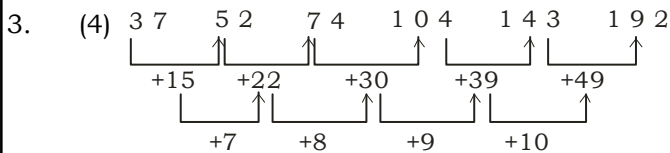
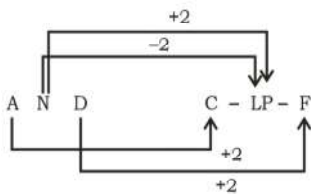


16 AUGUST (3 PM) (SOLUTION)

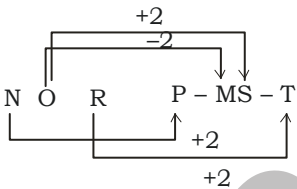
1. (1)
2. (4) Required number of families = $22 + 15 + 7 + 5 = 49$



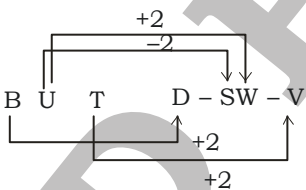
4. (4) As, $21 \times 21 + 4 = 445$
Similarly $24 \times 24 + 4 = 580$
5. (2) $36 * 14 * 63 * 9 * 11 * (6 * 3) * 90$
Put the sign,
 $36 - 14 + 63 \div 9 \times 11 - (6 + 3) = 90$
 $36 - 14 + 7 \times 11 - 9 = 90$
 $113 - 23 = 90$
6. (2) As,



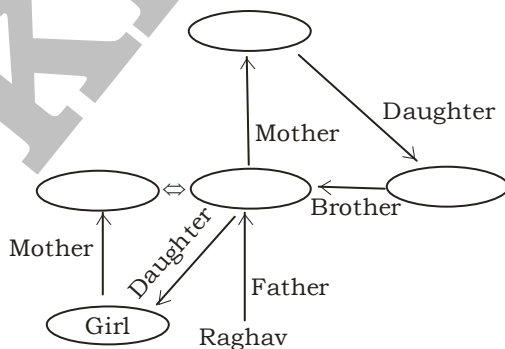
And,



Similarly,

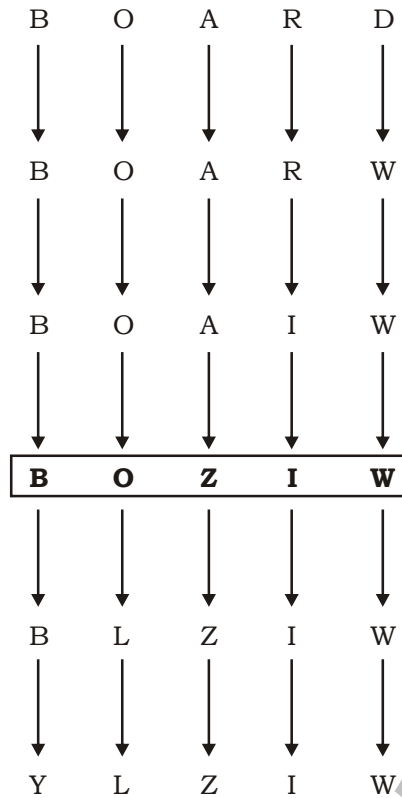


7. (4) Awful as antonym of Nice, while Nomadic is antonym of Settled.
8. (3)



Hence, Raghav's father is the husband of that girl's mother.

9. (3) Dentist treating in hospital, while professor teaches in university
 10. (1) One letter starting from the last letter of the word BOARD is changed to its opposite letter in each step as shown below.

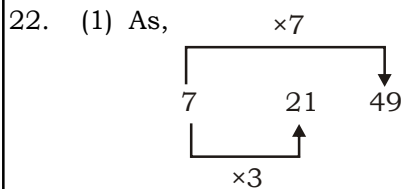


Hence, BOZIW is the correct answer.

