SSC MOCK TEST - 417 (SOLUTION)

1. (1) As,

B O R E
↓ ↓ ↓ ↓
2+15+18+5 = 40

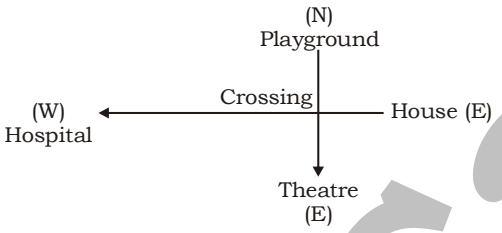
40 ÷ 4 = 10

Similarly,

H O T E L
↓ ↓ ↓ ↓ ↓
8+15+20+5 + 12 = 60

60 ÷ 5 = 12

2. (3) As 'indolence' and 'Work' are opposite to each other, in the same way 'Taciturn' and 'Talkative' are opposite to each other.
3. (4) Except 9883, in all other numbers the sum of the digits is 30.
4. (4) Except DEGF, other groups contain four consecutive letters.
5. (1)

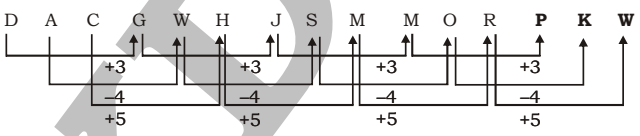


Hence, playground is in North direction.

6. (3) $7\frac{1}{7} = \frac{50}{7}$, $8\frac{2}{6} = \frac{50}{6}$, $9\frac{5}{5} = \frac{50}{5}$, $12\frac{2}{4} = \frac{50}{4}$, $16\frac{2}{3} = \frac{50}{3}$

The denominator is decreasing by 1,but the numerator remains constant therefore next number is $\frac{50}{2}$.

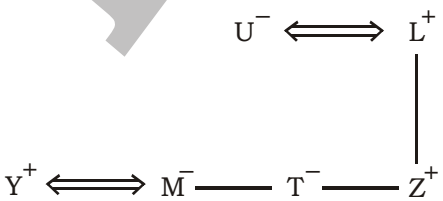
7. (4)



8. (3) As, $6^2 \times 19 = 684$

Similarly, $9^2 \times 15 = 1215$

9. (4) d**l**j**x**r**b**/dl**j**xrb/dljx**r**b/**d**ijxrb
10. (4)



Hence, U is the Mother-in-law of Y.

11. (1)

12. (2) **In the first figure,**
$(6 \times 7) + (8 + 4) = 42 + 12 = 54$
In the first figure,
$(8 \times 4) + (12 + 7) = 32 + 19 = 51$
In the first figure,
$(9 \times 5) + (14 + 9) = 45 + 23 =$ **68**

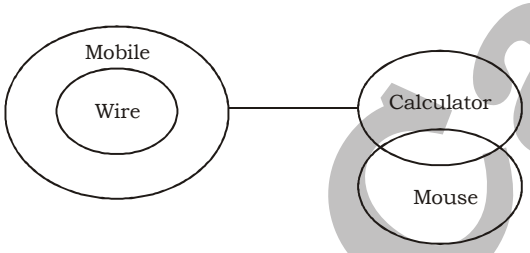
13. (4) $12 \times 3 + 6 = 30$
After changing,
$12 + 6 \times 3 = 30$
$12 + 18 = 30$
$30 = 30$

14. (1) 1. Country → 3. Forest → 5. Tree → 4. Wood → 2. Furniture

15. (2) Let Sunita's present age = x years
Then, Reena present age = $2x$ years
ATQ,
$(2x - 3) = 3(x - 3)$
$2x - 3 = 3x - 9$
$x = 6$
Reena's age = $2x = 2 \times 6 = 12$ years

16. (2) As, SYSTEM ⇒ 19 + 25 + 19 + 20 + 5 + 13 = 101 ⇒ 101 + (1 + 0 + 1) = 103
And, LION ⇒ 12 + 9 + 15 + 14 = 50 ⇒ 50 + (5 + 0) = 55
Similarly, MOBILE ⇒ 13 + 15 + 2 + 9 + 12 + 5 = 56 ⇒ 56 + (5 + 6) = 67

