SSC MOCK TEST - 414 (SOLUTION)

1. (2) As, Similarly,

$P\ S \Rightarrow 19^2 - 16^2 = 105$ $J\ T \Rightarrow 20^2 - 10^2 = \textbf{300}$

2. (3) A Chef is a person who cooks Food, while a Choreographer is a person who teaches Dance.

3. (4) (1) $9 \times 8 \times 7 = 504$

   (2) $8 \times 7 \times 6 = 336$

   (3) $7 \times 6 \times 5 = 210$

   (4) $6 \times 5 \times 4 = 120 \neq 240$

4. (3) Except Ounce, others are currencies, while Ounce is a unit of weight.

5. (1) Required answer is 4

6. (4) 400   20   2   0.4   **0.16**

   $\div 20$ $\div 10$ $\div 5$ $\div 2.5$

   $\div 2$ $\div 2$ $\div 2$

7. (2)

   +2   +2   +2

   L   M   625   O   P   961   R   S   1369   **U   V   1849**

   $12 + 13 = (25)^2$ $15 + 16 = (31)^2$ $18 + 19 = (37)^2$ $21 + 22 = (43)^2$

8. (3)

   W^+ $R^- \Longleftrightarrow P^+$

   $V^- \Longleftrightarrow S^+ \longrightarrow Q^-$

   U^+ T^-

   Hence, T is grand-daughter of P.

9. (2) As, $7 \times 2 = 14$ and $14 \times 4 = 56$

   Similarly, $18 \times 2 = 36$ and $36 \times 4 = 144$

10. (3) As, Similarly,

   A N S W E R S F X T O B   C O M P U T E R **S F U V Q N P D**

   +1   +1
   +1   +1
   +1   +1
   +1   +1
   +1   +1
   +1   +1
                               +1
                               +1

11. (1) k**k**lmm/l**l**mk**k**/mmk**l**l/kkl**m**m

12. (4) **In first column,**

$10 \times 8 - 8^2 = 16$

In second column,

$18 \times 7 - 7^2 = 77$

In third column,

$29 \times 21 - 21^2 = 168$

13. (2) $8 + 7 \times 3 - 22 \div 11 = 3 \times 5 - 8 + 24 \div 3$

After Changing the numbers 7 and 5,

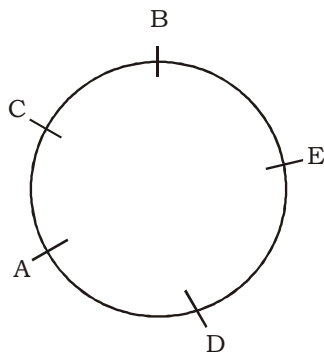$8 + 5 \times 3 - 22 \div 11 = 3 \times 7 - 8 + 24 \div 3$
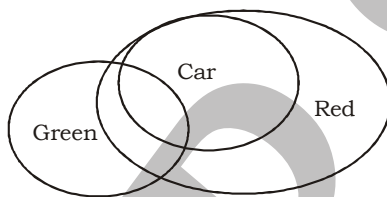
$8 + 15 - 2 = 21 - 8 + 8$

$21 = 21$

14. (3)

15. (4) 2. Application $\rightarrow$ 1. Scrutiny $\rightarrow$ 3. Interview $\rightarrow$ 4. Job offer $\rightarrow$ 5. Joining

16. (3)

Hence, A is sitting second to the left of E.

17. (1)

I. True   II. True   III. True

Hence, all the conclusions follow.

18. (4)

19. (2)

20. (1) Angle made by hour hand in $\dfrac{125}{12}$ hours $= \left(\dfrac{360}{12} \times \dfrac{125}{12}\right)^{\circ} = 312.5°$

Angle made by minute hand in 25 minutes $= \left(\dfrac{360}{60} \times 25\right)^{\circ} = 150°$

