S1. Ans. (b)
Sol. (I) $x^2 = 529 - 385$
$x^2 = 144$
$x = +12, -12$
(II) $2y^2 + 51y + 324 = 0$
$2y^2 + 24y + 27y + 324 = 0$
$y = -12, -\frac{27}{2}$
$\therefore x \geq y$

S2. Ans. (c)
Sol. (I) $3x^2 - 58x + 280 = 0$
$3x^2 - 28x - 30x + 280 = 0$
$x(3x - 28) - 10(3x - 28) = 0$
$x = 10, \frac{28}{3}$
(II) $3y^2 - 67y + 374 = 0$
$3y^2 - 33y - 34y + 374 = 0$
$y = 11, \frac{34}{3}$
$\therefore y > x$

S3. Ans. (e)
Sol. (I) $25x^2 - 25x - 176 = 0$
$25x^2 - 80x + 55x - 176 = 0$
$x = \frac{-11}{5}, \frac{+16}{5}$
(II) $25y^2 - 55y + 18 = 0$
$25y^2 - 10y - 45y + 18 = 0$
$y = \frac{2}{5}, \frac{9}{5}$
$\therefore$ No relation Ans.(a)

S4. Ans. (e)
Sol. (I) $20x^2 - 41x + 20 = 0$
$20x^2 - 25x - 16x + 20 = 0$
$x = \frac{5}{4}, \frac{4}{5}$

(II) $16y^2 - 22y + 7 = 0$
$16y^2 - 14y - 8y + 7 = 0$
$y = \frac{1}{2}, \frac{7}{8}$
$\therefore$ No relation

S5. Ans. (c)
Sol. (I) $2x - y = \frac{31}{15}$
(II) $3x + 5y = 20$
Solving (i) and (ii)
$x = \frac{7}{3}, y = \frac{13}{5}$
$\therefore y > x$

S6. Ans. (d)
Sol. Given x = 4 km/hr, let speed of current = y km/hr
$\frac{d}{x-y} = \frac{3d}{x+y}$
$2x = 4y$
y = 2 km/hr

S7. Ans. (a)
Sol. Let radius of 1st cone be r_1 and that of second cone be r_2.
$\pi r_1 \ell = 3(\pi r_2 . 3\ell)$
or, $\pi r_1 \ell = 9\pi r_2 \ell$
$\Rightarrow \frac{r_1}{r_2} = \frac{9}{1}$
Ratio of areas = 81 : 1

S8. Ans. (b)
Sol. Let present age of B is x years.
So, present age of D $= \frac{9\times(x-5)}{10} + 5 = \frac{9x+5}{10}$
Present age of A $= \frac{4}{5} \times \frac{9x+5}{10} = \frac{18x+10}{25}$
Present age of E $= \frac{5}{11}x$
ATQ
$\frac{18x+10}{25} - \frac{5}{11}x = 15$
$73x + 110 = 4125$
$x = \frac{4015}{73} = 55$
So, present ages of A, B, C, D and E are 40 years, 55 years, 35 years, 50 years and 25 years respectively.
$\therefore$ required average $= \frac{40+55+35+50+25}{5} = \frac{205}{5} = 41\ years$

S9. Ans. (e)
Sol. $A + B + C = 84 \times 3 = 252$
$A + B + C + D = 80 \times 4 = 320$
Age of D $= 320 - 252 = 68$
Age of E $= 71$
B + C + D + E = 316
B + C = 316 – (68 + 71)
B + C = 177
Age of A $= 252 - 177 = 75$ kg.

S10. Ans. (a)

Sol. Let t be the time which is excess of 40 days.

$200 \times 5 = 100(t + 5)$

$1000 = 100t + 500$

$100t = 500$

$t = 5$ days

S11. Ans (a)

Sol. Ratio of their profit $= 6280 : 3768$

$= 785 : 471$

Let total profit in the business = $Rs.x$

$x \times \frac{70}{100} \times \frac{314}{1256} = 700$

Total profit $= 700 \times \left(\frac{100}{70}\right) \times \frac{1256}{314}$

$= 10 \times 100 \times 4$

$= 4000$ Rs.

S12. Ans. (c)

Sol. Krishna $\rightarrow 3x \times 2t \Rightarrow 6xt$

Nandan $\rightarrow x \times t \Rightarrow xt$

Ratio of their profits = 6 : 1

$\therefore$ Required amount $= \frac{4000}{1} \times 7 = 28000$ Rs.