17. (4)



I. True II. False III. False
Hence, only conclusion I follows.

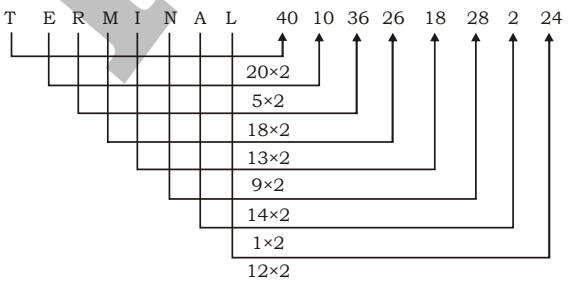
18. (1) Paddy is a kharif crop, while Wheat is a Rabi-Crop.

19. (2) 20. (3)

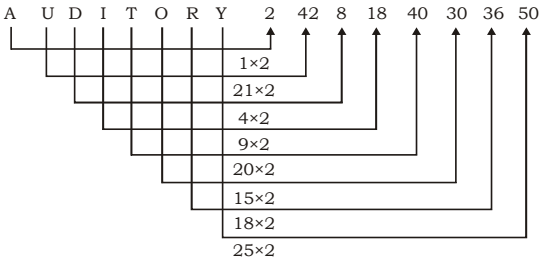
21. (3) As, $25 \times 3 = 75$
$75 \times 2 = 150$
Similarly, $36 \times 3 = 108$
$108 \times 2 = 216$

22. (2)

23. (3) As,



Similarly,



24. (1) 25. (1)

26. (3) Indian Constitution empowers the President of India to convene the session of Parliament such that there should not be more than six months gap between two consecutive Parliament sessions.

29. (1) All India Khilafat Conference : In November 1919, a joint conference of the Muslims and Hindus was called at Delhi in pursuance of the Muslim League President Fazl-ul-Haq . Gandhi ji suggested to start the non–cooperation movement which was opposed by Jinnah. In December 1919, the Khilafat Conference held its second session. The third Khilafat Conference was held in February 1920 at Bombay .

30. (2) The book "Ringside with Vijender" has been authored by Rudraneil Sengupta, the deputy editor of Lounge (the weekly feature magazine of Mint). The book throws light on the Beijing Olympics bronze medallist boxer Vijender Singh's sudden decision to turn pro just a year ahead of the 2016 Rio Olympics. It also portrays the moment when Vijendra was awarded India's highest sporting honour Rajiv Gandhi Khel Ratna Award. Beside this, it also contains his struggles, changes in his boxing style, training and his personal life.

31. (3) Union Environment Ministry has set a new target of 40 percent reduction in particulate matter concentration in cities covered under the National Clean Air Programme (NCAP) by 2026.

32. (4) Galacto Oligosaccharides (GOS), also known as oligogalactose, belong to the group of prebiotics.It is naturally found in soybeans and can be synthesized from lactose. GOS occurs in commercial available products such as food for both infants and adults.

33. (2) World's largest temple is Angkor Wat, located in Angkor, Cambodia. This temple was built by Khmer King Suryavarman II in 12th century as his state temple and capital city.

35. (4) Pipavav Shipyard was established in 1997 at west coast of Saurashtra, Gujarat and it is one of the largest and leading shipbuilding company in India that is spread over 500 acres. It was the first corporate shipyard to be granted clearance to build 5 warships per year and currently it is executing a naval offshore patrol vessel.

36. (2) China's regulator wants provinces to come up with their own plans to handle financial risks, according to a report.

39. (2) Tilaiya project is a 3,960 Megawatt (MW) Ultra Mega Power Project (UMPP) in Jharkhand. It was to be commissioned in 2012 but got delayed due to array of reasons.

40. (3) The Rhine, which flows in Switzerland, Liechtenstein, Austria, Germany, France and Netherlands, is the most important and busiest waterway in Europe. Other busy waterways include Seine and Loire rivers of France, Danube river of eastern Europe and Volga river of Russia.