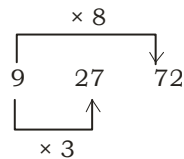
11. (1)
 12. (2) $x(x+1) = 1260$
 $x^2 + x - 1260 = 0$
 $x^2 + 36x - 35x - 1260 = 0$
 $x(x + 36) - 35(x + 36) = 0$
 $(x - 35)(x + 36) = 0$
 $x = 35$ ($\because x$ is not negative)
 $\therefore y = 106 - 35 = 71$
 13. (2)
 14. (3)
-
- I. True II. False III. False
 Hence, only conclusion I follows.
15. (4) 16. (3)
 17. (1) 1. Success $\rightarrow$ 3. Succum $\rightarrow$ 4. Suction $\rightarrow$ 6. Surprise $\rightarrow$ 2. Surreal $\rightarrow$ 5. surrogate
 18. (2) As, $(16 + 12) + (16 - 12) = 32$
 Similarly, $(36 + 27) + (36 - 27) = 72$
 19. (2) As, SAFETY $\Rightarrow 19 + 1 + 6 + 5 + 20 + 25 = 76 \Rightarrow 76 + 19 = 95$
 And, EXPAND $\Rightarrow 5 + 24 + 16 + 1 + 14 + 4 = 64 \Rightarrow 64 + 23 = 87$
 Similarly, GATHER $\Rightarrow 7 + 1 + 20 + 8 + 5 + 18 = 59 \Rightarrow 59 + 27 = 86$

20. (3) Except Vivacious, others are synonyms of each other.

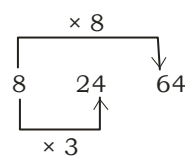
21. (3) $\underline{b}b\underline{c}e\underline{f}k / \underline{b}b\underline{c}e\underline{f}k / \underline{b}b\underline{c}e\underline{f}k / \underline{b}b\underline{c}e\underline{f}k$



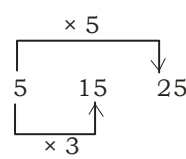
(1)



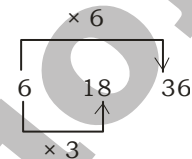
(2)



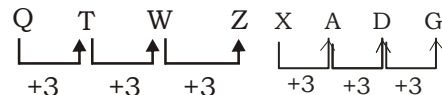
(3)



(4)



23. (4) (1)



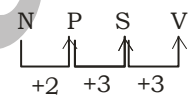
(2)



(3)



(4)



24. (3)

25. (4) (A) $5237 - 4003 = 1234$
(B) $3527 - 2293 = 1234$
(C) $2347 - 1113 = 1234$
(D) $4327 - 2003 = 2324$

28. (2) Deccan Riot of 1875 - Background. In 1875, peasants in the Bombay Presidency rose in rebellion against the agrarian crisis that faced them.

29. (4) The Zeeman effect is the effect of splitting of a spectral line into several components in the presence of a static magnetic field. It is named after the Dutch physicist Pieter Zeeman, who discovered it in 1896 and received a Nobel prize for this discovery.

30. (1) The permanent members of the United Nations Security Council (also known as the Permanent Five, Big Five, or P5) are the five sovereign states to whom the UN Charter of 1945 grants a permanent seat on the UN Security Council: China, France, Russia, the United Kingdom, and the United States.

31. (2) Lok Sabha Speaker Om Birla inaugurated 'Bharat Parv-2021' organised by the Ministry of Tourism in New Delhi today. Addressing the august gathering, Lok Sabha Speaker Om Birla greeted everyone on the occasion of our Republic Day.

32. (1) The Chennai Super Kings (CSK) are a franchise cricket team based in Chennai, Tamil Nadu. They play in the Indian Premier League (IPL). Founded in 2008, the team plays its home matches at the M. A.

33. (2) West Bengal Coverage. Months before the 2021 state polls, West Bengal chief minister Mamata Banerjee in December last year expanded the 'Swasthya Sathi' scheme to cover the state's entire population.

36. (1) Anchar Lake is a lake in highly deteriorated condition located near the Soura area in Srinagar of Jammu and Kashmir

38. (4) Karnataka retained its leadership position in the major States category in the second edition of India Innovation Index released by NITI Aayog on Wednesday. It was followed by Maharashtra, which moved past Tamil Nadu to occupy the second place

45. (3) The Indian Association was the first avowed nationalist organization founded in British India by Surendranath Banerjee and Ananda Mohan Bose in 1876.

46. (3) Legendary actor Biswajit Chatterjee, who had essayed memorable roles in Hindi and Bengali films, was conferred with the 'Indian Personality of the Year Award' at the 51st edition of International Film Festival of India (IFFI) held in Goa on Sunday

47. (4) An international paragliding festival will be held at Vagamon in Kerala on April 6th, 7th and 8th. The event is jointly organized by Kerala Tourism and the Adventure Sports and Sustainable Tourism Academy (ASSTA).