$\therefore$ Reflex angle = 360° – (312.5° – 150°) = 360° – 162.5° = 197.5°

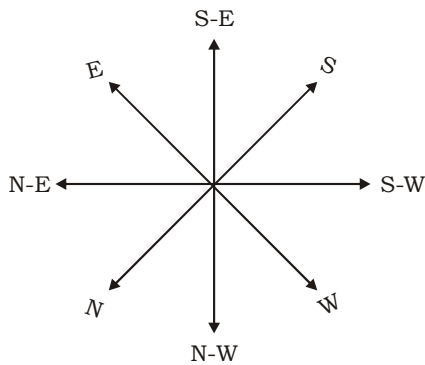21. (1)   22. (1)   23. (4)   24. (1)

25. (4)
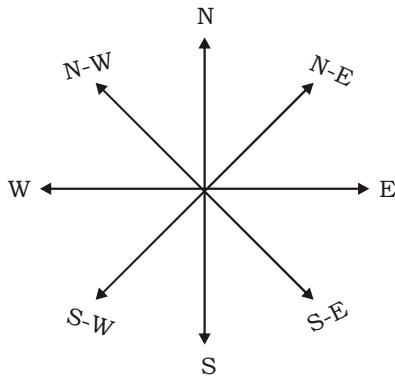
Rotating above diagram such that South-East becomes North.

Then, West becomes South-East.

26. (4) Argon is an inert gas most commonly found in light bulbs. Argon improves bulb life by avoiding too rapid a degradation of the tungsten filaments.

28. (1) Muvendavelan was not a type of sacrifice performed by kings in ancient India to establish their position. Muvendavelan was a famous military officer of the Chola Empire, known for his generous donation to the numerous temples where he had been deployed by the king.

29. (2) The Class Gastropoda (in Phylum Mollusca) includes the groups pertaining to snails and slugs. The majority of gastropods have a single, usually spirally, coiled shell into which the body can be withdrawn.

30. (3) Mount Kyaiktiyo (Kyite Htee Yoe), famous for the huge golden rock perched at its summit, is one of the three most sacred religious sites in Myanmar, along with the Shwedagon Pagoda and the Mahamuni Temple. It is a wellknown Buddhist pilgrimage site in Mon State, Burma.

31. (1) Article 244 (1) of the Indian Constitution defines Scheduled Areas as the areas defined so by the President of India and are mentioned in the fifth schedule of the Constitution. In India, there are 10 states having scheduled areas. Article 244 deals with the Scheduled and Tribal Areas.

36. (2) The Vigilance Awareness Week, 2023 is being observed by the Central Vigilance Commission and all institutions across the country from 30th October till 5th November. This year the theme is – Say no to corruption, commit to the Nation.

39. (1) The International Kite Festival takes place in specially in Ahmedabad, Gujarat, India. The festival is called Uttarayan.

40. (4) Constitution (101st Amendment) Act, 2016 resulted in the insertion, deletion and amendment of certain Articles of the Constitution.

43. (4) That yellow powder is called pollen, and the stick that holds it is called a stamen. Flowers reproduce when bees or other pollinators carry pollen between flowers.

44. (4) Vitamin A Deficiency impaired dark adaptation of the eyes, which can lead to night blindness, is an early symptom of vitamin A deficiency.

45. (1) Hydrogen has three naturally occurring isotopes: 1H (protium), 2H (deuterium), and 3H (tritium).

46. (2) The pass located at the southern end of the Nilgiri Hills in south India is called the Palghat gap.

47. (4) The Jayakwadi Dam on the Godavari River, which feeds the project, has been at 86 per cent water storage since August last year, allowing the project to work at full steam.

50. (2) Professor Saleemul Huq, a prominent advocate for climate justice and the director of the International Centre for Climate Change and Development (ICCCAD) in Dhaka, passed away at the age of 71.

51. (1) Water in new mixture = $\frac{5}{9} \times 63 + \frac{4}{9} \times 63 + 15$ = 35 + 28 + 15 = 78 litres

Total quantity of new mixture = 63 + 63 + 15 = 141 litres

∴ Required percentage of water = $\left(\frac{78}{141} \times 100\right)\% = 55\frac{15}{47}\%$

52. (2) Let the breadth = x cm
Length of rectangle = 2x cm
Now, Area = L × B
228 = 2x × x
$x^2 = \frac{288}{2}$
$x = \sqrt{144}$
x = 12 cm
Diameter of circle = 7 × 12 = 84 cm
Radius = $\frac{84}{2}$ = 42 cm

∴ Area of circle = $\pi r^2 = \frac{22}{7} \times 42 \times 42$ = 5544 cm²

53. (4) Pipe A fills the tank in 25 minutes
Pipe B fills the tank in 40 minutes
Pipe C fills the tank in 50 minutes
Let the capacity of the tank be 200 litres.