44. (1) World Milk Day, established by the Food and Agriculture Organization (FAO) of the United Nations is observed annually on 1$_{st}$ June to recognise the importance of milk as a global food. It has been observed on June 1$_{st}$ each year since 2001. In India, the National Milk Day is observed on November 26$_{th}$.

45. (1) Turgid : Hypotonic solution has lower solute concentration than cell cytoplasm, so by osmosis water will enter inside the cell.

46. (2) The Pahlavi dynasty was the ruling dynasty of Iran from 1925 to 1979.

50. (1) Garden Reach Shipbuilders and Engineers delivered the largest survey vessel built in India, INS Sandhayak to the Indian Navy on Navy Day 2023.

51. (3) Let ₹ x and ₹ y be the cost price of two goats.

64% of x = 144% of y

$$\frac{x}{y} = \frac{144}{64} = \frac{9}{4}$$

$x : y = 9 : 4$

$\therefore$ Cost price of first goat = ₹ $\left(\frac{9}{13} \times 728\right)$ = ₹ 504

52. (2) If distance is same, then speed is inversly proportion to time taken.

So, Ratio between speed in upstream and downstream = 4 : 7

Let the speed of boat in upstream and downstream be 4x and 7x respectively.

Speed of stream = $\frac{7x - 4x}{2}$

$$12 = \frac{3x}{2}$$

$$x = \frac{24}{3} = 8 \text{ km/hr}$$

Downstream speed = 8 × 7 = 56 km/hr

Required time to cover 224 km in downstream = $\frac{224}{56}$ = 4 hours

53. (3) $\sqrt{3}$ = 1.73

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

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

$$= 4\sqrt{3} + (4 + 3 + 4\sqrt{3}) - (\sqrt{3} + 2)$$

$$= 7\sqrt{3} + 5 = 7 \times 1.73 + 5 = 12.11 + 5 = 17.11$$

54. (3) Difference in percentage of votes = (54 – 46)% = 8%

8% of total votes = 14400

54% of total votes = $\frac{14400 \times 54}{8}$ = 97200

55. (4) $1818 = 2 \times 3^2 \times 101$

$2952 = 2^3 \times 3^2 \times 41$

LCM of 1818, 2952 and K is $3^2 \times 2^4 \times 7 \times 101 \times 41$

HCF of 1818, 2952 and K is $3^2 \times 2$, so K must contain $3^2 \times 2$.

We know that, in the LCM of the numbers we take highest power.

In LCM of given number highest power of 2, 3, 7, 101 and 41 is 4, 2, 1, 1 and 1 respectively.
So, K must contain $2^4 \times 3 \times 7$.

Value of K may be $(2^4 \times 3 \times 7)$, $(2^4 \times 3^2 \times 7)$, $(2^4 \times 3 \times 7 \times 101 \times 41)$, $(2^4 \times 3^2 \times 7 \times 101)$ etc.

56. (2) Let the number of males in town be x.

Number of females in town = (10000 – x)

ATQ,

$$x \times \frac{115}{100} + (10,000 - x) \times \frac{120}{100} = 11700$$

$115x - 120x + 1200000 = 1170000$

$-5x = -30000$

$\therefore \quad x = \frac{30000}{5} = 6000$

57. (1) Let the radius and height of cone be r and h respectively.

Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = π rl

Total surface area of cone = π r (l + r)

Ratio of curved surface area and volume = $\pi rl : \frac{1}{3}\pi r^2 h = 3l : rh$

