Quantitative Aptitude

Solved Paper of Cooperative Bank Exam, 2000

1. A square garden has fourteen posts along each side at equal interval. Find how many posts are there in all four sides:
   (*a*) 56   (*b*) 52   (*c*) 44   (*d*) 60

2. Average age of students of an adult school is 40 years. 120 new students whose average age is 32 years joined the school. As a result the average age is decreased by 4 years. Find the number of students of the school after joining of the new students:
   (*a*) 1200   (*b*) 120   (*c*) 360   (*d*) 240

3. When Rs 250 added to 1/4th of a given amount of money makes it smaller than 1/3rd of the given amount of money by Rs 100. What is the given amount of money?
   (*a*) Rs 350   (*b*) Rs 600   (*c*) Rs 4200   (*d*) Rs 3600

4. Find the least number of candidates in an examination so that the percentage of successful candidates should be 76.8%:
   (*a*) 500   (*b*) 250   (*c*) 125   (*d*) 1000

5. The number of times a bucket of capacity 4 litres to be used to fill up a tank is less than the number of times another bucket of capacity 3 litres used for the same purpose by 4. What is the capacity of the tank?
   (*a*) 360 litres (*b*) 256 litres (*c*) 48 litres (*d*) 525 litres

6. Simplify:

$$\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2}}}}$$

   (*a*) $\dfrac{8}{5}$ (*b*) $\dfrac{5}{8}$ (*c*) $\dfrac{1}{2}$ (*d*) $\dfrac{3}{2}$

7. A certain quantity of rice is spent daily for 30 students in a hostel. One day some students were absent as a result, the quantity of rice has been spent in the ratio of 6 : 5. How many students were present on that day?
   (*a*) 24   (*b*) 20   (*c*) 15   (*d*) 25

8. The ratio of daily wages of two workers is 4 : 3 and one gets daily Rs 9 more than the other, what are their daily wages?
   (*a*) Rs 32 and Rs 24   (*b*) Rs 60 and Rs 45
   (*c*) Rs 80 and Rs 60   (*d*) Rs 36 and Rs 27

9. Find the ratio of purchase price and sell price if there is loss of $12\dfrac{1}{2}\%$.
   (*a*) 7 : 8   (*b*) 8 : 7   (*c*) 2 : 25   (*d*) 25 : 2

10. The simplified value of $1.2 + (1.2)^2 + (1.2)^3$ is:
    (*a*) 4.248   (*b*) 4.368   (*c*) 3.248   (*d*) 3.368

11. The rate of failure in an examination is 39.25%. Find the least number of total candidates appeared in the examination.
    (*a*) 500   (*b*) 400   (*c*) 125   (*d*) 260

12. Find H.C.F. of $\dfrac{3}{5}$, .36, .24
    (*a*) .04   (*b*) 2
    (*c*) .4   (*d*) None of the above

13. 0.8 portion of a tank is filled with water. If 25 litres of water is taken out from the tank, 14 litres of excess water over the half filled up tank remains in it. Find the capacity of the tank.
    (*a*) 100 litres   (*b*) 130 litres
    (*c*) 200 litres   (*d*) 150 litres

14. The ratio of ages of two persons is 4 : 7 and one is 30 years older than the other. Find the sum of their ages.
    (*a*) 210 years (*b*) 110 years (*c*) 90 years (*d*) 140 years

15. The ratio of the age of a gentleman and his wife is 4 : 3. After 4 years this ratio will be 9 : 7. If at the time of their marriage the ratio was 5 : 3, how many years ago they were married?
    (*a*) 10 years   (*b*) 8 years
    (*c*) 12 years   (*d*) 15 years

16. Simplify: $\dfrac{1.\dot{3}\times1.\dot{3}\times1.\dot{3}-1}{1.\dot{3}\times1.\dot{3}+1.\dot{3}+1}$
    (*a*) .3   (*b*) $3\dfrac{1}{3}$ (*c*) $.\dot{3}$ (*d*) 1