49. (4) Highly electronegative halogens & highly electropositive alkali metals are separated by noble gases"

50. (4) Deserts, rain forests, coral reefs and mangroves are features of diversity.

51. (4) $4(\sin^4 30^\circ + \cos^4 30^\circ) - 3(\sin^2 45^\circ - 2\cos^2 45^\circ)$

$$= 4 \left[\left(\frac{1}{2} \right)^4 + \left(\frac{\sqrt{3}}{2} \right)^4 \right] - 3 \left[\left(\frac{1}{\sqrt{2}} \right)^2 - 2 \left(\frac{1}{\sqrt{2}} \right)^2 \right]$$

$$= 4 \times \frac{10}{16} - 3 \times \frac{-1}{2} = \frac{40}{16} + \frac{3}{2} = \frac{64}{16} = 4$$

52. (4) Let total work be 150.

$$\text{Samir 1 day work} = \frac{150}{10} = 15$$

$$\text{Punit's 1 day work} = \frac{150}{15} = 10$$

$$(\text{Samir} + \text{Punit})'s \text{ 3 day work} = (15 + 10) \times 3 = 75$$

$$\text{Remaining work} = 150 - 75 = 75$$

$$(\text{Samir} + \text{Punit} + \text{Ashok's}) \text{ 1 day work} = \frac{75}{2} = 37.5$$

$$\text{Ashok's 1 day work} = 37.5 - 25 = 12.5$$

Ratio of efficiency of samir, punit

$$\text{Ashok} = 15 : 10 : 12.5 = 6 : 4 : 5$$

$$\therefore \text{Ashok's share} = \frac{4500}{15} \times 5 = 1500$$

53. (4) Fourth proportion to 12, 18 and 6 = $12 : 18 :: 6 : x$

$$\frac{12}{18} = \frac{6}{x}$$

$$x = \frac{18 \times 6}{12} = 9 \dots (i)$$

Third proportion of K and 6 = $K : 6 :: 6 : x$

$$\frac{k}{6} = \frac{6}{x}$$

$$x = \frac{36}{k} \dots (ii)$$

From (i) and (ii),

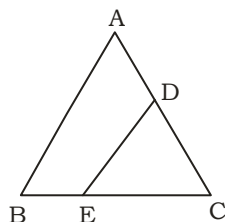
$$\frac{36}{k} = 9$$

$$k = 4$$

54. (2) Required ratio = $\left(\frac{400 + 420 + 550 + 480 + 620}{5} \right) : \left(\frac{350 + 380 + 420 + 450 + 580}{5} \right)$

$$= 494 : 436 = 247 : 218$$

55. (3)



$DE \parallel AB$

Now,

$\triangle CDE \sim \triangle CAB$

$$\frac{CD}{CA} = \frac{CE}{CB}$$

$$\frac{AC - AC}{CA} = \frac{BC - BE}{CB}$$

$$\frac{2x - x + 3}{2x} = \frac{2x + 3 - x + 2}{2x + 3}$$

$$\frac{x + 3}{2x} = \frac{x + 5}{2x + 3}$$

$$2x^2 + 3x + 6x + 9$$

$$2x^2 + 10x$$

$$9x + 9 = 10x$$

$$x = 9$$

56. (1) $25 \div 15$ of $4 \times [4 \div 5 \times (9 - 7)] - (20 \div 5$ of $9)$

$$= 25 \div 60 \times [4 \div 5 \times 2] - [20 \div 45]$$

$$= \frac{25}{60} \times \frac{18}{5} - \frac{20}{45} = \frac{2}{3} - \frac{4}{9}$$

$$= \frac{6 - 4}{9} = \frac{2}{9}$$

57. (2) $291600 = P \left(1 + \frac{R}{100} \right)^2$... (i)

$$314928 = P \left(1 + \frac{R}{100} \right)^3$$
 (ii)

Divide (ii) by (i)

$$1 + \frac{R}{100} = \frac{314928}{291600}$$

$$\frac{R}{100} = \frac{23328}{291600}$$

$$R = \frac{23328}{2916} = 8\%$$

$$SI = \frac{40000 \times 2 \times 8}{100} = 6400$$

58. (4) Let the down stream speed be 4 km/hr and upstream speed be v km/hr.