ATQ,

$$\frac{3\sqrt{r^2 + h^2}}{rh} = \frac{5}{28}$$

Ratio of total surface area and volume = $\pi r(l + r) : \frac{1}{3}\pi r^2 h$

$= 3(l + r) : rh$

$$\frac{3\sqrt{r^2 + n^2} + 3r}{rh} = \frac{2}{7}$$

$$\frac{3\sqrt{r^2 + n^2}}{rh} + \frac{3r}{rh} = \frac{2}{7}$$

$$\frac{5}{28} + \frac{3}{h} = \frac{2}{7}$$

$$\frac{3}{h} = \frac{2}{7} - \frac{5}{28}$$

$$\frac{3}{h} = \frac{8 - 5}{28} = \frac{3}{28}$$

h = 28

Putting the value of h is equation (i),

$$\frac{3\sqrt{r^2 + 28^2}}{28r} = \frac{5}{28}$$

$r^2 + 784 = \frac{25}{9}r^2$

$\frac{25}{9}r^2 - r^2 = 784$

$\frac{16r^2}{9} = 784$

$r^2 = \frac{784 \times 9}{16}$

$r = \sqrt{\frac{784 \times 9}{16}} = \frac{28 \times 3}{4} = 21cm$

∴ Required ratio = 21 : 28 = 3 : 4

58. (3) In first bottle, ratio of spirit and water = (3 : 1) × 7 = 21 : 7
In second bottle, ratio of spirit and water = (5 : 2) × 4 = 20 : 8
In third bottle, ratio of spirit and water = (11 : 17) ×1 = 11 : 17
In new mixture, ratio of spirit and water = (21 + 20 +11) : (7 + 8 + 17)
= 52 : 32 = 13 : 8

∴ Required % = $\left(\frac{13}{13+8} \times 100\right)\%$ = 61.9% ≈ 62%

59. (4) After 3 years amount = ₹12000

∴ Required amount after 4th year = $P\left(1 + \frac{R}{100}\right)$ = $12000\left(1 + \frac{12}{100}\right)$

= $\frac{12000 \times 112}{100}$ = ₹ 13440

60. (1) Distance travelled by car when they meet = 168 km

Time taken by car = $\frac{Distance}{Time}$

= $\frac{168}{2 \text{ hours } 40 \text{ minute}}$

= $\left(\frac{168 \times 3}{8}\right)$ = 63 km/hr

Speed of bus = (63 × 2) = 126 km/hr
Distance travelled by bus when they meet = 126 × (5 : 40 – 4)

= $126 \times 1\frac{2}{3} = 126 \times \frac{5}{3}$ = 210 km

Total distance between A and B = (210 + 168) = 378 km

61. (3) Let the two positive number be x and y respectively.
According to question,
x + y = 72 .....(i)
x – y = 16 .....(ii)

Adding equation (i) and (ii)

$2x = 88$

$x = 44$

$y = 72 - x = 72 - 44 = 28$

$x^2 - y^2 = (44)^2 - (28)^2 = 1936 - 784 = 1152$

62. (2) $a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$

$$\frac{(0.63+0.37)[(0.63)^2+(0.37)^2-0.63\times0.37)]}{(0.63)^2+(0.37)^2-0.63\times0.37}$$

$= 0.63 + 0.37 = 1$

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

$\cos(A-B) = \cos 30°$

$A - B = 30°$ .....(i)

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

$\cot(A+B) = \cot 60°$

$A + B = 60°$ .....(ii)

Adding equation (i) and (ii),

$2A = 90°$

$A = 45°$

Put the value of A in equation (i),

$45 - B = 30°$

$B = 15°$

$\therefore$ $2A - 3B = 2\times45 - 3\times15° = 90° - 45° = 45°$

64. (2) Three years ago, the average age of P and Q = x years

Total age = 2x years

Present age of P and Q = (2x + 6) years

Total age of P, Q and R = 16 × 3 = 48 years

ATQ,

$2x + 6 + 18 = 48$

$2x = 48 - 24$

$x = \frac{24}{2}$ = 12 years

Total age of P and Q, three years ago = 12 × 2 = 24 years

P's age = (y + 2) years

ATQ,

$y + y + 2 = 24$

$2y = 22$ years

$y = \frac{22}{2}$ = 11 years

$\therefore$ Age of Q, three year ago = 11 years

65. (3) Let the length of track be x m when they meet, distance travelled by Deep is $\frac{4x}{10}$ km and distance travelled by Jatin is $\frac{6x}{10}$ km.

Time taken by both is same so, the ratio of distance = ratio of speed

Ratio of speed of Deep and Jatin = $\left(\frac{4x}{10} : \frac{6x}{10}\right)$ = 2 : 3

Let the speed of Deep and Jatin be 2y m/s and 3y m/s respectively.