17. What sum of money is to be divided among 3 men in the ratio 3 : 4 : 5 so that the third man receives Rs 10 only.
    (*a*) Rs 56   (*b*) Rs 84   (*c*) Rs 120   (*d*) Rs 24

18. Sum of two numbers prime to each other is 20 and their L.C.M. is 99. What are the numbers?
    (*a*) 8 and 12   (*b*) 14 and 6
    (*c*) 19 and 1   (*d*) 11 and 9

19. Find square root of $2.\dot{7}$
    (*a*) .5   (*b*) 5   (*c*) $1\dfrac{2}{3}$ (*d*) .3

20. Find the greatest of the four least common multiples of 3, 5 and 7.
    (*a*) 1   (*b*) 420   (*c*) 315   (*d*) 105

21. Find the greatest number which on dividing 107 and 120 leaves remainders 5 and 1 respectively.
(*a*) 25   (*b*) 6   (*c*) 9   (*d*) 17

22. Express Rs 25 as percentage of Rs 75:
(*a*) 3%   (*b*) 30%   (*c*) $.\dot{3}$%   (*d*) $33.\dot{3}$%

23. 25% of X = 45% of Y. Then X : Y is:
(*a*) 5 : 9   (*b*) 3 : 5   (*c*) 5 : 3   (*d*) 9 : 5

24. The value of $99\frac{1}{7}+99\frac{2}{7}+99\frac{3}{7}+99\frac{4}{7}+99\frac{5}{7}+99\frac{6}{7}$ is:
(*a*) 594   (*b*) 595   (*c*) 596   (*d*) 597

25. If n is any positive odd integer greater than 1, the n(n^2 – 1) is always divisible by:
(*a*) 7   (*b*) 5   (*c*) 24   (*d*) 15

26. The value of $\{(.87)^3 + (.13)^3 + .87 \times .39\}^{0.5}$ is:
(*a*) 0.6   (*b*) 1   (*c*) 0   (*d*) 3

27. A hawker purchased oranges at the rate of 4 oranges in a rupee, but he sells at the rate of 5 oranges in a rupee. His loss is:
(*a*) 20%   (*b*) 25%   (*c*) 50%   (*d*) 100%

28. A businessman purchased 35 kg dal of Rs 525 and sells it at the rate of Rs 18 per kg. Then the rate of profit or loss is:
(*a*) 20% profit (*b*) 25% loss (*c*) 25% profit (*d*) 20% loss

29. The difference and the product of two numbers are 32 and 2145 respectively. Their sum is:
(*a*) 89   (*b*) 98   (*c*) 78   (*d*) 87

30. The sum of two numbers is 45 and their product is 500. The G.C.M. of the numbers is:
(*a*) 5   (*b*) 9   (*c*) 10   (*d*) 15

31. The simplest value of $\frac{\sqrt{5}+2}{\sqrt{5}-2}+\frac{\sqrt{5}-2}{\sqrt{5}+2}$:
(*a*) 9   (*b*) 1   (*c*) 14   (*d*) 18

32. The sum of the present age of the father and his daughter is 42 years. 7 years later, the father will be 3 times old than the daughter. The present age of the father is:
(*a*) 35   (*b*) 28   (*c*) 32   (*d*) 33

33. If x < 5, which one is true?
(*a*) $x^3 > 125$ (*b*) $x^3 < 125$ (*c*) $x^3 \geq 125$ (*d*) $x^3 \leq 125$

34. The average of the first four of five numbers is 40 and that of the last four numbers is 60. The difference of the last and the first number is:
(*a*) 400   (*b*) 200   (*c*) 40   (*d*) 80

35. The numbers which divide 80 in such a way that the sum of their reciprocals is $\frac{4}{75}$ are:
(*a*) 40, 40   (*b*) 35, 45   (*c*) 30, 50   (*d*) 60, 20

