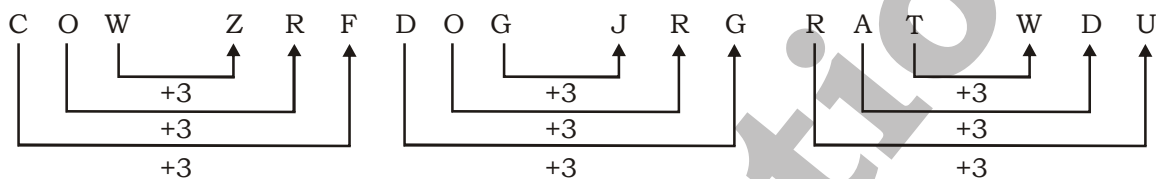


24 AUGUST (9 AM) (SOLUTION)

1. (3) As, $12 - 1 = 11$, $14 - 1 = 13$
 $11 \times 13 = 143$
Similarly, $15 - 1 = 14$, $19 - 1 = 18$
 $14 \times 18 = 252$

2. (1)
3. (4) 'Ottawa' is the capital of 'Canada' and 'Havana' is the capital of 'Cuba'.

4. (2) As, And, Similarly,



5. (1)
6. (1) $r \mathbf{m} \mathbf{v} \mathbf{q} \mathbf{l} / r \mathbf{m} \mathbf{v} \mathbf{q} \mathbf{l} / r \mathbf{m} \mathbf{v} \mathbf{q} \mathbf{l} / r \mathbf{m} \mathbf{v} \mathbf{q} \mathbf{l}$
7. (3) Tintometer is the measuring instrument of colour, while Protractor is measuring instrument of angles.

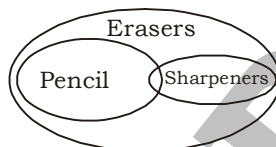
8. (2)

9. (4)
$$\begin{array}{ccccc} \text{M} & \text{I} & \text{N} & \text{T} & \\ \downarrow & \downarrow & \downarrow & \downarrow & \\ 13 & + 9 & + 14 & + 20 & = 56 \times 4 = 224 \\ \text{F} & \text{A} & \text{N} & \text{C} & \text{Y} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 6 & + 1 & + 14 & + 3 & + 25 = 49 \times 5 = 245 \end{array}$$

Similarly,

- $$\begin{array}{ccccccc} \text{C} & \text{O} & \text{N} & \text{T} & \text{O} & \text{U} & \text{R} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 3 & + & 15 & + & 14 & + & 20 & + & 15 & + & 21 & + & 18 & = & 106 \times 7 = & \boxed{742} \end{array}$$

10. (3)



Only conclusion I follows.

11. (3) $3 \quad 20 \quad 38 \quad 52 \quad 75 \quad 82 \quad 114 \quad 110$
- $+35 \quad +32 \quad +37 \quad +30 \quad +39 \quad +28$

- [illegible]

The relation of baby girl mother to Sripad is 'Aunt'.

13. (4) Let the ratio be $5x$ and $21x$.
ATQ,
 $21x - 5x = 50 - 18$
 $16x = 32$
 $x = 2$
Required years = $18 - 5 \times 2 = 8$ years

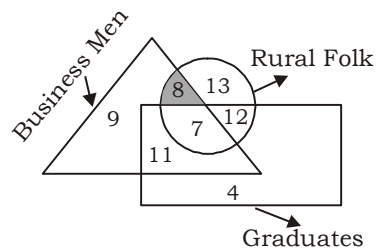
14. (2) (1) $\begin{array}{cccc} R & D & M & I \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 18 & 4 & 13 & 9 \end{array} = 44$

(2) $\begin{array}{cccc} F & H & W & U \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 6 & 8 & 23 & 21 \end{array} = 58$

(3) $\begin{array}{cccc} J & N & C & Q \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 10 & 14 & 3 & 17 \end{array} = 44$

(4) $\begin{array}{cccc} T & F & K & G \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 20 & 6 & 11 & 7 \end{array} = 44$

15. (3)