$\frac{6x}{10 \times 2y}$ = 27 × 60

$\frac{3x}{y}$ = 16200

x = $\frac{16200y}{3}$ = 5400y

40% of x = $\frac{40}{100} \times 5400y$ = 2160y

Time taken by Jatin to cover 40% distance of track = $\frac{2160y}{3y}$ = 720 Second = 12 minutes

∴ Required time = (1: 00 pm + 12 minutes) = 1 : 12 pm

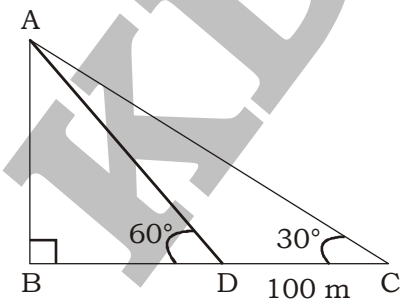
66. (4) Required number of days = $\frac{12 \times 10}{16 - 10}$ = 20 days

67. (2) Cost price of Monu = 12 × 10 = ₹ 120

Selling price of Monu = 10 × 10 = ₹ 100

Loss % = $\left(\frac{120 - 100}{120} \times 100\right)\%$ = $16\frac{2}{3}\%$

68. (2)



Let AB is the height of tower.

CD = 100 m

Let BD = x m

In ΔABD,

$$\tan 60° = \frac{AB}{BD}$$

$$\sqrt{3} = \frac{AB}{x}$$

$AB = \sqrt{3}\, x\, m$ .....(i)

In ΔABC,

$$\tan 30° = \frac{AB}{BC}$$

$$\frac{1}{\sqrt{3}} = \frac{AB}{x+100}$$

$$AB = \frac{x+100}{\sqrt{3}}\ m$$ .....(ii)

Comparing equation (i) and (ii),

$$\sqrt{3}\, x = \frac{x+100}{\sqrt{3}}$$

$3x = 100 + x$

$$x = \frac{100}{2} = 50\ m$$

$\therefore$ Height of tower = $\sqrt{3}\, x = \sqrt{3} \times 50 = 50\sqrt{3}\ m$

69. (1)

A(2, 5) C B(0, 7)

Let line AB perpendicularly bisects line joining A(2, –5) and B (0, 7) at C, thus C is the midpoint of AB.

Coordinates of C = $\left(\frac{2+0}{2}, \frac{-5+7}{2}\right) = \left(\frac{2}{2}, \frac{2}{2}\right) = (1,1)$

Now, slope of AB = $\frac{y_2 - y_1}{x_2 - x_1} = \frac{(7+5)}{(0-2)} = \frac{12}{-2} = -6$

Let slope of line AB = m

Product of slopes of two perpendicular lines = –1

$m \times -6 = -1$

$$m = \frac{1}{6}$$

Equation of a line passing through point (x_1, y_2) and having slope m is $(y - y_1) = m(x - x_1)$

Equation of line AB = $(y - 1) = \frac{1}{6}(x - 1)$

$6y - 6 = x - 1$

$x - 6y = 1 - 6 = -5$

$x - 6y = -5$

70. (3) $\frac{\cos ec\ \theta+\cot\theta}{\cos ec\,\theta-\cot\theta}=7$

$7\cos ec\,\theta-2\cot\theta$

$\cos ec\,\theta+\cot\theta$

$6\cos ec\theta=8\cot\theta$

$\frac{6}{\sin\theta}=\frac{8\cos\theta}{\sin\theta}$

$\cos\theta=\frac{6}{8}=\frac{3}{4}$

$\cos^2\theta=\frac{9}{16}$

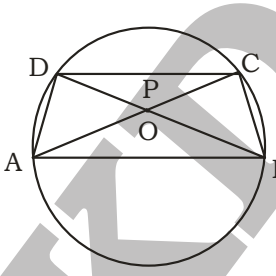
$1-\sin^2\theta=\frac{9}{16}$

$\sin^2\theta=1+\frac{9}{16}=\frac{7}{16}$

$\frac{4\sin^2\theta-1}{4\sin^2\theta+5}=\frac{4\times\frac{7}{16}-1}{4\times\frac{7}{16}+5}$

