SSC MOCK TEST - 437 (SOLUTION)

1. (4) Telescope is used to observe Distant objects, similarly Microscope is used to observe Tiny objects.

2. (3) As, $(7 – 2)^3 + (7 – 2) = 130$
    And, $(9 – 2)^3 + (9 – 2) = 350$
    Similarly, $(11 – 2)^3 + (11 – 2) = 738$

3. (2) Except Euphoria, others are negative word.

4. (4) (1) I + J + U = 9 + 10 + 21 = 40
    (2) G + M + T = 7 + 13 + 20 = 40
    (3) N + M + M = 14 + 13 + 13 = 40
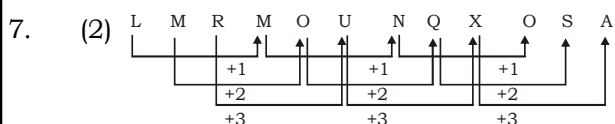   (4) V + T + Q = 22 + 20 + 17 = 59 ≠ 40

5. (1) As,   And,

L	A	P	T	O	P
12	1	16	20	15	16

    Rev. | | Rev. | | Rev. | | |

15	1	11	20	12	16
+1	+1	+1	+1	+1	+1
16	2	12	21	13	17

N	O	T	E
14	15	20	5

    Rev. | | Rev. | |

13	15	7	5
+1	+1	+1	+1
14	16	8	6

    Similarly,

A	D	A	P	T	O	R
1	4	1	16	20	15	18

    Rev. | | Rev. | | Rev. | | Rev. | |

26	4	26	16	7	15	9
+1	+1	+1	+1	+1	+1	+1
27	5	27	17	8	16	10

6. (2) 14 × 2 – 2 = 26
    26 × 2 – 2 = 50
    50 × 2 – 2 = 98
    98 × 2 – 2 = 194

7. (2)
    L M R M O U N Q X O S A
    +1   +1   +1
    +2   +2   +2
    +3   +3   +3

8. (3) As, 95 – (9 – 5) = 91
    91 – (9 – 1) = 83
    Similarly, 72 – (7 – 2) = 67
    67 – (6 – 7) = 68

9. (2) The possible arrangement may be
    1. V > R > Q > S > T > U > P
    And 2. V > Q > R > S > T > U > P
    Arrangement 1 available in options.

10. (4) d**a**bcf/**a**bcfd/b**c**fda/cf**d**ab

11. (2)

12. (1) **In the first row,**
$57 – (49 ÷ 7) = 50$
In the second row,
$68 – (35 ÷ 7) = 63$
In the third row,
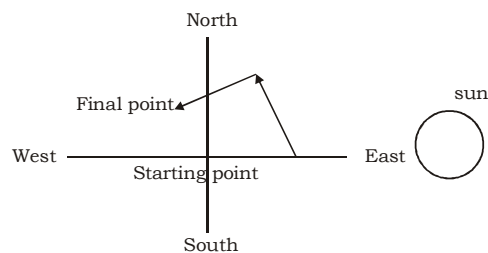$93 – (\mathbf{77} ÷ 7) = 82$

13. (2) $144 + 12 × 16 ÷ 4 – 15 = 181$
Change + and ÷ ,
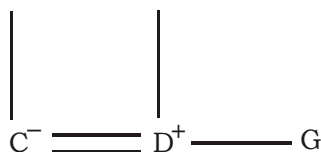$144 ÷ 12 × 16 + 4 – 15 = 181$
$12 × 16 + 4 – 15 = 181$
$192 + 4 – 15 = 181$
$181 = 181$

14. (3)

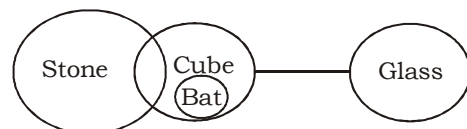From the above figure, final position is in the North-West of his initial position.

15. (2) A^- ══ B^+ E^+ ══ F^-

C^- ══ D^+ ── G

D is the Brother of G.