The no. of rural Businessmen who are not Graduates = 8

16. (1)

17. (4) (1) $22 \xrightarrow{\times 6} 130 - 5 = 127$

(2) $16 \xrightarrow{\times 6} 96 - 5 = 91$

(3) $28 \xrightarrow{\times 6} 168 - 5 = 163$

(4) $27 \xrightarrow{\times 3} 81 + 1 = 82$

18. (1) $\begin{array}{l} M \xrightarrow{+3} P \xrightarrow{+3} S \xrightarrow{+3} V \xrightarrow{+3} Y \\ E \xrightarrow{+3} H \xrightarrow{+3} K \xrightarrow{+3} N \xrightarrow{+3} Q \\ N \xrightarrow{-4} J \xrightarrow{-4} F \xrightarrow{-4} B \xrightarrow{-4} X \\ D \xrightarrow{-4} Z \xrightarrow{-4} V \xrightarrow{-4} R \xrightarrow{-4} N \end{array}$

19. (2) 4. Together $\rightarrow$ 3. Tolerance $\rightarrow$ 5. Tomorrow $\rightarrow$ 1. Topology $\rightarrow$ 2. Topper

20. (2) $156 - 13 + 9 \times 18 \div 5 = 169$

According to option (2),
 $= 156 \div 13 + 9 \times 18 - 5$
 $= 12 + 162 - 5 = 169$

21. (2)

22. (2) As, $\frac{64 + 91 + 118}{3} = \frac{273}{3} = 91$

From option,

(1) $\frac{55 + 82 + 109}{3} = \frac{246}{3} = 82$

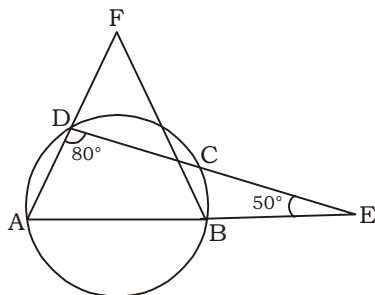
(2) $\frac{46 + 73 + 101}{3} = \frac{220}{3} = 73.33$

(3) $\frac{72 + 99 + 126}{3} = \frac{297}{3} = 99$

(4) $\frac{48 + 75 + 102}{3} = \frac{225}{3} = 75$

23. (1) As, $(23)^2 = 529 + 2 = 531$
Similarly, $(27)^2 = 729 + 2 = 731$
24. (4)
25. (1) (1) Ecology → Ecology is the study of Interaction among living things and their environment.
(2) Myology → Myology is the study of the muscular system.
(3) Ophthalmology → Ophthalmology is a branch of medicine and surgery that deals with the diagnosis and treatment of disorders of the eye.
(4) Dermatology → Dermatology is a branch of medicine dealing with the skin.
Hence, option Myology, ophthalmology and Dermatology are related to biology whereas, Ecology is related to Environment.
26. (2) Actor Deepika Padukone and several Indian citizens and India-origin persons on Wednesday joined the list of the Young Global Leaders (YGLs) compiled by the World Economic Forum.
29. (1) The alkaline earth metals are six chemical elements in group 2 of the periodic table. They are beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra).
30. (4) Coral, a sessile animal, relies on its relationship with plant-like algae to build the largest structures of biological origin on Earth.
31. (4) There are six official languages of the UN. These are Arabic, Chinese, English, French, Russian and Spanish.
32. (2) Perth, Australia and New Delhi, India - December 22, 2020: Uttar Pradesh has become the first state to launch blockchain-enabled solar power trading in India and South Asia in a project led by India Smart Grid Forum (ISGF) with Australian technology company Power Ledger.
34. (3) The brightest star in the constellation is Alioth, Epsilon Ursae Majoris, with an apparent magnitude of 1.76. The constellation Ursa Major contains 22 formally named stars.
35. (1) Watershed is defined as a geohydrological unit draining to a common point by a system of drains. All lands on earth are part of one watershed or other. Watershed is thus the land and water area, which contributes runoff to a common point.
36. (1) The Sind conquest by Muhammad Bin Qasim in 712 AD gave the Muslims a strong dominance in the Indian sub-continent and also showed the tolerance between the two religions. The conquest of Sind led the Islamic civilization come in contact with the ancient Vedic civilization of the subcontinent.
37. (4) Detailed Solution. The correct answer is India. Asus Republic of Gamers (ROG) has announced the launch of the Asus ROG Academy in India. The competitive Esports training initiative will be India's first virtual academy programme for upcoming gamers who are looking to be professionals.
40. (1) A mixed economic system is a system that combines aspects of both capitalism and socialism. A mixed economic system protects private property and allows a level of economic freedom in the use of capital, but also allows for governments to interfere in economic activities in order to achieve social aims.
41. (2) The force of cohesion is defined as the force of attraction between molecules of the same substance.
43. (2) Mohammed Salim: The first Indian to play for a European Club.
44. (4) The Delhi Sultanate - The Tughlaq Dynasty: Muhammad Bin Tughlaq created a department of agriculture known as Diwan-i-Kohi.
46. (3) Bhavya Lal, the Indian-American scientist who oversaw NASA's transition under President Joe Biden's administration, has been appointed as the Acting Chief of Staff of the U.S. space agency.
48. (4) Women performing the ghoomar folk dance, Rajasthan state, India.
49. (4) Stagflation is characterized by slow economic growth and relatively high unemployment-or economic stagnation-which is at the same time accompanied by rising prices.
50. (4) The International Olympic Committee (IOC) was formed, and the first Games were planned for 1896 in Athens, the capital of Greece. In Athens, 280 participants from 13 nations competed in 43 events, covering track-and-field, swimming, gymnastics, cycling, wrestling, weightlifting, fencing, shooting, and tennis.