Pipe A fills the tank in 1 minute = $\frac{200}{25}$ = 8 litres

Pipe B fills the tank in 1 minute = $\frac{200}{40}$ = 5 litres

Pipe C fills the tank in 1 minute = $\frac{200}{50}$ = 4 litres

Pipe (A + B + C) fill the tank in 4 minutes = 4 (8 + 5 + 4) = 68 litres

Pipe (B + C) fill the tank in next 6 minutes = 6 (5 + 4) = 54 litres

Remaining part of the tank = 200 – (68 + 54) = 200 – 122 = 78 litres

A leak empty the tank in 1 minute = $\dfrac{200}{80}$ = 2.5 litres

Now time taken by pipe C fill the tank taking into consideration the leak as well

= $\dfrac{78}{4 - 2.5}$ = 52 minutes

∴ Required total time to taken to fill the tank = 4 + 6 + 52 = 62 minutes

54. (3) Let the speed of boat in still water be u km/hr and speed of stream be v km/hr.

Upstream speed = u – v = $\dfrac{20}{40} \times 60$ = 30 km/hr ....(i)

Downstream speed = u + v = $\dfrac{30}{50} \times 60$ = 36 km/hr .....(ii)

Adding equation (i) and (ii), we get

2u = 66

u = $\dfrac{66}{2}$ = 33 km/hr

55. (2) $\dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c} = 0$
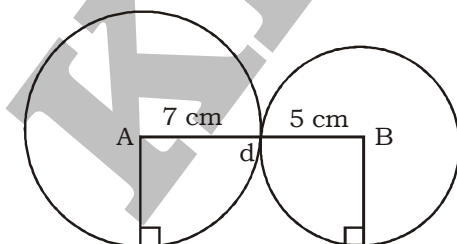
$\dfrac{ab + bc + ca}{abc} = 0$

ab + bc + ca = 0

We know, $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

$32 - 3 \times 8 = 4(a^2 + b^2 + c^2) - 0$

$8 = 4(a^2 + b^2 + c^2)$

∴ $a^2 + b^2 + c^2 = \dfrac{8}{4} = 2$

56. (1)

Length of direct common tangent = $\sqrt{d^2 - (R_1 - R_2)^2} = \sqrt{(R_1 + R_2)^2 - (R_1 - R_2)^2}$

= $\sqrt{(7 + 5)^2 - (7 - 5)^2} = \sqrt{144 - 4} = \sqrt{140} = 2\sqrt{35}$ cm

57. (3)   Amount after two years = ₹5775

Amount after three years = ₹6930

From 2nd year to 3rd year, the amount ₹5775 becomes ₹6930 at R% compounded annually in 1 year.

Then,

$$6930 = 5775\left(1 + \frac{R}{100}\right)^1$$

$$\frac{6930}{5775} = 1 + \frac{R}{100}$$

$$\frac{6930}{5775} - 1 = \frac{R}{100}$$

$$\frac{6930 - 5775}{5775} = \frac{R}{100}$$

$$\frac{R}{100} = \frac{1155}{5775}$$

$$\frac{R}{100} = \frac{1}{5}$$

∴ $R = \frac{100}{5} = 20\%$

58. (4) $\sqrt{25} \div 5 - 16 \div (-64 \div 8) + \sqrt{2601} \div \sqrt{(200 + 89)} + 2^8 \div 64$

= $\sqrt{25} \div 5 - 16 \div -8 + 51 \div 17 + 256 \div 64$

= $5 \div 5 - 16 \div -8 + 3 + 4$

= $1 + 2 + 3 + 4 = 10$

59. (2)   Let the two numbers be x and y.