36. 20 labourers can do a work in 20 days if everybody works for 6 hours daily. Then 25 labourers can do the same work in 12 days by working daily for:
(*a*) 8 hours (*b*) 6 hours (*c*) 4 hours (*d*) 10 hours

37. The value of $3.\dot{3}$% of Rs 300 is:
(*a*) Rs 9.90   (*b*) Rs 11
(*c*) Rs 10   (*d*) None of the above

38. Two identical bottles A and B of sweet drinks contain sugar such that 30% of sugar in A is equal to 40% sugar in B. The ratio of sugar in the two bottles is:
(*a*) 4 : 3   (*b*) 3 : 4   (*c*) 12 : 1   (*d*) 1 : 12

39. The volume is decreased by 10% when ice is melted into water. If water is freezed, the volume is increased by:
(*a*) $11\frac{1}{10}$%   (*b*) $11\frac{1}{9}$%   (*c*) $9\frac{1}{11}$%   (*d*) 10%

40. The greatest two digit number whose square root is an integer is:
(*a*) 99   (*b*) 89   (*c*) 81   (*d*) 10

41. If A : B = 3 : 4, C : B = 5 : 4, C : D = 10 : 9, then A : B : C : D is:
(*a*) 6 : 8 : 10 : 9   (*b*) 8 : 6 : 9 : 10
(*c*) 8 : 6 : 10 : 9   (*d*) 6 : 8 : 9 : 10

42. If 20% of A = 30% of B = $\frac{1}{6}$ th of C, then A : B : C is:
(*a*) 2 : 3 : 16   (*b*) 3 : 2 : 16
(*c*) 10 : 15 : 18   (*d*) 15 : 10 : 18

43. If A = 2 + $\frac{1}{a}$ and B = a + $\frac{1}{2}$ then A = B if a is:
(*a*) $\frac{1}{2}$ (*b*) $-\frac{1}{2}$ (*c*) 2   (*d*) – 2

44. A man retired from his service at the age of 60. He served for $\frac{3}{5}$ th years of his retirement age. He joined his job at the age of:
(*a*) 36 years (*b*) 24 years (*c*) 18 years (*d*) 30 years

45. If $\frac{a}{2}=\frac{b}{7}=\frac{c}{5}$, then the value of $\frac{a-b+c}{a+b-c}$ is:
(*a*) 0   (*b*) 1   (*c*) 3   (*d*) ∞

46. The least number divisible by any integer between 1 and 9 is:
(*a*) 2250   (*b*) 5220   (*c*) 2520   (*d*) 2025

47. The value of $\frac{.7\times.7\times.7-.6\times.6\times.6}{.7\times.7+.6\times.6+.7\times.6}$ is:
(*a*) 0.1   (*b*) 1   (*c*) 1.3   (*d*) 1.1

48. A number is increased consecutively two times by 20% each. The original number is actually increased by:
(*a*) 40%   (*b*) 42%   (*c*) 44%   (*d*) 20%

49. 42 oranges are distributed among some boys and girls. If each boy gets 3 then each girl gets 6. But if each boy gets 6 and each girl gets 3, it needs 6 more. The number of girls is:
(*a*) 4   (*b*) 6   (*c*) 8   (*d*) 10

50. An alloy of zinc and copper contains the metals in the ratio 5 : 3. The quantity of zinc to be added to 16 kg of the alloy so that the ratio of the metal may be 3 : 1 is:
(*a*) 2 kg   (*b*) 4 kg   (*c*) 3 kg   (*d*) 8 kg

ANSWERS AND EXPLANATIONS

1. (b) Reqd no. of posts = 4 (at the corners) + 4 × 12
   (in between on the sides)
   = 4 + 48 = 52

2. (d) Let the original no. of students be x
   A.T.S. $40x + 120 \times 32 = (x + 120)36 \Rightarrow x = 120$
   ∴ Reqd no. of students after joining the new students
   = x + 120 = 240