51. (3)



$$\angle ADB + \angle ABF = 180^\circ$$

(Sum of opposite angles of cyclic quadrilateral is 180°)

$$\angle ABF = 180 - 80^\circ = 100^\circ$$

In $\triangle ADE$,

$$\angle DAE = 180^\circ - 80^\circ - 50^\circ = 50^\circ$$

In $\triangle ABF$,

$$\angle AFB = 180^\circ - 50^\circ - 100^\circ = 30^\circ$$

52. (4) Area of equilateral $\Delta = 9\sqrt{3} \text{ cm}^2$

$$\frac{\sqrt{3}}{4} \times (\text{side})^2 = 9\sqrt{3}$$

$$\left(\frac{26}{25}\right)^3 = \left(1 + \frac{R}{100}\right)^3$$

$$\text{side} = \sqrt{36} = 6 \text{ cm}$$

53. (4) $\sec^2 \alpha \left(1 + \frac{1}{\operatorname{cosec} \alpha}\right) \left(1 - \frac{1}{\operatorname{cosec} \alpha}\right)$

$$= \sec^2 \alpha \left(1 - \frac{1}{\operatorname{cosec} \alpha}\right)$$

$$= \sec^2 \alpha - \frac{\sec^2 \alpha}{\operatorname{cosec}^2 \alpha}$$

$$= \frac{\sec^2 \alpha \cdot \operatorname{cosec}^2 \alpha - \sec^2 \alpha}{\operatorname{cosec}^2 \alpha} = 1$$

54. (2) $\cot A = \frac{1}{2}$

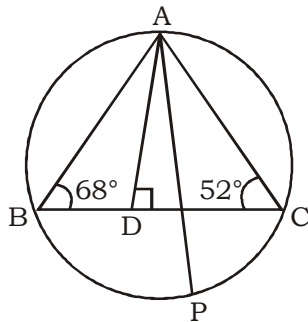
$$\frac{AB}{BC} = \frac{1}{2}$$

$$AC = \sqrt{1^2 + 2^2} = \sqrt{5}$$

$$\therefore \frac{\sin A (\operatorname{cosec} + \cos A)}{\operatorname{cosec} (\sin - \sin A)} = \frac{\frac{2}{\sqrt{5}} \left(\frac{2}{\sqrt{5}} + \frac{1}{\sqrt{5}}\right)}{\frac{1}{\sqrt{5}} \left(\frac{1}{\sqrt{5}} - \frac{2}{\sqrt{5}}\right)}$$

$$= \frac{\frac{2}{\sqrt{5}} \left(\frac{3}{\sqrt{5}}\right)}{\frac{1}{\sqrt{5}} \left(\frac{1-2}{\sqrt{5}}\right)} = -\frac{\frac{3}{\sqrt{5}}}{\frac{1}{\sqrt{5}}} = -3$$