Now,

x : 13 : : 13 : y

$$\frac{x}{13} = \frac{13}{y}$$

$$x = \frac{169}{y} \qquad ....(i)$$

And, x : y : : y : 832

$$\frac{x}{y} = \frac{y}{832}$$

$$\frac{169}{y^2} = \frac{y}{832}$$

$$y^3 = 169 \times 832$$

$$y = \sqrt[3]{140608}$$

$$y = 52$$

Put the value of y in equation (i),

$$x = \frac{169}{y} = \frac{169}{52} = \frac{13}{4}$$

∴ Required numbers are 52 and $\frac{13}{4}$.

60. (3) A's profit as remuneration in a year = 120 × 12 = ₹1440

Let the annual profit be ₹x.

Then, ₹(x – 1440) will be distributed between A and B as their share of profit.

Ratio of their profit = 40000 : 50000 = 4 : 5

A's share in the profit $= 1440 + \left(x - 1440\right) \times \frac{4}{9}$

$$3600 = 1440 + \left(x - 1440\right) \times \frac{4}{9}$$

$$3600 - 1440 = \frac{4x}{9} - 640$$

$$\frac{4x}{9} = 2160 + 640$$

$$\frac{4x}{9} = 2800$$

$$x = \frac{2800 \times 9}{4} = ₹6300$$

∴ B's share in the profit $= \frac{5}{9} \times \left(6300 - 1440\right) = \frac{5}{9} \times 4860 = ₹2700$

61. (4) Monthly pass cost = ₹3552

Total cost of ticket for 30 days = 160 × 30 = ₹4800

Saving = 4800 – 3552 = ₹1248

∴ Required saving% = $\left(\frac{1248}{4800} \times 100\right)\%$ = 26%

62. (1) Let the selling price of an article be ₹300.

So, x = ₹300

New selling price = $300 \times 66\frac{2}{3}\% = 300 \times \frac{200}{3 \times 100}$ = ₹200

Now, the cost price of an article $= \frac{200}{80} \times 100$ = ₹250

When the article sold at ₹300, the profit = 300 – 250 = ₹50

∴ Profit = $\left(\frac{50}{250} \times 100\right)\%$ = 20%

63. (2) $\dfrac{\text{Speed}_P}{\text{Speed}_Q} = \sqrt{\dfrac{T_Q}{T_P}}$

$\dfrac{S_P}{44} = \sqrt{\dfrac{9}{13\frac{4}{9}}}$

$\dfrac{S_P}{44} = \sqrt{\dfrac{9}{\frac{121}{9}}}$

$\dfrac{S_P}{44} = \sqrt{\dfrac{9 \times 9}{121}}$

$\dfrac{S_P}{44} = \dfrac{9}{11}$
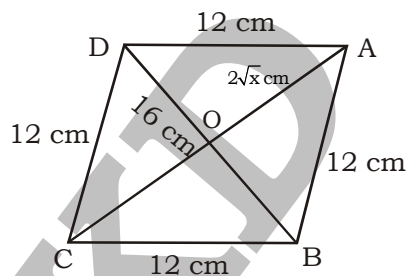
$S_P = \dfrac{44 \times 9}{11} = 36$ km/hr

∴ Speed of P = 36 km/hr

64. (3) $\dfrac{4\cos(270° + \theta)\sin^3(90° - \theta) - 4\cos(360° + \theta)\cos^3(90° - \theta)}{\cos(90° + \theta)}$

$= \dfrac{4\sin\theta\cos^3\theta - 4\cos\theta\sin^3\theta}{-\sin^4\theta} = \dfrac{4\cos\theta\sin\theta(\cos^2\theta - \sin^2\theta)}{2\sin 2\theta\cos 2\theta}$

$= -\dfrac{2\sin 2\theta\cos 2\theta}{2\sin 2\theta.\cos 2\theta} = -1$

65. (4)

Side of rhombus = 12 cm

Diagonal BD = 16 cm

AC = $2\sqrt{x}$ cm

Since, diagonals of rhombus bisects each other at perpendicular.