16. (2) 2. President → 1. Vice President → 4. Prime Minister → 3. Speaker → 5. Member of Parliament

17. (1)

I. True   II. True   III. False   IV. False
Hence, only conclusion I and II follow.

18. (2)   19. (3)
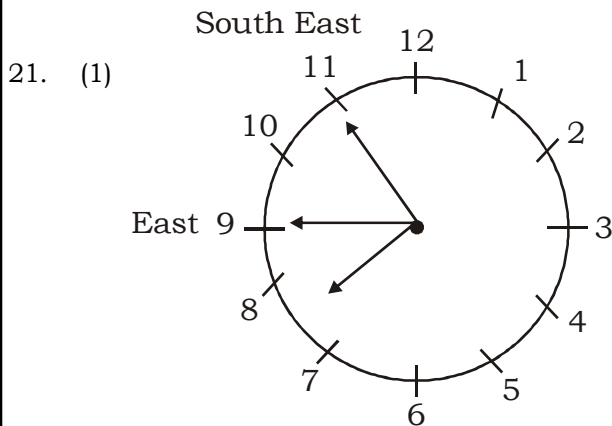
20. (4) Number of odd days in 2000 years = 0
Number of odd days from 2001 to 2005 = 1 + 1 + 1 + 2 + 1 = 6 days
Number of odd days from 1 January to 28 May 2006 = 3 + 0 + 3 + 2 + 0 = 8 days
Total odd days = 6 + 8 = 14 days, i.e. 0 odd day
So, 28 May 2006 was Sunday.

21. (1)

South East

East

22. (2)   23. (1)   24. (4)   25. (2)

27. (3) Dadabhai Naoroji's mentioned the concept of drain of wealth from India during British rule in his book Poverty and Un-British Rule in India.

30. (2) The largest ethnic groups in North Africa are Arabs. Berbers are considered the second largest after the Arabs in western North Africa. The region is predominantly Muslim with a Jewish minority in Morocco and Tunisia, and significant Christian minority—the Copts—in Egypt, Algeria, Morocco, Libya, and Tunisia.

31. (4) The Palk Strait is a strait between the Tamil Nadu State of India and the Mannar District of the Northern Province of the Island Nation of Sri Lanka. The Palk Strait isolates India from Sri Lanka.

32. (1) The formal title of the amendment is the Constitution (First Amendment) Act, 1951. It was moved by the then Prime Minister of India, Jawaharlal Nehru, on 10 May 1951 and enacted by Parliament on 18 June 1951.

33. (3) This sum is simply referred to as the total mechanical energy (abbreviated TME). TME = PE + KE. The total mechanical energy remains constant during freefall.

35. (2) Robert Brown discovered the nucleus of the cell in 1804. The nucleus is a membrane-bound organelle present in eukaryotic cells.

36. (1) The Indian Institute of Technology-Patna (IIT-P) secured a patent for its lightweight, compact inverter, developed under the startup scheme 'Portable Power Technology'.

37. (2) Aryabhata was India's first satellite, named after the famous Indian astronomer. It was launched on 19 April 1975 from Kapustin Yar, a Soviet rocket launch and development site in Astrakhan Oblast using a Kosmos-3M launch vehicle.

39. (2) The Secretary-General is appointed by the General Assembly, on the recommendation of the Security Council.

40. (4) Sangeet Academy is responsible for fostering the development of dance, drama and music in India.

41. (2) The Jnanpith Award is the oldest and the highest Indian literary award presented annually by the Bharatiya Jnanpith to an author for their "outstanding contribution towards literature".

43. (1) A seismograph is a primary earthquake measuring instrument. The seismograph produces a digital graphic recording of the ground motion caused by the seismic waves.

44. (1) Bahmani kingdom was a Muslim state of the Deccan in southern India and was one of the great medieval Indian kingdoms. It was founded by Alauddin Hasan Bahaman Shah in 1347. It was the first Independent Islamic Kingdom in South India.

45. (3) On 6 October 1839, Debendranath Tagore established Tattvaranjini Sabha which was shortly thereafter renamed the Tattwabodhini ('Truth-seekers') Sabha.