After

$$\frac{27}{u+v} + \frac{33}{u-v} = 6 \quad \dots(i)$$

$$\frac{36}{u+v} + \frac{22}{u-v} = 6 \quad \dots(ii)$$

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

$$27x + 33y = 6 \quad \dots(iii)$$

$$36x + 22y = 6 \quad \dots(iv)$$

Multiply equation (iii) by 2 and equation (iv) by 3 and subtract,

$$54x + 66y = 12$$

$$108x + 66y = 18$$

$$\begin{array}{r} - \quad - \quad - \\ 54x = 6 \end{array}$$

$$x = \frac{6}{54} = \frac{1}{9}$$

Put the value of x in equation (iii)

$$27 \times \frac{1}{9} + 33y = 6$$

$$33y = 6 - 3$$

$$y = \frac{3}{33} = \frac{1}{11}$$

Now,

$$\frac{1}{u+v} = x$$

$$\frac{1}{u+v} = \frac{1}{9}$$

$$u+v = 9 \quad \dots(v)$$

and

$$\frac{1}{u-v} = y$$

$$\frac{1}{u-v} = \frac{1}{11}$$

$$u-v = 11 \quad \dots(vi)$$

Adding (v) and (vi),

$$2u = 20$$

$$u = 10 \text{ km/hr}$$

Put the value of u in (v)

$$v = -1 \text{ km/hr}$$

$$\therefore \text{ Required time} = \frac{36}{10-1} + \frac{44}{10+1} = 8 \text{ hours}$$

59. (3) Let the number of students initially be x .

ATQ,

$$156 \times x + 160 \times 5 = (x + 5) \times 156.8$$

$$156x + 800 = 156.8x + 784$$

$$0.8x = 16$$

$$x = \frac{16}{0.8} = 20$$

60. (3) Get the CP of article sold at 20% loss x .

CP of article sold at 16% profit = $(490 - x)$

ATQ,

$$(490 - x) \times \frac{116}{100} = x \times \frac{80}{100}$$

$$568.4 - \frac{116x}{100} = \frac{80x}{100}$$

$$\frac{196x}{100} = 568.4$$

$$x = \frac{568.4 \times 100}{196} = 290$$

61. (3) $\frac{\tan^2 30^\circ + \sin^2 90^\circ + \cot^2 60^\circ + \sin^2 30^\circ \cos^2 45^\circ}{\sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ}$

$$= \frac{\left(\frac{1}{\sqrt{3}}\right)^2 + 1^2 + \left(\frac{1}{\sqrt{3}}\right)^2 + \left(\frac{1}{2}\right)^2 + \left(\frac{1}{\sqrt{2}}\right)^2}{\left(\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2}\right) - \frac{1}{2} \times \frac{1}{2}} = \frac{\frac{1}{3} + 1 + \frac{1}{3} + \frac{1}{4} + \frac{1}{2}}{\frac{3}{4} - \frac{1}{4}}$$

$$= \frac{\frac{2}{3} + 1 + \frac{1}{8}}{\frac{2}{4}} = \frac{\frac{16 + 24 + 3}{24}}{\frac{2}{4}} = \frac{43}{24} \times \frac{4}{2} = \frac{43}{12}$$

62. (4) $(P - 2q)^3 = 3^3$

$$p^3 - 8q^3 - 3 \times p \times 2q(p - 2q) = 27$$

$$p^3 - 8q^3 - 6 \times 5 \times 3 = 27$$

$$p^3 - 8q^3 = 27 + 90 = 117$$

63. (4) There will be a total of 41 members in the factory = 39 workers + 2 managers

Daily wages of the managers ranges between 700 and 800, it would be calculated on the basis of 750.