$=\frac{\frac{7}{4}-1}{\frac{7}{4}+5}=\frac{3}{4}\times\frac{4}{27}=\frac{1}{9}$

71. (2)



$\angle ABC=34°$

$\angle ACB=90°$ (Angle in semi-circle)

In ΔABC,

$\angle ACB+\angle ABC+\angle BAC=180°-90°-37°=56°$

$\angle DCA=\angle BAC=56°$

$\angle DBC=28°$

72. (1) Miscellaneous charges = $\frac{1800}{10} \times 9 = ₹ 1620$

73. (4) Male population in park B, C and D = (500 – 200) + (700 – 350) + (800 – 450) = 1000

$\therefore$ Required average = $\frac{1000}{3} = 333.33$

74. (4) Total population of city A = 300 + 400 = 700
Total population of city D = 450 + 550 = 1000

$\therefore$ Required % = $\frac{1000 - 700}{1000} \times 100 = 30\%$ less

75. (2) Required number of teachers = $(5 + 15 + 22) \times \frac{2400}{100} = 1008$

MEANINGS IN ALPHABETICAL ORDER

Allegory	a story, poem, or picture that can be interpreted to reveal a hidden meaning, typically a moral or political one	रूपक कथा, जिसमें एक (एक नैतिक या राजनीतिक) अर्थ छुपा हुआ होता है
Astonish	surprise or impress (someone) greatly	चकित करना
Clown	a comic entertainer, especially one in a circus, wearing a traditional costume and exaggerated makeup	विदूषक
Constructive	serving a useful purpose	रचनात्मक
Contagious	likely to spread to and affect others	संक्रामक
Dauntless	showing fearlessness and determination	निडर
Dilemma	A dilemma is a difficult situation in which you have to choose between two or more alternatives	दुविधा
Dogma	an established opinion	मत, नीति
Evocative	bringing strong images, memories, or feelings to mind	विचारोत्तेजक
Evoke	to call or summon up (a memory, feeling, etc)	कोई स्मृति या भावना पैदा करना
Hindrance	a thing that provides resistance, delay, or obstruction to something	रूकावट
Intuition	the ability to understand something immediately, without the need for conscious reasoning	सहज बोध
Lethargic	sluggish and apathetic	सुस्त
Narrative	a spoken or written account of connected events; a story	वर्णन, विवरण
Nefarious	wicked or criminal	कुटिल
Nostalgia	a sentimental longing or wistful affection for the past	अतीत के प्रति एक भावुक लालसा या प्रेमपूर्ण स्नेह
Parable	a short story that uses familiar events to illustrate a religious or ethical point	एक छोटी कहानी जो एक धार्मिक या नैतिक बिंदु को चित्रित करती है
Prerogative	a right or privilege exclusive to a particular individual or class	विशेषाधिकार
Reproach	to express disapproval or disappointment	झिड़कना, डांटना
Spectre	a ghost or apparition	काली छाया
Steadfast	resolutely or dutifully firm and unwavering	दृढ़
Suppliant	a person making a humble plea to someone in power or authority	विनती करने वाला
Sycophant	a person who acts obsequiously toward someone important in order to gain advantage	चापलूस
Venerate	regard with great respect; revere	आदर करना
Vigorously	in a way that involves physical strength, effort, or energy	जोर से
Welfare	the health, happiness, and fortunes of a person or group	खुशहाली

SSC MOCK TEST - 417 (ANSWER KEY)

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

76. (1) Since both the action happened in the past, one after another, the first action shall be in Past Perfect Tense.
Here, in this inverted form of sentence, 'Did' should be replaced by 'had'.

77. (3) Replace 'suddenly' by an adjective 'sudden'.

85. (2) A conditional sentence takes following form:
(i) if + sub + had + v_3, sub + would have + v_3 + ...
or
(ii) Had + sub + v_3, sub + would have + v_3 + ...

86. (4) Since the Reporting verb is in Past Tense, 'would' should be used in Indirect Speech.

89. (2) The correct spelling of 'Nostelgia' is 'Nostalgia'.

90. (2) The correct spelling of 'Hinderence' is 'Hindrance'.