

And for some colour of ball

$$n(E_1) = {}^{13}C_2 = \frac{13!}{2!11!} = \frac{13 \times 12}{2} = 78$$

$$\text{and } n(E_2) = {}^7C_2 = \frac{7!}{2!5!} = \frac{7 \times 6 \times 5!}{2 \times 5!} = \frac{7 \times 6}{2} = 21$$

∴ Required probability for same colour of ball

$$P(E) = \frac{n(E_1) + n(E_2)}{n(S)} = \frac{78 + 21}{190} = \frac{99}{190}$$

37. (2) Akash scored in Subject A = 73 marks
Akash scored in Subject B

$$= 56\% \text{ of } 150 = 150 \times \frac{56}{100} = 84 \text{ marks}$$

Akash scored in Subject C = X marks
Maximum marks of all three subjects is 150.

$$\therefore \text{Total marks} = 150 \times 3 = 450$$

Now, according to the question Marks obtained in Subject A + Marks obtained in Subject B + Marks obtained in Subject C = 54% of total marks

$$\Rightarrow 73 + 84 + X = 450 \times \frac{54}{100}$$

$$\Rightarrow X + 157 = 243$$

$$\Rightarrow X = 243 - 157 = 86$$

$$\Rightarrow X = 86$$

Hence, Akash scored 86 marks in Subject C.

38. (4) Area of square = 1444 m²

$$\therefore \text{Side of square} = \sqrt{1444} = 38 \text{ m}$$

Now, according to the question,

$$\text{Breadth of rectangle} = 38 \times \frac{1}{4} \text{ m}$$

$$\text{And length of rectangle} = 38 \times \frac{3}{4} \text{ m}$$

Area of Length of rectangle = length Breadth

$$= 38 \times \frac{1}{4} \times 38 \times \frac{3}{4} = 1444 \times \frac{3}{16} \text{ m}^2$$

Now, difference between area of square and rectangle = Area of square - Area of rectangle

$$= 1444 - 1444 \times \frac{3}{16} = 1444 \left(1 - \frac{3}{16} \right) = 1444 \times \frac{13}{16}$$

$$= 1173.5 \text{ m}^2$$

39. (5) Share of A = $\frac{4}{11} \times 73689 = \text{Rs. } 26796$

$$\text{Share of B} = \frac{7}{11} \times 73689 = \text{Rs. } 46893$$

∴ Required difference

$$= 2 \times \text{Share of B} - 3 \times \text{Share of A}$$

$$= 2 \times 46893 - 3 \times 26796$$

$$= 93786 - 80388 = 13398 = \text{₹ } 13398$$

40. (4) According to the question,

$$\frac{1}{A} + \frac{1}{B} = \frac{1}{20} \quad \dots(i)$$

$$\frac{1}{B} + \frac{1}{C} = \frac{1}{30} \quad \dots(ii)$$

$$\text{and } \frac{1}{C} + \frac{1}{A} = \frac{1}{40} \quad \dots(iii)$$

adding Eqs. (i), (ii) and (iii), we get

$$2 \left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C} \right) = \frac{1}{20} + \frac{1}{30} + \frac{1}{40}$$

$$\Rightarrow \frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{13}{240} \quad \dots(iv)$$

Subtracting Eq. (ii) from Eq. (iv), we get

$$\frac{1}{A} = \frac{13}{240} - \frac{1}{30} = \frac{5}{240} = \frac{1}{48}$$

$$\Rightarrow A = 48 \text{ days}$$

Now, subtracting Eq. (i) from Eq. (iv), we get

$$\frac{1}{C} = \frac{13}{240} - \frac{1}{20} = \frac{1}{240}$$

$$\Rightarrow C = 240 \text{ days}$$

∴ Required ratio = 48 : 240 = 1 : 5.

41. (2) Income of A and B in 2004 = 28 + 25 = 53 lakh.
Income of A and B in 2003 = 16 + 15 = 31 lakh.
Difference = 53 - 31 = 22 lakh.

42. (2) A's profit % in 2003 = $\frac{12}{16-12} \times 100 = 300\%$.

$$\text{B's profit \% in 2002} = \frac{6}{10-6} \times 100 = 150\%.$$

$$\text{Difference} = 300 - 150 = 150\%.$$

43. (1) In 2000 - A's profit% = $\frac{12}{15-12} \times 100 = 400\%$

$$\text{In 2001 - A's profit \%} = \frac{10}{20-10} \times 100 = 100\%$$

$$\text{In 2002 - A's profit \%} = \frac{12}{12-8} \times 100 = 300\%$$

$$\text{In 2003 - A's profit \%} = \frac{12}{16-12} \times 100 = 300\%$$

$$\text{In 2004 - A's profit \%} = \frac{10}{28-10} \times 100 = 55.5\%$$

In 2000 A's profit % is maximum.