55. (1)



In $\triangle ABD$,

$$\angle BAD = 180 - 90 - 68 = 22^\circ$$

In $\triangle ADC$,

$$\angle DAC = 180 - 90 - 52 = 38^\circ$$

$$\therefore \angle DAP = 38 - 22 = 16^\circ$$

56. (4) Let $AB = x$

$$AC = 2x + 4$$

$$BC = 3x - 4$$

ATQ,

$$x + 3x - 4 + 2x + 4 = 60$$

$$6x = 60$$

$$x = 10 \text{ cm}$$

$$AB = 10 \text{ cm}$$

$$BC = 26 \text{ cm}$$

$$AC = 24 \text{ cm}$$

Here, 10 cm, 24 cm and 26 cm is triplet.

$$\therefore \text{Area of } \triangle ABC = \frac{1}{2} \times 24 \times 10 = 120 \text{ cm}^2$$

$$57. (1) \text{ Required difference} = 320 - \frac{285 + 294}{2} = 30.5$$

The difference is lies between 30 and 35.

$$58. (3) \text{ Total of 23 numbers} = 23 \times 51 = 1173$$

$$12\text{th number} = 12 \times 45 + 12 \times 54 - 1173 = 588 + 648 - 1173 = 63$$

$$\therefore \text{Required average} = \frac{1173 - 63}{22} = 50.45$$

$$59. (2) a^4 + b^4 + a^2b^2 = 273$$

$$(a^2 + b^2)^2 - a^2b^2 = 273$$

$$(21 + ab)^2 - a^2b^2 = 273$$

$$441 + a^2b^2 + 42ab - a^2b^2 = 273$$

$$42ab = -168$$

$$ab = -\frac{168}{42} = -4$$

$$\text{Now, } (a + b)^2 = a^2 + b^2 + 2ab$$

$$(a + b)^2 = 21 + ab + 2ab$$

$$(a + b)^2 = 21 + 3ab$$

$$(a + b)^2 = 21 + 3 \times -4$$

$$a + b = 3$$

$$\therefore \frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab}$$

$$= \frac{3}{-4} = -\frac{3}{4}$$

60. (1) Number of girls = $1400 \times \frac{35}{100} = 490$

Number of boys = $1400 - 490 = 910$

Number of students failed = $490 \times \frac{10}{100} + 910 \times \frac{20}{100} = 231$

$\therefore$ Required% = $\left(\frac{231}{1400} \times 100 \right) \% = 16.5\%$

61. (2) $p = \frac{9 \times 9}{3} = 27$

$\therefore$ Fourth proportion = $\frac{4 \times 27}{6} = 18$

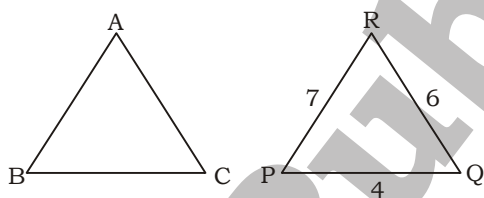
62. (1) $x + \frac{1}{x} = 7$

$\left(x + \frac{1}{x} \right)^2 = 49$

$x^2 + \frac{1}{x^2} + 2 \times x \times \frac{1}{x} = 49$

$\therefore x^2 + \frac{1}{x^2} = 47$

63. (3)



$\triangle ABC \sim \triangle PQR$

$\frac{\text{Area}(\triangle ABC)}{\text{Area}(\triangle PQR)} = \left(\frac{AC}{RQ} \right)^2$