3. (c) Let the given amount be Rs x
   A.T.S. $\dfrac{x}{3} - (\dfrac{x}{4} + 250) = 100 \Rightarrow x = Rs\ 4200$

4. (c) No. of successful candidates = 76.8% of x
   x = total students
   $= (\dfrac{768}{10 \times 100} \times x) = \dfrac{96}{125}x$
   Which must be a whole no. ∴The reqd least no. = 125

5. (c) $\dfrac{x}{4} - \dfrac{x}{3} = 4 \Rightarrow x = 48\ l$

6. (b) $\dfrac{1}{1+\dfrac{1}{1+\dfrac{1}{\dfrac{3}{2}}}} = \dfrac{1}{1+\dfrac{1}{1+\dfrac{2}{3}}} = \dfrac{1}{1+\dfrac{1}{\dfrac{5}{3}}}$

   $= \dfrac{1}{1+\dfrac{3}{5}} = \dfrac{1}{\dfrac{8}{5}} = \dfrac{5}{8}$

7. (d) Reqd no. of students $= 30 \times \dfrac{5}{6} = 25$ $\quad [\because \dfrac{30}{x} = \dfrac{6}{5}]$

8. (d) $\dfrac{x+9}{x} = \dfrac{4}{3} \Rightarrow x = 27$
   Their daily wages are Rs 27 + 9, Rs 27 *i.e.* Rs 36, Rs 27

9. (b) Reqd ratio $= \dfrac{C.P.}{S.P.} = \dfrac{100}{100 - \dfrac{25}{2}} = \dfrac{8}{7}$ $\quad$ S.P.=C.P.–Loss
   = 8 : 7

10. (b) 1.2 + 1.44 + 1.728 = 4.368

11. (b) No. of failures = 39.25% of $x = \dfrac{3925}{100 \times 100} \times x$
    $= \dfrac{157}{400}x$ which must be a whole no.
    ∴ x = 400 (least no.)

12. (d) H.C.F. of $\dfrac{3}{5}, \dfrac{36}{100}, \dfrac{24}{100} = \dfrac{HCF\ of\ 3, 9, 6}{LCM\ of\ 5, 25, 25} = \dfrac{3}{25} = .12$

13. (b) $.8 = \dfrac{4}{5}$ $\quad$ A.T.S. $\dfrac{4}{5}x - 25 = \dfrac{x}{2} + 14 \Rightarrow x = 130$

14. (b) $\dfrac{x}{x+30} = \dfrac{4}{7} \Rightarrow x = 40$ Sum of ages = x + x + 30 = 110

or $7x - 4x = 30 \Rightarrow x = 10$ ∴ Sum of ages = 11x = 110

15. (c) $\dfrac{4x+4}{3x+4} = \dfrac{9}{7} \Rightarrow x = 8$
    Man's present age = 32 years, woman's age = 24 yrs
    Let the reqd time be y years
    ∴ $\dfrac{32-y}{24-y} = \dfrac{5}{3} \Rightarrow y = 12\ years$

16. (c) $\dfrac{a^3 - b^3}{a^2 + ab + b^2} = a$ $\quad$ b, $\dfrac{(1.\dot{3})^3 - 1^3}{(1.\dot{3})^2 + .\dot{3} \times 1 + (1)^2} = 1.\dot{3} - 1 = .\dot{3}$

17. (d) $\dfrac{5}{3+4+5} \times x = 10 \Rightarrow x = Rs\ 24$

18. (d)

19. (c) $2.\dot{7} = 2 + .\dot{7} = 2 + \dfrac{7}{9} = \dfrac{25}{9}, \sqrt{2.\dot{7}} = \sqrt{\dfrac{25}{9}} = \dfrac{5}{3} = 1\dfrac{2}{3}$

20. (b) L.C.M. of 3, 5, 7 = 105
    Four least common multiples of 3, 5, 7 are 105, 210, 315, 420 $\quad$ ∴ Greatest = 420