47. (3) Oxalic acid as mentioned above is mainly used for the toughest cleaning duties. The acid features bleach-like qualities and can be used for things like removing rust and stains on objects and metals. This acid is found in some quantity in several cleaning products, detergents and bleaches.

48. (2) Enzymes are produced by microorganisms. These microorganisms can be modified to produce enzymes with much better yield properties and purity. Such GMMs (genetically modified micro-organisms) are however not part of the final enzyme product.

50. (3) The Bengaluru-based Indian Institute of Astrophysics (IIA) recorded the moon passing in front of Antares, a massive red supergiant star in Scorpius constellation.

51. (1) $a^3 - b^3 = 189$

$a - b = 3$

Now,

$(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

$3^3 = 189 - 3ab (3)$

$27 = 189 - 9ab$

$9ab = 189 - 27$

$ab = \dfrac{162}{9} = 18$

$\therefore \quad (a - b)^2 - ab$

$= (3)^2 - 18 = 9 - 18 = -9$

52. (3) $9\dfrac{3}{4} \div \left[2\dfrac{1}{6} \div \left\{ 4\dfrac{1}{3} - \left(2\dfrac{1}{2} + \dfrac{3}{4} \right) \right\} \right]$

$= \dfrac{39}{4} \div \left[\dfrac{13}{6} \div \left\{ \dfrac{13}{3} - \left(\dfrac{5}{2} + \dfrac{3}{4} \right) \right\} \right]$

$= \dfrac{39}{4} \div \left[\dfrac{13}{6} \div \left\{ \dfrac{13}{3} - \left(\dfrac{10 + 3}{4} \right) \right\} \right]$

$= \dfrac{39}{4} \div \left[\dfrac{13}{6} \div \left\{ \dfrac{13}{3} - \dfrac{13}{4} \right\} \right]$

$= \dfrac{39}{4} \div \left[\dfrac{13}{6} \div \left\{ \dfrac{52 - 39}{12} \right\} \right]$

$= \dfrac{39}{4} \div \left[\dfrac{13}{6} \div \dfrac{13}{12} \right]$

$= \dfrac{39}{4} \div \left[\dfrac{13}{6} \times \dfrac{12}{13} \right]$

$= \dfrac{39}{4} \div 2 = \dfrac{39}{4} \times \dfrac{1}{2}$

$= \dfrac{39}{8} = 4\dfrac{7}{8}$

53. (2) 3 men = 1 woman

    1 man = 2 boys

    Now, 4 men + 6 women + 10 boys

    = 4 men + 18 men + 5 men

    = 27 men = 9 women

    In 6 days, 9 women can complete the work.

    ∴ In 3 days $\dfrac{9 \times 6}{3} = 18$ women complete the work.

54. (2) $\dfrac{2\sin\theta - \cos\theta}{\cos\theta + \sin\theta} = 1$

    $\dfrac{\dfrac{2\sin\theta - \cos\theta}{\sin\theta}}{\dfrac{\cos\theta + \sin\theta}{\sin\theta}} = 1$ (Dividing numerator and denominator by sinθ)

    $\dfrac{2 - \cot\theta}{1 + \cot\theta} = 1$

    2 – cot θ = 1 + cot θ

    2cot θ = 1

    cot θ = $\dfrac{1}{2}$

55. (2) Let the marked price be ₹ x.

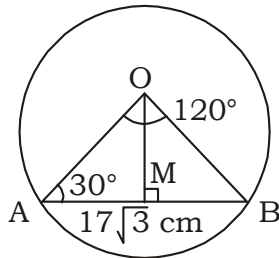   Selling price = ₹ 576

    ATQ,

    $x \times \dfrac{80}{100} \times \dfrac{75}{100}$ = ₹ 576

    $x \times \dfrac{4}{5} \times \dfrac{3}{4}$ = ₹ 576

    $x = \dfrac{576 \times 20}{12}$ = ₹ 960

56. (4)

    Draw OM ⊥ AB

    OM ⊥ AB

    AM = MB = $\dfrac{1}{2}$ × 17$\sqrt{3}$ cm

In ΔOAM,

$\dfrac{AM}{AO}$ = cos 30°

$\dfrac{17\sqrt{3}}{2} \times \dfrac{1}{AO} = \dfrac{\sqrt{3}}{2}$

AO = 17 cm

Radius of the circle = 17 cm

57. **(2)** First candidates secured 40% votes.