[The ratio of area of two similar Δ is equal to square of the ratio of any pair of corresponding sides of similar Δ]

$\frac{16}{25} = \left(\frac{AC}{76} \right)^2$

$\frac{AC}{60} = \frac{4}{5}$

$\therefore AC = \frac{6 \times 4}{5} = 4.8 \text{ cm}$

64. (1) Required total = $2500 + 1750 = 4250$

65. (2) $(8x^3 + 8 + 27y^3 - 18xy) = (2x)^3 + (3y)^3 + (1)^3 - 3 \times 2x \times 3y \times 1 + 7$
 $= (2x + 3y + 1)[(2x)^2 + (3y)^2 + (1)^2 - 2x \times 3y - 3y \times 1 - 1 \times 2x] + 7$
 $= 0 + 7 = 7$

66. (3) $A = P\left(1 + \frac{R}{100}\right)^T$

$$11495 = 9500\left(1 + \frac{R}{100}\right)^2$$

$$\frac{11495}{9500} = \left(1 + \frac{R}{100}\right)^2$$

$$\frac{121}{100} = \left(1 + \frac{R}{100}\right)^2$$

$$\left(\frac{11}{10}\right)^2 = \left(1 + \frac{R}{100}\right)^2$$

$$\frac{R}{100} = \frac{11}{10} - 1 = \frac{1}{10}$$

$$R = 10\%$$

$$\text{Now, } P = 9500$$

$$T = 2 \text{ years}$$

$$R = 20\%$$

$$SI = \frac{9500 \times 2 \times 20}{100} = ₹3800$$

67. (4) Required ratio = $42000 : (7500 + 1240 + 1500) = 42000 : 10240$
 $= 525 : 128$

68. (3) $3\frac{1}{5} \div 4\frac{1}{2}$ of $5\frac{1}{3} - \frac{1}{8} \div \frac{1}{2}$ of $\frac{1}{4} + \frac{1}{4}$ $\left(\frac{1}{2} \div \frac{1}{8} \times \frac{1}{4}\right)$
 $= \frac{16}{5} \div \frac{9}{2}$ of $\frac{16}{3} - \frac{1}{8} \div \frac{1}{2}$ of $\frac{1}{4} + \frac{1}{4}$ $\left(\frac{1}{2} \times \frac{8}{1} \times \frac{1}{4}\right)$
 $= \frac{16}{5} \div 24 - \frac{1}{8} \div \frac{1}{8} + \frac{1}{4} \times 1$
 $= \frac{16}{5} \times \frac{1}{24} - \frac{1}{8} \times \frac{8}{1} + \frac{1}{4}$
 $= \frac{2}{15} - 1 + \frac{1}{4} = \frac{8 - 60 + 15}{60} = -\frac{37}{60}$

69. (3)

70. (2) Total no. of students passed from school S in 2014 and 2017 = $273 + 247 = 520$
 90% of the total no. of students appeared from school T in 2015, 2016 and 2017
 $= 273 + 247 = 520$

90% of the total no. of students appeared from school T in 2015, 2016 and 2017

$$= (300 + 320 + 350) \times \frac{90}{100} = 873$$

$$\therefore \text{Required \%} = \left(\frac{520}{873} \times 100\right)\% = 59.6\%$$

71. (4) Let the usual speed = x km/hr
 ATQ,

$$\frac{450}{x} - \frac{450}{x+5} = 1$$

$$\frac{450x + 2250 - 450x}{x^2 + 5x} = 1$$

$$x^2 + 5x + 2250 = 0$$

$$x^2 + 50x - 45x - 2250 = 0$$

$$x(x + 50) - 45(x + 50) = 0$$

$$(x - 45)(x + 50) = 0$$

$$x = 45 \text{ km/hr} \quad (\because x \neq -50)$$

$$\therefore \text{Required time} = \frac{315}{45} = 7 \text{ hours}$$

$$72. (1) \text{ Loss\%} = \left(\frac{75 - 60}{75} \times 100 \right) \% = 20\%$$

