S31. Ans.(c)

Sol. Total ovens sold by C & D = $1200 - \left(240 + 1200 \times \frac{45}{100}\right) + 1500 - \left(300 + 1500 \times \frac{56}{100}\right)$

= 420 + 360 = 780

Total number of refrigerators sold by A & D

= $500 \times \frac{32}{100} + 1500 \times \frac{56}{100} = 160 + 840 = 1000$

Required percentage = $\frac{1000-780}{1000} \times 100 = 22\%$

S32. Ans.(e)

Sol. Total number of ovens sold by B & D

= $800 - \left(96 + 800 \times \frac{48}{100}\right) + 1500 - \left(300 + 1500 \times \frac{56}{100}\right)$

= 320 + 360 = 680

Total number of refrigerators sold by C

= $1200 \times \frac{45}{100} = 540$

Required difference = $540 - \frac{680}{2} = 200$

S33. Ans.(e)

Sol.

Total refrigerators sold by store X

= $1500 \times \frac{56}{100} \times \frac{125}{100} = 1050$

Total ovens sold by store X

= $[500 - (100 + 500 \times \frac{32}{100})] \times \frac{11}{8} = 330$

Required sum = 330 + 1050 = 1380

S34. Ans.(b)

Sol.

Total AC's sold by C & D together

= 240 + 300 = 540

Total AC's & refrigerators sold by B

= $800 \times \frac{48}{100} + 96 = 480$

Required ratio = 540 : 480 = 9 : 8

S35. Ans.(d)

Sol. Total refrigerators sold by A & C

= $500 \times \frac{32}{100} + 1200 \times \frac{45}{100}$

= 160 + 540 = 700

Total ovens sold by C

= $1200 - \left(240 + 1200 \times \frac{45}{100}\right) = 420$

Required percentage = $\frac{700-420}{420} \times 100$

= $\frac{280}{420} \times 100 = 66\frac{2}{3}\%$

S36. Ans.(b)

Sol.

I. $x^2 - 6x + 8 = 0$

$x^2 - 4x - 2x + 8 = 0$

$x(x - 4) - 2(x - 4) = 0$

$(x - 2)(x - 4) = 0$

$x = 2, 4$

II. $y^2 + 8y + 15 = 0$

$y^2 + 5y + 3y + 15 = 0$

$y(y + 5) + 3(y + 5) = 0$

$(y + 3)(y + 5) = 0$

$y = -3, -5$

$i.e. x > y$

S37. Ans.(c)

Sol.

I. $x^2 - 12x + 32 = 0$

$x^2 - 8x - 4x + 32 = 0$

$x(x - 8) - 4(x - 8) = 0$

$(x - 4)(x - 8) = 0$

$x = 4, 8$

II. $y^2 - 17y + 72 = 0$

$y^2 - 9y - 8y + 72 = 0$

$y(y - 9) - 8(y - 9) = 0$

$(y - 9)(y - 8) = 0$

$y = 9, 8$

$so, x \leq y$

S38. Ans.(e)
Sol.
I. $x^2 - 12x + 35 = 0$
$x^2 - 5x - 7x + 35 = 0$
$x(x - 5) - 7(x - 5) = 0$
$(x - 7)(x - 5) = 0$
$x = 7, 5$
II. $y^2 - 11y + 24 = 0$
$y^2 - 3y - 8y + 24 = 0$
$y(y - 3) - 8(y - 3) = 0$
$(y - 8)(y - 3) = 0$
$y = 8, 3$
So, no relation can be established between x and y

S39. Ans.(d)
Sol.
I. $8x^2 + 10x - 7 = 0$
$8x^2 - 4x + 14x - 7 = 0$
$4x(2x - 1) + 7(2x - 1) = 0$
$(2x - 1)(4x + 7) = 0$
$x = \frac{1}{2}, \frac{-7}{4}$
II. $y^2 - 6y + 8 = 0$
$y^2 - 4y - 2y + 8 = 0$
$y(y - 4) - 2(y - 4) = 0$
$(y - 4)(y - 2) = 0$
$y = 4, 2$
$so, x < y$

S40. Ans.(a)
Sol.
I. $x^2 + 7x + 12 = 0$
$x^2 + 4x + 3x + 12 = 0$
$x(x + 4) + 3(x + 4) = 0$
$(x + 3)(x + 4) = 0$
$x = -3, -4$
II. $y^2 + 15y + 44 = 0$
$y^2 + 4y + 11y + 44 = 0$
$y(y + 4) + 11(y + 4) = 0$
$(y + 4)(y + 11) = 0$
$y = -11, -4$
$so, x \geq y$