Second candidates secured 60% votes.

Let the total number of votes polled be x.

ATQ,

$x \times \dfrac{60}{100} - x \times \dfrac{40}{100} = 596$

$\dfrac{20x}{100} = 596$

$x = \dfrac{596 \times 100}{20} = 2980$

58. **(3)** Let the sum lent at 8% be ₹ x.

Sum lent at 12% = ₹ (3000 – x)

ATQ,

$\dfrac{x \times 8 \times 5}{100} + \dfrac{(3000 - x) \times 12 \times 5}{100} = 1600$

$\dfrac{40x}{100} + \dfrac{180000 - 60x}{100} = 1600$

$\dfrac{40x - 60x + 180000}{100} = 1600$

–20x + 180000 = 160000

20x = 180000 – 160000

$x = \dfrac{20000}{20}$ = ₹ 1000

∴ Required ratio = 1000 : (3000 – 1000) = 1000 : 2000 = 1 : 2

59. **(4)** ATQ,

When B runs 200 m, A runs 190 m.

When B runs 180 m, A runs = $\dfrac{190}{200} \times 180$ = 171 m

When C runs 200 m, B runs 180 m.
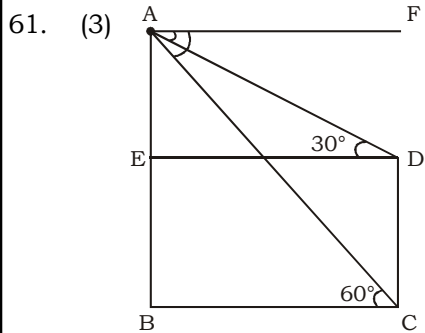
Hence, C will give a start to A by (200 – 171) = 29 m

60. (2) $\dfrac{4x-3}{x}+\dfrac{4y-3}{y}+\dfrac{4z-3}{z}=0$

$\dfrac{4x}{x}-\dfrac{3}{x}+\dfrac{4y}{y}-\dfrac{3}{y}+\dfrac{4z}{z}-\dfrac{3}{z}=0$

$\dfrac{3}{x}+\dfrac{3}{y}+\dfrac{3}{z}=4+4+4$

$\dfrac{1}{x}+\dfrac{1}{y}+\dfrac{1}{z}=\dfrac{12}{3}$

$\therefore\quad \dfrac{1}{x}+\dfrac{1}{y}+\dfrac{1}{z}=4$

61. (3)

Let AB is tower.

AB = 150 m

$\angle$ADE = 30°

$\angle$ACB = 60°

In $\triangle$ABC,

$\tan 60° = \dfrac{AB}{BC}$

$\sqrt{3} = \dfrac{150}{BC}$

$BC = \dfrac{150}{\sqrt{3}}$ m

In $\triangle$ADE,

$\tan 30° = \dfrac{AE}{DE}$

$\dfrac{1}{\sqrt{3}} = \dfrac{AE}{\dfrac{150}{\sqrt{3}}}$ $(\because \ BC = DE)$
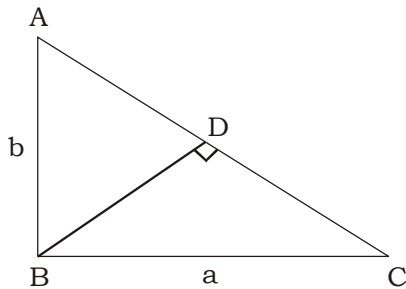
$AE = \dfrac{150}{3} = 50$ m

BE = AB – AE

BE = 150 – 50 = 100 m

BE = CD

CD = 100 m

∴ Height of the house = 100 m

62. (2)