$$73. (4) \text{ A can do a work in } \frac{23}{2} \text{ days.}$$

$$\text{B can do a work in } \frac{23}{2 \times 125} \times 100 = \frac{46}{5} \text{ days}$$

$$\text{C can do a work in } \frac{46}{5 \times 150} \times 100 = \frac{92}{15} \text{ days}$$

$$\text{Let total work} = 92$$

$$(A + B + C) \text{ day work} = \left(\frac{92}{23} \times 2 + \frac{92}{46} \times 5 + \frac{92}{92} \times 15 \right) = (8 + 10 + 15) = 33 \text{ units}$$

$$\text{Required time} = \frac{92}{33} = 2\frac{26}{33} \text{ days} \approx 3 \text{ days}$$

$$74. (3) \tan \theta + 3 \cot \theta - 2\sqrt{3} = 0$$

$$\tan \theta + \frac{3}{\tan \theta} - 2\sqrt{3} = 0$$

$$\tan^2 \theta - 2\sqrt{3} \tan \theta + 3 = 0$$

$$\tan^2 \theta - \sqrt{3} \tan \theta - \tan \theta + 3 = 0$$

$$\tan \theta (\tan \theta - \sqrt{3}) - \sqrt{3} (\tan \theta - \sqrt{3}) = 0$$

$$\tan \theta - \sqrt{3} = 0$$

$$\tan \theta = \sqrt{3}$$

$$\theta = 60^\circ$$

$$\therefore \operatorname{cosec}^2 \theta + \cos^2 \theta = \operatorname{cosec}^2 60^\circ + \cos^2 60^\circ = \left(\frac{2}{\sqrt{3}} \right)^2 + \left(\frac{1}{2} \right)^2 = \frac{4}{3} + \frac{1}{4}$$

$$= \frac{16 + 3}{12} = \frac{19}{12}$$

$$75. (3) \text{ MP} = ₹ 10000$$

$$\text{SP}_1 = 10000 \times \frac{75}{100} = ₹ 7500$$

$$\text{SP}_2 = 10000 \times \frac{86}{100} \times \frac{88}{100} = ₹ 7568$$

$$\therefore \text{Offer} = 7598 - 7500 = ₹ 68$$

MEANINGS IN ALPHABETICAL ORDER

Words	Meaning in English	Meaning in Hindi
Aesthetic	concerned with beauty or the appreciation of beauty	सौंदर्य विषयक
Assimilate	take in (information, ideas, or culture) and understand fully	अपनाना
Chandelier	a decorative hanging light with branches for several light bulbs or candles	झूमर
Conglomerate	a number of different things or parts that are put or grouped together to form a whole but remain distinct entities	संगुटिका
Energetic	showing or involving great activity or vitality	शक्तिशाली
Evidence	the available body of facts or information indicating whether a belief or proposition is true or valid	सबूत
Exposition	a comprehensive description and explanation of an idea or theory	प्रदर्शनी
Feeble	lacking physical strength, especially as a result of age or illness	कमजोर
Haphazard	lacking any obvious principle of organization	अव्यवस्थित
Infirm	not physically or mentally strong, especially through age or illness	कमजोर
Influence	the capacity to have an effect on the character, development, or behavior of someone or something, or the effect itself	प्रभाव
Integrate	combine (one thing) with another so that they become a whole	एकीकृत
Lethargic	affected by lethargy; sluggish and apathetic	सुस्ती
Leverage	the exertion of force by means of a lever or an object used in the manner of a lever	लाभ लेना
Override	use one's authority to reject or cancel	अवहेलना
Sprightly	(especially of an old person) lively; full of energy	प्रमुदित, उत्साहयुक्त

24 AUGUST (9 AM) (ANSWER KEY)

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

80. (2) The correct spelling of Lisenced is Licenced.
84. (4) Change 'has' into 'have', as plural subject takes a plural auxiliary verb.
88. (4) Change 'best' into 'better', as there is a comparison.
89. (1) 'The need of the hour' is a correct expression.
91. (3) 'Inside' denotes a physical place.
93. (3) The correct spelling of Override is Override.