So, BO = $\dfrac{16}{2}$ = 8 cm and OC = $\dfrac{2\sqrt{x}}{2} = \sqrt{x}$ cm
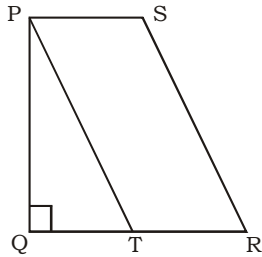
In ΔBOC,

$CD^2 = BO^2 + OC^2$

$12^2 = 8^2 + \left(\sqrt{x}\right)^2$

$x^2 = 144 - 64 = 80$ cm

$\therefore \quad \sqrt{x + 20} = \sqrt{80 + 20} = 10\,cm$

66. (2)

Given, QT = PQ

Area of $\Delta PQT = 128$ cm^2

$\dfrac{1}{2} \times PQ \times QT = 128$

$PQ^2 = 256$

$PQ = \sqrt{256} = 16$ cm

It is also given that,

PQ = 2PS

$PS = \dfrac{PQ}{2} = \dfrac{16}{2} = 8$ cm

Now, Area of trapezium PQRS

$= \dfrac{1}{2} \times PQ \times (PS + QR)$

$= \dfrac{1}{2} \times 16 \times (8 + 16 + 8) \qquad (\because PS = TR)$

$= \dfrac{1}{2} \times 16 \times 32 = 256$ cm^2

67. (1) $\dfrac{\left[2\sin(45° + \theta).\sin(45° - \theta)\right]}{\cos 2\theta}$

$= \dfrac{\left[2\sin 45° \cos\theta + \cos 45° \sin\theta\right].\left[\sin 45° \cos\theta - \cos 45° \sin\theta\right]}{\cos 2\theta}$

$= \dfrac{2\left[\dfrac{1}{\sqrt{2}}(\cos\theta + \sin\theta)\dfrac{1}{\sqrt{2}}(\cos\theta - \sin\theta)\right]}{\cos^2\theta - \sin^2\theta}$

$= 2 \times \dfrac{1}{2} \times \dfrac{\cos^2\theta - \sin^2\theta}{\cos^2\theta - \sin^2\theta} = 2$

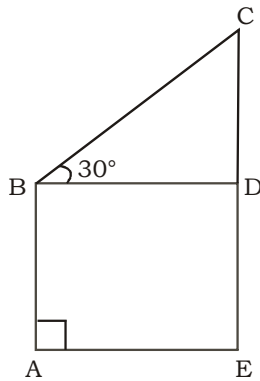**68. (3)** Let the length of each train be x m.

Speed of first train = $\dfrac{x}{24}$ m/s

Speed of second train = $\dfrac{x}{16}$ m/s

ATQ,

$$\dfrac{x + x}{\dfrac{x}{24} + \dfrac{x}{16}} = \dfrac{2x}{\dfrac{2x + 3x}{48}}$$

$$= \dfrac{2x}{5x} \times 48 = 19.2 \text{ seconds}$$

69. (2)

Let AB is the observer and CE is the tower.

AB = DE = 1.4 m

BD = AE = $25\sqrt{3}$ m

In ΔBCD,

$$\tan 30° = \dfrac{CD}{BD}$$

$$\dfrac{1}{\sqrt{3}} = \dfrac{CD}{25\sqrt{3}}$$

CD = 25 m

Now, CE = CD + DE = 25 + 1.4 = 26.4 m

∴ Height of tower = 26.4 m

70. (4) $x = \dfrac{2\sqrt{6}}{\sqrt{3} + \sqrt{2}} \times \dfrac{\sqrt{3} - \sqrt{2}}{\sqrt{3} - \sqrt{2}}$

$x = 2\sqrt{18} - 2\sqrt{12} = 6\sqrt{2} - 4\sqrt{3}$ ....(i)

$$\dfrac{x + \sqrt{2}}{x - \sqrt{2}} + \dfrac{x + \sqrt{3}}{x - \sqrt{3}}$$

$$= \dfrac{6\sqrt{2} - 4\sqrt{3} + \sqrt{2}}{6\sqrt{2} - 4\sqrt{3} - \sqrt{2}} + \dfrac{6\sqrt{2} - 4\sqrt{3} + \sqrt{3}}{6\sqrt{2} - 4\sqrt{3} - \sqrt{3}} \qquad \text{[From (i)]}$$