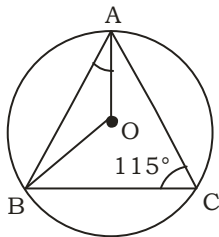
Similarly, the calculation would be done according to the midpoints (for eg. if 5 employees have their salaries between 200 to 300, it will be solved as 5×250)

Total daily wages of all members of staff of the factory = $250 \times 5 + 350 \times 9 + 450 \times 12 + 550 \times 11 + 650 \times 2 + 750 \times 2 = ₹18650$

Total number of workers = $5 + 9 + 12 + 11 + 2 + 2 = 41$

$\therefore$ The average daily wage of all members of staff of the factory = $\frac{18650}{41} = ₹454.8 \approx ₹455$

64. (3)



$$\angle ACB = 115^\circ$$

$$\text{Ext. } \angle AOB = 115^\circ \times 2 = 230^\circ$$

$$\text{Int. } \angle AOB = 360^\circ - 230^\circ = 130^\circ$$

In $\triangle AOB$,

$$\angle OAB + \angle OBA + \angle AOB = 180^\circ \quad (\text{Angle sum property of triangle})$$

$$x + x + \angle AOB = 180^\circ \quad (\because AO = OB)$$

$$2x = 180^\circ - 130^\circ$$

$$x = \frac{50}{2} = 25^\circ$$

$$\therefore \angle OAB = 25^\circ$$

65. (1) $x + y = 2$

$$\frac{1}{x} + \frac{1}{y} = \frac{18}{5}$$

$$\frac{x+y}{xy} = \frac{18}{5}$$

$$\frac{2}{xy} = \frac{18}{5}$$

$$xy = \frac{10}{18} = \frac{5}{9}$$

Now,

$$(x+y)^3 = x^3 + y^3 + 3xy(x+y)$$

$$(2)^3 = x^3 + y^3 + 3 \times \frac{5}{9} \times 2$$

$$8 = x^3 + y^3 + \frac{10}{3}$$

$$\therefore x^3 + y^3 = 8 - \frac{10}{3} = \frac{14}{3} = 4\frac{2}{3}$$

66. (2) Area of square field = 1764 m^2

$$\text{Side} = \sqrt{1764} = 42\text{m}$$

$$\text{Breath of rectangular part} = 42 \times \frac{1}{3} = 14\text{m}$$

$$\text{Length} = 14 \times 2 = 28 \text{ m}$$

$$\text{Area} = (14 \times 28) \text{ m}^2$$

$$\therefore \text{Total cost} = 14 \times 28 \times 15 = 5880$$

67. (4) $(x - 2y)^2 = 5^2$

$$x^2 + 4y^2 - 2 \times x \times 2y = 25$$

$$53 - 25 = 4xy$$

$$4xy = 28$$

$$xy = 7$$

Now,

$$(x - 2y)^3 = x^3 - 8y^3 - 3 \times x \times 2y$$

$$5^3 = x^3 - 8y^3 - 6 \times 7 \times 5$$

$$x^3 - 8y^3 = 125 + 210 = 335$$

68. (4) Required average $= \frac{460 + 580 + 670}{3} = 570$

69. (1) Let the number be x.
ATQ,

$$x \times \frac{115}{100} \times \frac{85}{100} = 782$$

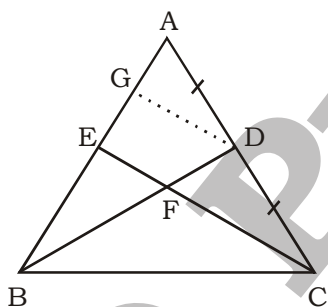
$$x = \frac{7820000}{115 \times 85} = 800$$

$$\therefore \text{Required number} = \frac{800}{100} \times \frac{125}{100} \times \frac{80}{100} = 600$$

70. (2) Total number of boys in science Stream $= 40 + 42 + 38 + 41 + 39 = 200$

$$\therefore \text{Require more\%} = \left(\frac{210 - 200}{200} \times 100 \right) \% = 5\%$$

71. (2)



Draw line parallel to EC from point D on side AC at G.

$DG \parallel EC$

In $\triangle AEC$,

$DG \parallel EC$

$$\frac{AG}{GE} = \frac{AD}{DC}$$

$AG = GE$ as $AD = DC$

Similarly, in $\triangle BGD$,

$GD \parallel EF$

$$\frac{EB}{EG} = \frac{BF}{FD}$$

$EB = GE$ as $BF = FD$

$$AE = AG + GE = 30$$

$$AG = GE = 15$$

$$\therefore EB = 15 \text{ cm}$$

72. (2) Take $A = 45^\circ$ and $B = 30^\circ$

$$\sin\left(\frac{2A+B}{2}\right) = \cos\left(\frac{2A-B}{2}\right) = \frac{\sqrt{3}}{2}, \text{ it satisfies the equation.}$$

$$\therefore \sin[3(A-B)] = \sin[3(45^\circ - 30^\circ)]$$

$$= \sin 45^\circ = \frac{1}{\sqrt{2}}$$

73. (2) 5306P2 is divisible by 3.
 $(5 + 3 + 0 + 6 + P + 2)$ is divisible by 3.