44. (3) Total profit of A and B in 2000 = 12 + 9 = 21 lakhs.
Total profit of A and B in 2003 = 12 + 8 = 20 lakhs
Their difference = 21 - 20 = 1 lakh.

45. (4) Average of A income in 2001 and B in 2004

$$= \frac{20+25}{2} = 22.5 \text{ lakh}$$

46. (4) In 2008 - $\frac{1-0.9}{0.9} \times 100 = 11.11\%$

$$\text{In 2009} - \frac{1-0.5}{0.5} \times 100 = 100\%$$

$$\text{In 2010} - \frac{1-0.8}{0.8} \times 100 = 25\%$$

$$\text{In 2011} - \frac{1-0.3}{0.3} \times 100 = 233.33\%$$

$$\text{In 2012} - \frac{1-0.6}{0.6} \times 100 = 66.66\%$$

$$\text{In 2013} - \frac{1-0.4}{0.4} \times 100 = 150\%$$

47. (4)

48. (2) 'B' in 2008 - $\frac{E_1}{I_1} = \frac{0.8}{1} = \frac{8}{10} \Rightarrow E_1 = \frac{8}{10} I_1$

'B' in 2012 - $\frac{E_2}{I_2} = \frac{0.8}{1} = \frac{8}{10} \Rightarrow E_2 = \frac{8}{10} I_2$

$$\therefore \frac{8}{10} I_1 + \frac{8}{10} I_2 = 60 \Rightarrow I_1 + I_2 = \frac{60 \times 10}{8} = 75 \text{ lakhs}$$

49. (2) From '46' solution, 'C' gains 100% profit in 2009.

50. (1) C's profit % in 2009 = 100%

C's profit % in 2010 = 25%

$$\text{Required \%} = \frac{100-25}{100} \times 100 = 75\%.$$

51. (2) $\frac{40000 \times 12 \times 19 \times 55}{100 \times 20 \times 100} = 2508$

52. (2) $2800 : 2000 = 7 : 5$

53. (4) $4400 + 3200 = 7600$

54. (5) $\frac{(4560 + 4400 + 4400 + 2800 + 3200 + 3600)}{6}$

$$\Rightarrow \frac{22960}{6} = 3826.66$$

55. (3) $(3040 + 4400 + 2800) = 10240$

56. (3) I. $\sqrt{289x} + \sqrt{25} = 0$

$$\Rightarrow \sqrt{289x} = -\sqrt{25}$$

Squaring both sides, we get $289x = 25$

$$x = \frac{25}{289}$$

II. $\sqrt{676y} + 10 = 0$

$$\Rightarrow \sqrt{676y} = -10$$

Squaring both sides, we get $696y = 100$

$$y = \frac{100}{676}$$

$\therefore y > x$

57. (2) I. $8x^2 - 78x + 169 = 0$

$$\Rightarrow 8x^2 - 52x - 26x + 169 = 0$$

$$\Rightarrow 4x(2x - 13) - 13(2x - 13) = 0$$

$$\Rightarrow (2x - 13)(4x - 13) = 0$$

$$\therefore x = \frac{13}{2} \text{ or } \frac{13}{4} = 6.5 \text{ or } 3.25$$

II. $20y^2 - 117y + 169 = 0$

$$\Rightarrow 20y^2 - 52y - 65y + 169 = 0$$

$$\Rightarrow 4y(5y - 13) - 13(5y - 13) = 0$$

$$\Rightarrow (5y - 13)(4y - 13) = 0$$

$$\therefore y = \frac{13}{5} \text{ or } \frac{13}{4} = 2.6 \text{ or } 3.25$$

$\therefore x \geq y$

58. (1) I. $\frac{15}{\sqrt{x}} + \frac{9}{\sqrt{x}} = 11\sqrt{x}$

$$\Rightarrow \frac{15+9}{\sqrt{x}} = 11\sqrt{x} \Rightarrow 24 = 11x$$

$$\therefore x = \frac{24}{11}$$

II. $\frac{\sqrt{y}}{4} + \frac{5\sqrt{y}}{12} = \frac{1}{\sqrt{y}}$

$$\Rightarrow \frac{3\sqrt{y} + 5\sqrt{y}}{12} = \frac{1}{\sqrt{y}} \Rightarrow 8y = 12$$