21. (d) 107 $\quad$ 120
    $\dfrac{-\ 5}{102}$ $\quad$ $\dfrac{-\ 1}{119}$ $\quad$ Reqd no. = HCF of 102 and 119 = 17

22. (d) x% of 75 = 25 $\Rightarrow$ x $= \dfrac{25}{75} \times 100 = 33.3$

23. (d) $\dfrac{25}{100} \times X = \dfrac{45}{100} Y \Rightarrow \dfrac{X}{Y} = \dfrac{45}{25} = \dfrac{9}{5} \Rightarrow X : Y = 9 : 5$

24. (d) Value $= 99 \times 6 + \dfrac{1}{7} + \dfrac{2}{7} + \dfrac{3}{7} + \dfrac{4}{7} + \dfrac{5}{7} + \dfrac{6}{7}$
    $= 594 + \dfrac{21}{7} = 594 + 3 = 597$

25. (c) $n(n^2 - 1) = n(n - 1)(n + 1)$ Take n = 3 $\quad (\because n \geq 1)$
    $= 3 \times 2 \times 4 = 24$ $\quad$ (Always take least no.)
    Which is divisible by 24

26. (b) $(.87)^3 + (.13)^3 + 3 \times .87 \times .13\ (.87 + .13) = (.87 + .13)^3$
    $= (1.00)^3 = 1$ $\quad$ (.87 + .13 = 1.00)
    $a^3 + b^3 + 3ab\ (a + b) = (a + b)^3$

27. (a) Let the no. of oranges be 20 $\quad$ (L.C.M. of 4 & 5)
    C.P. $= \dfrac{1}{4} \times 20 = Rs\ 5$, S.P. $= \dfrac{1}{5} \times 20 = Rs\ 4$
    ∴ Loss = 5 – 4 = Re 1
    Loss% $= \dfrac{Loss}{C.P.} \times 100 = \dfrac{1}{5} \times 100 = 20$

28. (a) C.P. of 1 kg dal $= \dfrac{525}{35} = Rs\ 15$, S.P. = Rs 18
    Profit = S.P. – C.P. = 18 – 15 = Rs 3, P% $= \dfrac{3}{15} \times 100 = 20$

29. (*b*) x – y = 32 ∴ x = 32 + y
     Product = y(32 + y) = 2145
     or $y^2 + 32y - 2145 = 0 \Rightarrow y^2 + 65y - 33y - 2145 = 0$
     y(y + 65) – 33 (y + 65) = 0 ⇒ (y – 33) (y + 65) = 0
     ⇒ y = 33, –65   y ≠ 65   ∴ y = 33
     The sum of nos. = y + (y + 32) = 2y + 32
                          = 2 × 33 + 32 = 98

30. (*a*) Let the nos. be x, 45 – x A.T.S x(45 – x) = 500
     $x^2 - 45x + 500 = 0 \Rightarrow x^2 - 20x - 25x + 500 = 0$
     x(x– 20) – 25 (x – 20) = 0 ⇒ (x – 20) (x – 25) = 0
     x = 25, 20. If one no. = 25 other no. = 45 – 25 = 20
     G.C.M. of 25, 20 = 5

31. (*d*) Value $= \dfrac{(\sqrt{5}+2)^2 + (\sqrt{5}-2)^2}{(\sqrt{5})^2 - 2^2}$

     $= \dfrac{5 + 4 + 4\sqrt{5} + 5 + 4 - 4\sqrt{5}}{5 - 4} = 18$

32. (*a*) Let father's present age be x years
     ∴ Son's present age 42 – x years
     A.T.S x + 7 = 3(42 – x + 7) ⇒ x = 35 years

33. (*b*)

34. (*d*) $x_1 + x_2 + x_3 + x_4 = 4 \times 40 = 160$
     $x_2 + x_3 + x_4 + x_5 = 4 \times 60 = 240$
     Subtracting $x_1 - x_5 = -80$ or $x_5 - x_1 = 80$