S41. Ans.(d)
Sol. Total number of students (graduate + postgraduate) in collage A = 80 + 120 = 200
Total postgraduate students in collage B & collage E = 150 + 100 = 250
Required percentage = $\frac{250-200}{250} \times 100 = 20\%$

S42. Ans.(b)
Sol. Total number of boys in graduate students and postgraduate students in collage C = $\left(140 \times \frac{3}{5}\right) + \left(160 \times \frac{5}{8}\right)$
= 84 + 100 = 184
Total number of graduate students in B=120
Required ratio = $\frac{184}{120}$ = 23 : 15

S43. Ans.(a)
Sol. Total number of graduates students in collage C & collage E = 140 + 70 = 210
Total graduate students and postgraduate students in collage D = 40 + 50 = 90
Required % = $\frac{210}{90} \times 100 = 233\frac{1}{3}\%$

S44. Ans.(d)
Sol. Total graduate students in collage X
= 90 + 70 = 160
Number of girls in graduate students in collage X
= $160 \times \frac{7}{10}$ = 112
Number of girls in graduate students in collage B
= $120 \times \frac{9}{20}$ = 54
So, required sum = 112 + 54 = 166

S45. Ans.(c)
Sol. Average number of students postgraduate students in collage B, C & D = $\frac{1}{3} \times (150 + 160 + 50)$ = 120
Graduate students in collage A & E = 80 + 70 = 150
Required difference = 150 – 120 = 30

S46. Ans.(a)
Sol.
Let the monthly income of man be Rs.100x.
Amount spent on house rent $= 100x \times \frac{20}{100} = 20x$
Amount spent on Food $= \frac{20}{100} \times (100x - 20x) = 16x$
Remaining amount $= 100x - 20x - 16x = 64x$
Amount spent on clothing $= 64x \times \frac{7}{16} = 28x$
ATQ,
$28x - 16x = 1080$
$x = 90$
So, income of man for nine months$= 90 \times 100 \times 9 = Rs.\,81000$

S47. Ans.(c)
Sol. Let the speed of stream be '$5x$' km/h
And speed of boat in still water $= 5x \times \frac{8}{5} = 8x$ km/hr
ATQ,
$$\frac{D}{5x + 8x} + \frac{D}{8x - 5x} = 32$$
$$\frac{16D}{39x} = 32$$
$$D = 78x$$
So, Required time $= \frac{2 \times 78x}{8x} = 19.5$ hours

S48. Ans.(e)
Sol. Speed of train A $= \frac{200}{8} = 25$ m/sec
So, speed of train B $= 25 \times \frac{4}{5} = 20$ m/sec
ATQ,
$\frac{l}{20} = 26$
$l = 520$ meters
Now the time in which train A crosses train B running in opposite direction
$= \frac{200 + 520}{(25 + 20)} = 16$ sec

S49. Ans.(d)
Sol. Let the cost price of article A $= 100a$
Marked price of article A $= 100a \times \frac{160}{100} = 160a$
Selling price of article, A
$= 160a \times \frac{(100-25)}{100} = 120a$

ATQ –
$120a - 100a = 475$
$a = \frac{95}{4}$
Since, Selling price = cost price + profit
So, selling price of article B
$= 100 \times \frac{140}{100} \times \frac{95}{4} + 475 = Rs.\,3800$

S50. Ans.(e)
Sol. Let the efficiency of a man and a woman be 'x' units/day and 'y' units/day respectively.
ATQ,
$$\frac{(16x+14y)\times30}{1} = \frac{(20x+14y)\times20}{\frac{80}{100}}$$
$96x + 84y = 100x + 70y$
$\frac{x}{y} = \frac{7}{2}$
Total work $= (16 \times 7 + 14 \times 2) \times 30 = 4200 \; units$
Required days $= \frac{2 \times 4200}{42 \times 2} = 100 \; days$

Solutions. (51 – 55): Let total number of items sold by store = 100x
Total Jackets sold by store $= 100x \times \frac{40}{100} = 40x$
Total Sweatshirts sold by store $= 40x \times \frac{9}{10} = 36x$
Total Sweaters sold by store $= 100x - (40x + 36x) = 24x$
Total Nike Sweaters sold by store $= 24x \times \frac{5}{12} = 10x$
Total Nike Jackets sold by store $= 40x \times \frac{40}{100} = 16x$
ATQ –
$10x + 16x + 40 = 170$
$26x = 130$
$x = 5$