BC = a, AC = b

$AB = \sqrt{AC^2 + BC^2} = \sqrt{b^2 + a^2}$

$Area\ of\ \triangle ABC = \frac{1}{2} \times BC \times AC = \frac{1}{2}ab$

$Again\ area\ of\ \triangle ABC = \frac{1}{2} \times AB \times CD = \frac{1}{2} \times \sqrt{a^2 + b^2} \times p$

ATQ,

$\frac{1}{2}\ ab = \frac{1}{2}\sqrt{a^2 + b^2} \times p$

$ab = \sqrt{a^2 + b^2} \times p$

On squaring both sides, we get

$a^2b^2 = (a^2 + b^2)p^2$

$\frac{1}{p^2} = \frac{a^2 + b^2}{a^2b^2}$

$\frac{1}{p^2} = \frac{a^2}{a^2b^2} + \frac{b^2}{a^2b^2}$

$\frac{1}{p^2} = \frac{1}{b^2} + \frac{1}{a^2}$

∴ $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

63. (4) Let the LCM and HCF be x and y respectively.

Now, x = 4y

ATQ,

y + 4y = 125

5y = 125

y = 25

x = 4 × 25 = 100

∴ Second number = $\frac{LCM \times HCF}{First\ nubmer} = \frac{100 \times 25}{100} = 25$

64. (1) Pipe A can fill the tank in 12 hours.
Pipe B can fill the tank in 16 hours.
Pipe C can empty the tank in 30 hours.
Let the capacity of tank be 240 litres.

Pipe A can fill the tank in 1 hour = $\dfrac{240}{12}$ = 20 litres

Pipe B can fill the tank in 1 hour = $\dfrac{240}{16}$ = 15 litres

Pipe C can empty the tank in 1 hour = $\dfrac{240}{30}$ = 8 litres

Pipe A, B and C together can fill the tank in first 8 hours = 8 × (20 + 15 – 8) = 216 litres
Remaining capacity = 240 – 216 = 24 litres
Pipe B and C can together can fill the tank in 1 hour = (15 – 8) = 7 litres

∴ Required time to fill the remaining part of tank = $\dfrac{24}{7} = 3\dfrac{3}{7}$ hours

65. (4) Let the original speed = x km/hr

Speed after increase = $x \times \dfrac{9}{5} = \dfrac{9x}{5}$ km / hr

Let the distance be D km.
ATQ,

$$\dfrac{D}{x} - \dfrac{D}{\dfrac{9x}{5}} = \dfrac{30}{60}$$

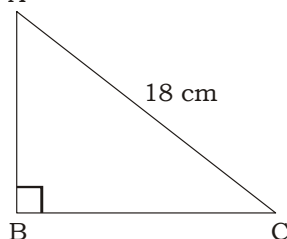$$\dfrac{D}{x} - \dfrac{5D}{9x} = \dfrac{1}{2}$$

$$\dfrac{9D - 5D}{9x} = \dfrac{1}{2}$$

$$\dfrac{4D}{9x} = \dfrac{1}{2}$$

$$x = \dfrac{8D}{9} \text{ km/hr}$$

∴ Required time = $\dfrac{D}{\dfrac{8D}{9}} = \dfrac{D}{8D} \times 9 = \dfrac{9}{8}$ hours

66. (1) A

18 cm

B   C

Given that :

AB + BC + AC = 40 cm

AC = 18 cm

Now, AB + BC = 40 – 18 = 22 cm

In right $\triangle$ABC,

$AB^2 + BC^2 = AC^2$　　　(By pythagoras theorem)

$AB^2 + BC^2 = 18^2$

$AB^2 + BC^2 = 324$ cm

Now,

$(AB + BC)^2 = AB^2 + BC^2 + 2AB.BC$

$(22)^2 = 324 + 2AB.BC$

$484 = 324 + 2AB.BC$

$2AB.BC = 484 – 324$

$AB \times BC = \dfrac{160}{2}$ = 80 cm

$\therefore$ Area of $\triangle ABC = \dfrac{1}{2} \times AB \times BC = \dfrac{1}{2} \times 80$ = 40 cm²

67. **(2)** Let the principal be P.

