proportionality theorem})$$

$$10^2 = 4 \times BC$$

$$BC = \frac{100}{4} = 25 \text{ cm}$$

71. (4)



$$\text{CSA of cylinder} = 462 \text{ cm}^2$$

$$\text{Base area} = 346.5 \text{ cm}^2$$

$$\pi r^2 = 346.5$$

$$r = \sqrt{\frac{346.5}{22}} \times 7 = 10.5 \text{ cm}$$

$$\text{CSA of cylinder} = 2\pi rh$$

$$462 = 2 \times \frac{22}{7} \times 10.5 \times h$$

$$h = \frac{462 \times 7}{44 \times 10.5} = 7 \text{ cm}$$

$$\therefore \text{volume} = \pi r^2 h = \frac{22}{7} \times 10.5 \times 10.5 \times 7 = 2425.5 \text{ cm}^3$$

72. (1) $SP = 1500 \times \frac{80}{100} = 1200$

$$\text{Profit} = 1200 - 991 = 209$$

73. (4) $P = \frac{13650 \times 100}{100 + (15 \times 2)} = 10500$

$$P = 1 \text{ year} = 2 \text{ half-yearly}$$

$$R = 15\% = 7.5\% \text{ half yearly}$$

$$A = 10500 \left(1 + \frac{7.5}{100} \right)^2 = 10500 \times \frac{107.5}{100} \times \frac{107.5}{100} = 12134$$

74. (1) Let the speed of A be x km/hr and speed of B be y km/hr.
ATQ,

$$\frac{160}{x} - \frac{160}{y} = 8 \quad \dots\dots\dots(i)$$

$$\frac{160}{2x} - \frac{160}{y} = 3 \quad \dots\dots\dots(ii)$$

$$\text{Let } \frac{1}{x} = u \text{ and } \frac{1}{y} = v$$

$$160u - 160v = 8 \quad \dots\dots\dots(iii)$$

$$80u - 160v = 3 \quad \dots\dots\dots(iv)$$

$$\text{Adding the equation (iii) and (iv),}$$

$$80u = 5$$

$$u = \frac{1}{16}$$

$$\text{Put the value of } u \text{ in equation (iii),}$$

$$v = \frac{1}{80}$$

$$\text{Now,}$$

$$\frac{1}{y} = v = \frac{1}{80}$$

$$y = 80 \text{ km/hr}$$

$$\therefore \text{The speed of B is } 80 \text{ km/hr}$$

75. (3) $(54\sqrt{2}x^3 + 24\sqrt{3}y^3) \div (\sqrt{18}x + \sqrt{12}y) = Ax^2 + By^2 + Cxy$

$$\left[(3\sqrt{2}x)^3 + (2\sqrt{3}y)^3 \right] \div \left[(3\sqrt{2}x)^2 - 3\sqrt{2}x \times 2\sqrt{3}y + (2\sqrt{3}y)^2 \right] \div \left[(3\sqrt{2}x)^3 + (2\sqrt{3}y)^3 \right] = Ax^2 + By^2 + Cxy$$

$$18x^2 - 6\sqrt{6}xy + 12y^2 = Ax^2 + By^2 + Cxy$$

$$A = 18, B = 12 \text{ and } C = -6\sqrt{6}$$

$$\therefore A^2 - (B^2 + C^2) = 18^2 - [12^2 + (-6\sqrt{6})^2]$$

$$= 324 - 360 = -36$$

MEANINGS IN ALPHABETICAL ORDER

Words	Meaning in English	Meaning in Hindi
Acquarium	a transparent tank of water in which fish and other water creatures and plants are kept	मछलीघर
Affordability	ability to be afforded; inexpensiveness	सामर्थ्य
Alliteration	the occurrence of the same letter or sound at the beginning of adjacent or closely connected words	अनुप्रास
Alteration	the action or process of altering or being altered	परिवर्तन
Assortment	a miscellaneous collection of things or people	वर्गीकरण
Astronomer	an expert in or student of astronomy	खगोल विज्ञान
Cheapness	the quality of being low in price, especially in relation to similar items or services	सस्तता
Consolation	the comfort received by a person after a loss or disappointment	सांत्वना
Conviction	a formal declaration that someone is guilty of a criminal offense, made by the verdict of a jury or the decision of a judge in a court of law	दोषसिद्धि
Cowardly	lacking courage	कायर
Denunciation	public condemnation of someone or something	निंदा
Designation	the choosing and naming of someone to be the holder of an official position	पद
Embodiment	a tangible or visible form of an idea, quality, or feeling	अवतार
Incriminating	making someone appear guilty of a crime or wrongdoing	बरामद
Infinite	limitless or endless in space, extent, or size; impossible to measure or calculate	अनंत
Knack	an acquired or natural skill at performing a task	आदत
Proficiency	a high degree of competence or skill; expertise	प्रवीणता

17 AUGUST (9 AM) (ANSWER KEY)

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

77. (3) The correct spelling of Unpretensious is Unpretentious.
83. (4) Replace 'Hears to' by 'Listen to'.
87. (3) Replace 'an' by 'a', as it is used before a consonant sound.
93. (3) The correct spelling of Acquarium is Aquarium.
94. (1) The verb of the Sentence starting with 'either...or' takes the form according to the number of the subject it precedes.
95. (2) Replace 'along' by 'with'.