Items	Adidas	Nike	Total
Jackets	120	80	200
Sweaters	70	50	120
Sweatshirts	140	40	180
Total	330	170	**500**

S51. Ans.(a)
Sol. Required difference = 330 – 170 = 160

S52. Ans.(b)
Sol. Required percentage $= \frac{80-70}{80} \times 100 = 12.5\%$

S53. Ans.(c)

Sol. Required average = $\frac{330}{3} = 110$

S54. Ans.(e)

Sol. Required ratio = $\frac{140}{170} = 14 : 17$

S55. Ans.(b)

Sol. Required percentage = $\frac{140-50}{50} \times 100 = 180\%$

S56. Ans.(b)

Sol. Pattern of series –

$33 + (2^2 - 1) = 36$

$36 + (3^2 - 1) = 44$

$44 + (4^2 - 1) = 59$

$? = 59 + (5^2 - 1) = \textbf{83}$

$83 + (6^2 - 1) = 118$

S57. Ans.(a)

Sol. Pattern of series –

Subtraction of consecutive prime number

$162 - 37 = 125$

$125 - 31 = 94$

$94 - 29 = 65$

$? = 65 - 23 = \textbf{42}$

$42 - 19 = 23$

S58. Ans.(c)

Sol. Pattern of series –

$2 \times 5 + 5 = 15$

$15 \times 4 + 4 = 64$

$64 \times 3 + 3 = 195$

$? = 195 \times 2 + 2 = \textbf{392}$

$392 \times 1 + 1 = 393$

S59. Ans.(e)

Sol. Pattern of series –

$322, ?= \textbf{162}, 82, 42, 22, 12$

$-160 \quad -80 \quad -40 \quad -20 \quad -10$

S60. Ans.(b)

Sol. Pattern of series –

$8 \times 0.5 + 1 = 5$

$5 \times 1 + 1 = 6$

$6 \times 2 + 1 = 13$

$13 \times 4 + 1 = 53$

$? = 53 \times 8 + 1 = \textbf{425}$

S61. Ans.(a)

Sol. Let investment of P = 4x Rs.

So, investment of Q = $4x \times \frac{125}{100} = 5x$ Rs.

ATQ –

Ratio of profit share of P to Q = $(4x \times 6 + 4x \times 2 \times 6) : (5x \times 6 + 5x \times \frac{2}{3} \times 6)$

$= 72x : 50x = 36x : 25x$

Profit of P = $12200 \times \frac{36x}{(36x+25x)} = 7200$ Rs.

S62. Ans.(e)

Sol. Equivalent interest received by man from scheme X at the rate of 20% p.a. for two years = $20 + 20 + \frac{20 \times 20}{100} = 44\%$

So, total interest received by man from scheme X = $P \times \frac{44}{100} = 0.44P$

Total amount received by man from scheme X = P + 0.44P = 1.44P

Total interest received by man from scheme Y = $1.44P \times \frac{5 \times 2}{100} = 0.144P$

Required percentage = $\frac{0.144P}{0.44P} \times 100 = 32.72\%$

S63. Ans.(c)

Sol. Let four years ago age of B = 2a

So, age of A = $\frac{2a}{2} + 6 = a + 6$

ATQ –

$(2a + 12) + (a + 18) = 42 \times 2$

$3a = 54$

$a = 18$ years

Age of A = $(18 + 10) = 28$ years

Age of B = $2 \times 18 + 4 = 40 \; years$

Required ratio = $(28 + 2) : (40 + 2) = 5 : 7$

S64. Ans.(e)
Sol. Let total mixture in vessel be x liters
ATQ,

$$\frac{\frac{5x}{7} - 42 \times \frac{5}{7}}{\frac{2x}{7} - 42 \times \frac{2}{7} + 32} = \frac{7}{6}$$

$$\frac{5x - 210}{2x + 140} = \frac{7}{6}$$

30x – 1260 = 14x + 980

16x = 2240

x = 140 liters

S65. Ans.(d)
Sol. Let radius of circle X & Y be 3r and 4r respectively

$2 \times \frac{22}{7} \times 3r + 2 \times 4r = 188$ cm

r = 7 cm

Side of square $= \frac{8}{7} \times (3 \times 7 + 4 \times 7) = 56 \ cm$

Perimeter of square $= 56 \times 4 = 224 \ cm$