CP – SP for 2 years = $P\left(\dfrac{R}{100}\right)^2$

$867 = P\left(\dfrac{17}{100}\right)^2$

$P = \dfrac{867 \times 100 \times 100}{17 \times 17}$ = ₹ 30000

$\therefore$　$CI = P\left(1 + \dfrac{R}{100}\right)^2 - P$

$= 30000\left(1 + \dfrac{17}{100}\right)^2 - 30000$

$= 30000 \times \dfrac{117}{100} \times \dfrac{117}{100} - 30000$

$= 41067 – 30000 =$ ₹ 11067

68. **(3)** Ratio of their profit = 25000 × 12 : 30000 × 9 : 45000 × 5

= 5 × 12 : 6 × 9 : 9 × 5 = 20 : 18 : 15

$\therefore$ Share of C in the profit = $\dfrac{13250}{20 + 18 + 15} \times 15$ = ₹ 3750

69. (2) $\cot \theta = \dfrac{1}{\sqrt{3}}$

$\cot \theta = \cot 60°$

$\theta = 60°$

Now,

$\dfrac{2 - \sin^2 \theta}{1 - \cos^2 \theta} + \left(\text{cosec}^2 \theta - \sec \theta\right)$

$\dfrac{2 - \sin^2 60°}{1 - \cos^2 60°} + \left(\text{cosec}^2 60° - \sec 60°\right)$

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

$= \dfrac{\dfrac{5}{4}}{\dfrac{3}{4}} + \left(\dfrac{4-6}{3}\right) = \dfrac{5}{3} - \dfrac{2}{3} = \dfrac{3}{3} = 1$

70. (1) Let the cost price of an article be ₹ 100.

$\text{SP} = 100 \times \dfrac{86.5}{100}$ = ₹ 86.50

Second SP = $100 \times \dfrac{109.5}{100}$ = ₹ 109.50

ATQ,

(109.50 – 86.50) → ₹ 552

23 → ₹ 552

∴ $100 \to \dfrac{552}{23} \times 100$ = ₹ 2400

71. (1) Average number of scooters produced per year (in thousands)

$= \dfrac{115 + 108 + 149 + 102 + 101}{5} = \dfrac{575}{5} = 115$

Clearly, it was in the year 1985.

72. (3) Decrease percentage in factory Q = $\left(\dfrac{20-15}{20} \times 100\right)\%$ = 25%

Decrease percentage in factory R = $\left(\dfrac{16-12}{16} \times 100\right)\%$ = 25%

Decrease percentage in factory T = $\left(\dfrac{41-35}{41} \times 100\right)\%$ = 14.63%

Required answer is factory Q and R.

73.　(2)　Required ratio = $\dfrac{20}{40}$ = 1 : 2

74.　(3)　It was maximum in the year 1987.

75.　(2)　Number of scooters produced by factory Q in the year 1986 = 23 thousands

Total number of scooters produced by all the factories in the year 1985 = 115 thousands

Required percentage = $\left(\dfrac{23}{115} \times 100\right)\%$ = 20%

MEANINGS IN ALPHABETICAL ORDER

Bashful	reluctant to draw attention to oneself; shy	संकोची
Cannibal	a person who eats the flesh of other human beings	नरभक्षक
Cumbersome	large or heavy and therefore difficult to carry or use; unwieldy	बोझिल
Diffident	modest or shy because of a lack of self-confidence	संकोची
Itinerant	traveling from place to place	भ्रमणकारी
Loquacious	tending to talk a great deal; talkative	बातूनी
Obsolete	no longer produced or used; out of date no longer produced or used; out of date	अप्रचलित
Quack	the characteristic harsh sound made by a duck	नीम हकीम
Remedial	giving or intended as a remedy or cure	उपचारात्मक
Summation	the process of adding things together	योग
Taciturn	(of a person) reserved or uncommunicative in speech; saying little	अल्पभाषी
Toxic	poisonous	विषाक्त
Yardstick	a measuring rod a yard long, typically divided into inches	मापदंड

SSC MOCK TEST - 437 (ANSWER KEY)

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

76. (3) "fell" will be come in place of "had fallen".

77. (2) "the car was sent by the driver" will be come in place of the driver sent the car.