S13. Ans. (c)

Sol. Total bad oranges = $510 \times \frac{70}{1700} = 21$

$\therefore$ Required probability = $\frac{(510-21)}{510} = \frac{163}{170}$

S14. Ans. (d)

Sol. Total possible outcomes = $(1/2)^3$ = ⅛

Favorable outcomes = (HHT), (HTH), (THH) = 3

$\therefore$ Required Probability = ⅜

S15. Ans (a)

Sol. Ratio of profit share of A and B $= \frac{8400 \times 24}{8000 \times 18} = \frac{7}{5}$

Remaining profit $= 12000 \times \frac{85}{100} = Rs\ 10200$

Profit share of B $= 10200 \times \frac{5}{12} = Rs\ 4250$

S16. Ans. (b)
Sol. Quantity I:
$\frac{^3C_2}{^{12}C_2} = \frac{1}{22}$
Quantity II:
$5\left(\frac{1}{2}+\frac{1}{2}+\frac{2}{7}-\frac{1}{14}-\frac{3}{14}\right) = \frac{1}{x}$
$6 = \frac{1}{x}$
$x = \frac{1}{6}$
Quantity II > Quantity I

S17. Ans. (b)
Sol. Let side of cube and radius of sphere be a and r respectively.
$\Rightarrow 6a^2 = 4\pi r^2$
$a = \sqrt{\frac{2}{3}\pi}\ r$
Quantity I:
Since , Volume of cube = a × a × a
Cube $\div \sqrt{\pi}$
$= \frac{2}{3}\pi \times \sqrt{\frac{2}{3}\pi}\, r^3 \div \sqrt{\pi}$
$= (2/3)^{\frac{3}{2}}\, \pi\, r^3$
Quantity II : volume of sphere
$\frac{4}{3}\pi r^3$
∴ Quantity II > Quantity I

S18. Ans. (e)
Sol. Let cost price = 100x
So selling price = 120x
Marked price = $\frac{120x}{70} \times 100 = \frac{1200}{7}x$
Profit% = 20%
When article sold 35 Rs. more
Profit % = $\frac{20\times150}{100}$ = 30%
$35 \rightarrow 10x$
100x = 350
120x = 420
$\frac{1200}{7}x = 600$
Quantity I:
420 + 35 = 455
Quantity II:
Discount percent = 24⅙%
Discount = $\frac{600\times145}{600}$ = 145 Rs.
Selling price = 600 – 145 = Rs 455
Quantity I = Quantity II

S19. Ans. (a)

Sol. Quantity I – Total work = 72 units (Lcm of days taken by A & B)

Efficiency of A = $\frac{72}{24} = 3\ units/day$

Efficiency of B = $\frac{72}{18} = 4\ units/day$

Let efficiency of C = x unit/day

$7x + 7(1.4x) = 72\frac{175}{3} \times \frac{1}{100} = 42\ units$

x = 2.5 units

Efficiency of D = $1.4 \times 2.5 = 3.5\ units$

(A + B + D) together = $\frac{72}{(3+4+3.5)}$

$= 6\frac{6}{7}\ days$

Quantity II –

Ratio of efficiency of Satish : Ankit = 100x : 40x

= 5x : 2x

Total work = 22.5 × 2x = 45x units

ATQ,

(Ankit + Satish) × 4.5 = 4.5 (5x + 2x)

= 31.5x work

Remaining work = 45x– 31.5 x

= 13.5x

Veer efficiency $= \frac{13.5}{4.5} = 3$ units/day

$(\text{Ankit} + \text{Satish} + \text{Veer}) = \frac{45x}{(5x + 2x + 3x)}$

$= 4.5$ days

So, Quantity I > Quantity II

S20. Ans. (b)

Sol. Quantity I – Let present ages of Hemant and Amit be 9x and 5x years respectively.

ATQ

$\frac{5x-3}{9x-3} = \frac{8}{15}$

$75x - 45 = 72x - 24$

$x = 7$

So, required difference $= 4x \times 12 = 48x = 336\ months$

Quantity II-

Sum of present age of 5 members $5 \times 40 + 5 \times 2 = 210\ years$

Sum of present age of 6 members (as a new born last year) $210 + 1 = 211\ years$

Sum of ages of 6 members after 4 years $= 211 + 4 \times 6 = 235\ years$

So, required average $= \frac{235}{6} \times 12 = 470\ months$

So, Quantity I < Quantity II

S21. Ans. (b)
Sol. $1 + (1^3 - 1) = 1$
$1 + (2^3 - 2) = 7$
$7 + (3^3 - 3) = 31$
$31 + (4^3 - 4) = 91$
$91 + (5^3 - 5) = 211$
$211 + (6^3 - 6) = 421$
So, wrong number= 4.