$$= \frac{7\sqrt{2} - 4\sqrt{3}}{5\sqrt{2} - 4\sqrt{3}} + \frac{6\sqrt{2} - 3\sqrt{3}}{6\sqrt{2} - 5\sqrt{3}}$$

$$= \frac{\left(84 - 35\sqrt{6} - 24\sqrt{6} + 60\right) + \left(60 - 15\sqrt{6} - 24\sqrt{6} + 36\right)}{60 - 25\sqrt{6} - 24\sqrt{6} + 60}$$

$$= \frac{240 - 98\sqrt{6}}{120 - 49\sqrt{6}} = \frac{2\left(120 - 49\sqrt{6}\right)}{120 - 49\sqrt{6}} = 2$$

71. (1) Profit on article D = ₹252

Cost price of article D = $\frac{252}{18} \times 100$ = ₹1400

Selling price = 1400 + 252 = ₹1652

∴ Marked price of an article = $\frac{1652}{70} \times 100$ = ₹2360

72. (3) Profit on article F = ₹264

Cost price of article F = $\frac{264}{12} \times 100$ = ₹2200

Cost price of article C = ₹2200

∴ Profit on article C = $2200 \times \frac{10}{100}$ = ₹220

73. (4) Marked price of article A = ₹1530

Selling price of article A = $\frac{1530}{85} \times 100$ = ₹1800

∴ Cost price of article A = $\frac{1800}{120} \times 100$ = ₹1500

74. (3) Cost price of article E = $\frac{540}{30} \times 100$ = ₹1800

Now, total cost price of article E = 1800 + 540 = ₹2340

∴ Selling price of article E = $2340 \times \frac{125}{100}$ = ₹2925

75. (1) Marked price of article B = $\frac{720}{24} \times 100$ = ₹3000

Selling price of article B = 3000 – 720 = ₹2280

Cost price of article B = $\frac{2280}{125} \times 100$ = ₹1824

Profit when no discount is allowed = 3000 – 1824 = ₹1176

∴ Profit % = $\left(\frac{1176}{1824} \times 100\right)\%$ = 64.47% ≈ 64%

MEANINGS IN ALPHABETICAL ORDER

Obsolete	No longer produced or used; out of date; Archaic	अप्रचलित, पुराना
Liberate	to free	मुक्त करना
Fallacy	a mistaken belief, especially one based on unsound arguments	भ्रांति
Replica	an exact copy or model of something	प्रतिरूप
Daunt	make (someone) feel intimidated or apprehensive	हतोत्साह करना, डराना
Ornate	elaborately or highly decorated	सुशोभित
Anonymous	(of a person) not identified by name; of unknown name	गुमनाम
Biography	an account of someone's life written by someone else	जीवनी
Demagogue	a leader who makes false claims and promises in order to gain power	जनोत्तेजक नेता
Tyrant	a cruel and oppressive ruler	निरंकुश शासक
Obituary	a notice of a death, especially in a newspaper typically including a brief biography of the deceased person	शोक समाचार
Plagiarism	the practice of taking someone else's work or ideas and passing them off as one's own	साहित्यिक चोरी
Conspicuous	attracting notice or attention	विशिष्ट
Conjuror	a performer of clever tricks that seem magic	करतब दिखाने वाला
Voluntary	done, given, or acting of one's own free will	स्वैच्छिक
Homage	special honour or respect shown publicly	श्रद्धांजलि

SSC MOCK TEST - 414 (ANSWER KEY)

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

76. (1) If two articles are used before two ordinals, the noun following must be singular. Change 'episodes' into 'episode'.

77. (3) Change 'some ' into 'somewhat' before 'angry'.

84. (3) 'Get away' means ' to escape'. 'Get away' is followed by 'with'.

85. (3) 'A big draw' means 'a big source of attraction'.

86. (1) Verb 'avoid' takes Gerund after it. Use 'avoid going to....'

87. (2) 'Break into' means ' to enter by force.'

90. (2) The correct spelling of 'Demogogue' is Demagogue, 'Homege' is 'Homage' and 'Obitury' is 'Obituary'.

91. (3) The correct spelling of 'Plegiarism' is 'Plagiarism', 'Conspicous' is 'Conspicuous' and 'Voluntery' is 'Voluntary'.