$$\Rightarrow y = 1.5 = 2.18$$

$\therefore x > y$

59. (1) I. $\frac{8}{\sqrt{x}} + \frac{6}{\sqrt{x}} = \sqrt{x}$

$$\Rightarrow \frac{14}{\sqrt{x}} = \sqrt{x} \Rightarrow x = 14$$

II. $y^3 - \frac{(14)^2}{\sqrt{y}} = 0 \text{ or, } y^3 = \frac{(14)^2}{\sqrt{y}}$

$$\Rightarrow y^{3+\frac{1}{2}} = (14)^2 \Rightarrow y^{\frac{7}{2}} = (14)^2$$

$\therefore x > y$



60. (1) Let the length of Train B = x m

Then the length of Train A = $\frac{x}{2}$ m

$$\text{Speed of Train A} = \frac{\frac{x}{2}}{25} = \frac{x}{50}$$

$$\text{Speed of Train B} = \frac{x}{75}$$

$$\text{Ratio of speed} = \frac{A}{B} = \frac{\frac{x}{50}}{\frac{x}{75}} = \frac{75}{50} = 3 : 2$$

61. (3) Let 100 cm read as 103 cm.
Area = 100 × 100 sq. cm. = 10000 sq. cm. and
New Area = 103 × 103 = 10609 sq. cm.

$$\% \text{ required} = \frac{10609 - 10000}{10000} \times 100 = 6.09\%$$

62. (2) Let original length = 100, breadth = 100
After lost length = 88, breadth = 85.
Area of original = 100 × 100 = 10000
After lost area = 88 × 85 = 7408.

$$\text{Required } \% = \frac{10000 - 7408}{10000} \times 100 = 25.92\%$$

63. (3) Let length = x m.

$$\text{Breadth} = \frac{45}{100} \times x = \frac{9}{20} x \text{ m}$$

$$\text{Perimeter of rectangle} = 2(l + b) = 1160$$

$$\Rightarrow 2\left(x + \frac{9}{20}x\right) = 1160$$

$$\Rightarrow x = 400 \text{ m}$$

$$\text{Length} = 400, \text{ breadth} = \frac{9}{20} \times 400 = 180.$$

$$\text{Area of rectangle} = 400 \times 180 = 72000 \text{ m}^2.$$

64. (2) Area of room = 840 cm × 408 cm = 342720 cm²
From options required square tiles = 595.

65. (4) Let length = 5x, Breadth = 3x

$$\text{Perimeter of rectangle, } 2(5x + 3x) = 15 \times \frac{9.6}{60}$$

$$\Rightarrow 2 \times 8x = 2.4 \text{ km}$$

$$\Rightarrow x = \frac{2.4 \times 1000}{16} = 150 \text{ m}$$

$$\text{Length} = 150 \times 5 = 750 \text{ m; Breadth} = 3 \times 150 = 450 \text{ m}$$

$$\therefore \text{Area of rectangle} = 750 \times 450 \text{ m}^2 = 337500 \text{ m}^2.$$

71. (5) Twelfth to the left of twenty first from the left means
9th from the left = F

72. (4) According to question, the arrangements are as follows.

B @ D A © F % [R] H E * N \$ U W P T δ V # Y I

So, R is 15th from right.

73. (3) Symbols — Consonant — Vowel
@ D A # Y I

74. (5) Star mark (8) is between E and N.

75. (2) So, WPU does not belong to group.

76-80.

Friends	Banks	Working area
A	S	Forex officer
B	M	Agriculture officer
C	N	Economist
D	L	Terminal operator
E	R	IT officer
F	Q	Clerk
G	P	Research analyst

76. (2)

78. (1)

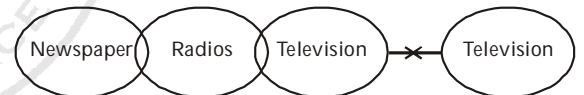
80. (2)

81. (2) $O < M \leq N \geq K > L$
 $N > L$ is true.

82. (3)

83. (4) $B < F = C < D < A$
or
 $B < F = C = D < A.$

84. (5)

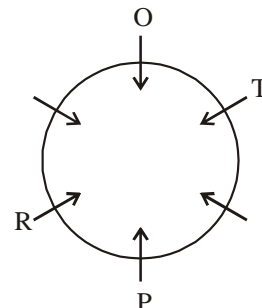


(i) ✗
(iii) ✓

(ii) ✓
(iv) ✓

85. (4) K B L 5 [A] 6 7 Z 2 R Q A 5 9

86. (1) From I – We can't determine the position of P with respect to T.
From II –



P is second to the left of T. Hence II alone sufficient.

87. (3) From I –
Mukesh's rank = 44th from the bottom.
 \therefore Raju's rank = 44 + 12 = 56th from the bottom.
From top = 80 – 56 + 1 = 25th