S22. Ans. (b)
Sol. $5 + 8 \times 1 = 13$
$13 + 7 \times 2 = 27$
$27 + 6 \times 3 = 45$
$45 + 5 \times 4 = 65$
$65 + 4 \times 5 = 85$
$85 + 3 \times 6 = 103$
$103 + 2 \times 7 = 117$
So, wrong number = 50

S23. Ans. (d)
Sol. $4 + (1^2 + 1) = 6$
$6 + (2^3 + 1) = 15$
$15 + (3^2 + 1) = 25$
$25 + (4^3 + 1) = 90$
$90 + (5^2 + 1) = 116$
$116 + (6^3 + 1) = 333$
So, wrong number =113

S24. Ans. (b)
Sol. 12+8=20
20+16=36
36+24=60
60+32=92
92+40=132
132+48=180
So, wrong number =32

S25. Ans. (c)
Sol. $14^2 + 1 = 197$
$15^2 + 1 = 226$
$16^2 + 1 = 257$
$17^2 + 1 = 290$
$18^2 + 1 = 325$
$19^2 + 1 = 362$
$20^2 + 1 = 401$
So, wrong number =255

S (26-30)

Total population of city X = 7100

Population below poverty line in city X = 1704

Population of X other than BPL = 7100 – 1704 = 5396

Total population of city Z = $\frac{7100}{(100-11.25)} \times 100 = 8000$

BPL population in city Z = ¼ × 8000 = 2000

Population other than BPL in city L = 5396 + 160 = 5556

Avg. population of city Y and K.

=Avg. population of City X and City Z

= $\frac{7100+8000}{2}$ = 7550.

Let total population of city K be x

∴ (1.5x + x) = 7550 × 2

x = 6040.

∴ Total population of city Y = 6040 × 1.5 = 9060

BPL population of city K = $\frac{2000}{2} \times 3 = 3000$

BPL population in city L = BPL population in city X

= 1704

Total population in city L = 1740 + 5556 = 7260

BPL population in city Y

= $\frac{20}{100} \times [9060 + 8000] - 2000$

= 3412 – 2000 = 1412

City	Below poverty line	other than BPL	Total
X	1704	5396	7100
Y	1412	7648	9060
Z	2000	6000	8000
K	3000	3040	6040
L	1704	5556	7260

S26. Ans. (a)

Sol. Required difference = $\left(\frac{3000+1704}{2}\right) - \left(\frac{1704+1412}{2}\right)$

= 2352 – 1558

= 794

S27. Ans. (c)

Sol. Required percentage = $\frac{\frac{6040+7260}{2}}{8000} \times 100$

= $\frac{6650}{8000} \times 100 = 83.125\%$

S28. Ans. (b)

Sol. BPL population in city A = $\frac{3040}{2}$ = 1520

∴ Total population in city A.

= 1520 × 4 = 6080

S29. Ans. (e)

Sol. Required Avg. = $\frac{1704+1412+2000+3000+1709}{5}$

= $\frac{9820}{5}$ = 1964

S30. Ans. (b)

Sol. Required ratio = $\frac{1412}{1704}$ = 353 : 426

S31. Ans(c)

Sol. Let length and breadth of rectangle be 7x and 4x respectively

From I,

Given, $\pi r^2 = 616$

$r^2 = \frac{616\times7}{22}$

r = 14 cm

length of rectangle = $14 \times 2 = 28\ cm$

breadth of rectangle = $\frac{28}{7} \times 4 = 16\ cm$

From I and II together,

2(l + b) – 4a = 20

2 (28 + 16) – 4a = 20

4a = 88 – 20

a = 17 cm

area of Square = $(17)^2$

= 289 cm^2

So, Statement I and II both together sufficient

S32. Ans. (e)

Sol. Both the statements are not sufficient

S33. Ans. (c)

Sol. if the max marks of exam = x

Raman = $\frac{x}{4}$

$\Rightarrow \frac{x}{4} = 288 - 128 = 160$

$x = 640$

∴ Minimum passing marks $= 160 + 64 = 224$

Required %= $\frac{224}{640} \times 100 = 35\%$

S34. Ans. (c)

Sol. Given no. of white ball

Let → a

From I. let probability → $\frac{x}{y}$

Let no. of red ball → px, total balls → py

From II. → Let probability = $\frac{s}{t}$

Let no. of black ball = qs, total balls = qt

From I & II

px + a + qs = qt = py

we know the values of x, y, s, t and a so we can find the value of p and q

So probability of white ball found = $\frac{a}{qt}$ or $\frac{a}{py}$

∴ I & II together sufficient to answer the question

S35. Ans. (b)

Sol. Only II is sufficient to answer the question

When we cut sphere into hemisphere total surface area of two hemisphere

Total surface area of two hemisphere

$3\pi r^2 + 3\pi r^2 = \pi \times 21 \times 21$

r = find out

So, volume of sphere can be find out.