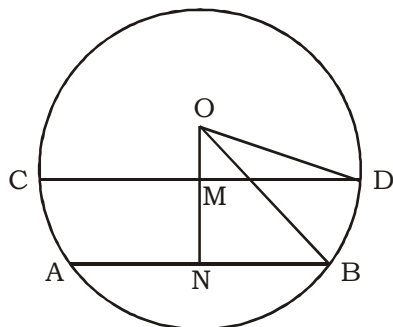
16 + P is divisible by 3.

Greatest value of P = 8

Smallest value of P = 2

$$\therefore \text{Required difference} = 8^2 - 2^2 = 60$$

74. (2)



$$AB = 12 \text{ cm}$$

$$AN = BN = 6 \text{ cm}$$

$$CD = 18 \text{ cm}$$

$$CM = DM = 9 \text{ cm}$$

$$\text{Let radius} = r \text{ cm}$$

$$\text{Let } OM = x \text{ cm}$$

$$MN = 3 \text{ cm}$$

In $\triangle ONB$,

$$r^2 = (x + 3)^2 + (6)^2 \quad \dots\dots\dots(i)$$

In $\triangle OMD$,

$$r^2 = x^2 + 9^2 \quad \dots\dots\dots(ii)$$

From (i) and (ii),

$$x^2 + 9^2 = (x + 3)^2 + 6^2$$

$$x^2 + 81 = x^2 + 9 + 6x + 36$$

$$6x = 81 - 45$$

$$x = \frac{36}{6} = 6 \text{ cm}$$

Put the value of x in equation (ii),

$$r^2 = x^2 + 9^2$$

$$r^2 = 6^2 + 9^2$$

$$r^2 = 36 + 81$$

$$r^2 = 117$$

$$r = 3\sqrt{13} \text{ cm}$$

75. (3) MP = 1800

$$SP = 1800 \times \frac{84}{100} = 1512$$

$$CP = \left(\frac{1512}{108} \times 100\right) = 1400$$

$$SP = \left(\frac{1800}{100} \times 92\right) = 1656$$

$$\text{Profit}\% = \left(\frac{1656 - 1400}{1400} \times 100\right)\% = 18.29\%$$

MEANINGS IN ALPHABETICAL ORDER

Words	Meaning in English	Meaning in Hindi
Astronomy	the branch of science which deals with celestial objects, space, and the physical universe as a whole	खगोल
Boundary	a line that marks the limits of an area; a dividing line	सीमा
Congregation	a group of people assembled for religious worship	मंडली
conservation	prevention of wasteful use of a resource	संरक्षण
Constellation	a group of stars forming a recognizable pattern that is traditionally named after its apparent form or identified with a mythological figure	तारामंडल
Dilemma	a situation in which a difficult choice has to be made between two or more alternatives, especially equally undesirable ones	दुविधा
Dormitory	a large bedroom for a number of people in a school or institution	छात्रावास
Grandiose	impressive and imposing in appearance or style, especially pretentiously so	दिखावटी
Infirmity	a place in a large institution for the care of those who are ill	दुर्बलता
Magnificent	impressively beautiful, elaborate, or extravagant; striking	शानदार
Mighty	possessing great and impressive power or strength, especially on account of size	ताकतवर
Modest	unassuming or moderate in the estimation of one's abilities or achievements	मामूली
Opulent	ostentatiously rich and luxurious or lavish	धनी
Perpetuate	make (something, typically an undesirable situation or an unfounded belief)	यादगार बनाना
Provision	the action of providing or supplying ; something for use	प्रावधान
Sustenance	food and drink regarded as a source of strength	जीविका

16 AUGUST (3 PM) (ANSWER KEY)

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

80. (2) The correct spelling of Photograph is Photograph.
81. (2) Replace 'putted' by 'put'. Past participle of the verb 'put' is 'put'.
85. (3) The correct spelling of Dilemma is Dilemma.
87. (2) Remove 'that'. The indirect speech of an interrogative direct speech does not contain 'that'.
92. (1) Replace 'to' by 'at'. 'Pleased at something' means 'happy about something or satisfied with something'.
95. (2) 'Has' is used with a singular subject.