35. (*c*)

36. (*a*)   Men   Days   Hours
             20   20   6
             25   12   x

     More men less hours
             25 : 20   ⎫
                              ⎬ : : 6 : x
     Less days more hours   ⎭
             12 : 20
     ∴ $x = \dfrac{6 \times 20 \times 20}{25 \times 12} = 8$

37. (*c*) $3.\dot{3} = 3 + \dfrac{3}{9} = \dfrac{10}{3}$

     $3.\dot{3}\%$ of Rs 300 $= \dfrac{10}{3 \times 100} \times 300 = $ Rs 10

38. (*a*) 30% of x = 40% of y ⇒ $\dfrac{30}{100}x = \dfrac{40}{100}y \Rightarrow \dfrac{x}{y} = \dfrac{4}{3}$

     = 4 : 3

39. (*b*) Volume of ice = x (say)
     ∴ Volume of water (when ice melted)

     $= \dfrac{(100 \quad 10)}{100}x = \dfrac{9}{10}x$

     When water is freezed, it changes into ice
     Volume becomes = x
     ∴ Increase = x $\dfrac{9x}{10} = \dfrac{x}{10}$

If vol. of water = $\dfrac{9x}{10}$, increase in vol. (when freezed)

$= \dfrac{x}{10}$

If volume of water 100, increase in volume

$= \dfrac{x}{10} \times \dfrac{10}{9x} \times 100 = 11\dfrac{1}{9}\%$

40. (*c*) $\sqrt{81} = 9$

41. (*a*) A : B : C   A : B : C : D
           3 : 4   12 : 16 : 20
              4 : 5   10 : 9
           12 : 16 : 20   120 : 160 : 200 : 180 or 6 : 8 : 10 : 9

42. (*d*) $\dfrac{20}{100}A = \dfrac{30}{100}B = \dfrac{C}{6}$ or $\dfrac{A}{5} = \dfrac{B}{\frac{10}{3}} = \dfrac{C}{6}$

     ∴ A : B : C = $5 : \dfrac{10}{3} : 6$ or 15 : 10 : 18

43. (*b & c*) A = B ⇒ $2 + \dfrac{1}{a} = a + \dfrac{1}{2} \Rightarrow 2a^2 - 3a - 2 = 0$

     ⇒ (2a + 1) (a – 2) = 0 ⇒ $a = 2, -\dfrac{1}{2}$

44. (*b*) He served for $60 \times \dfrac{3}{5} = 36$ years

     ∴ He joined his job at the age of 60 – 36 = 24 years

45. (*a*) $\dfrac{a}{2} = \dfrac{b}{7} = \dfrac{c}{5} = k$, a = 2k, b = 7k, c = 5k

     $\dfrac{a - b + c}{a + b - c} = \dfrac{2k - 7k + 5k}{2k + 7k - 5k} = \dfrac{0}{4k} = 0$

46. (*c*)

47. (*a*) $\dfrac{a^3 - b^3}{a^2 + b^2 + ab} = a - b = .7 - .6 = 0.1$

48. (*c*) Let the no. be 100
     No. after increasing consecutively two times

     $= 100 \times \dfrac{120}{100} \times \dfrac{120}{100} = 144$

     ∴ The original no. is actually increased by
             144 – 100 = 44   44%

49. (*a*) Let the no. of boys be x and that of girls be y
     A.T.S. 3x + 6y = 42 or x + 2y = 14 ... (*i*)
     6x + 3y = 42 + 6 ⇒ 2x + y = 16 ... (*ii*)
     Solving (*i*) and (*ii*) we get y = 4

50. (*d*) Zinc $= \dfrac{5}{8} \times 16 = 10$ kg   Copper = 6 kg

     A.T.S. $\dfrac{10 + x}{6} = \dfrac{3}{1} \Rightarrow x = 8$ kg