S36. Ans. (b)

Sol. $\frac{45}{100} \times 80 + \sqrt{841} + x^2 = 2121 \div 21$

$36 + 29 + x^2 = 101$

$x^2 = 36$

$x = 6$

S37. Ans. (c)

Sol. $\frac{36+3x}{23} + 1 = 52$

$36 + 3x + 23 = 52 \times 23$

$3x + 59 = 1196$

$3x = 1196 - 59$

$3x = 1137$

$x = 379$

S38. Ans. (c)

Sol. $\frac{343}{2} + \frac{175}{100} \times 350 = x^2$

$x^2 = 171.5 + 612.5$

$x^2 = 784$

$x = 28$

S39. Ans. (d)

Sol. $23(24 + 47 - 54) = x$

$x = 23 \times 17$

$x = 391$

S40. Ans. (c)

Sol. $\frac{6}{5} \times 650 + 320 + 51 = x$

$780 + 320 + 51 = x$

$x = 1151$

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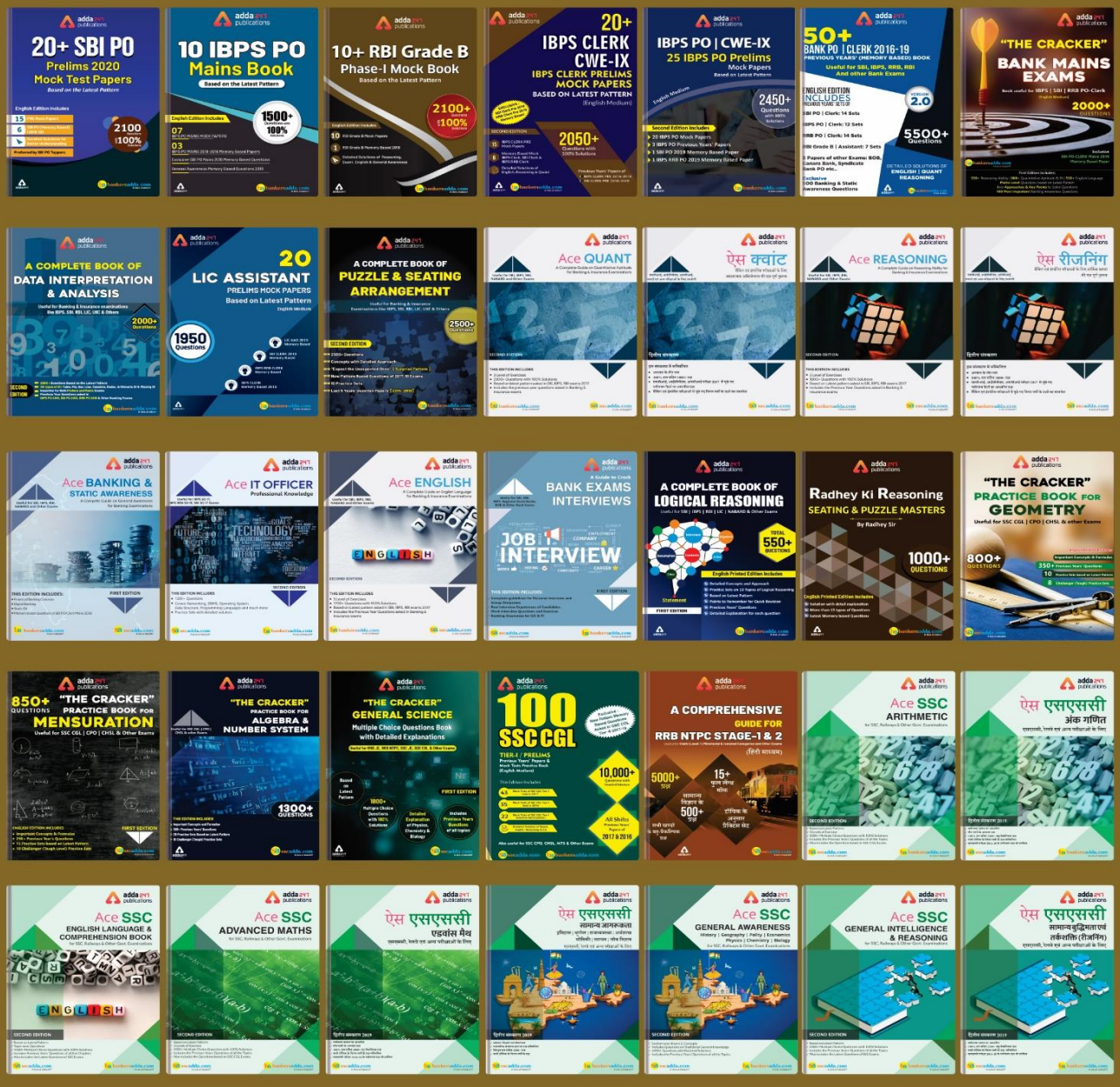

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