1) The value of $\frac{a^{\frac{1}{2}}+a^{-\frac{1}{2}}}{1-a} + \frac{1-a^{-\frac{1}{2}}}{1+\sqrt{a}}$

   a) $\frac{a}{a-1}$

   b) $\frac{a-1}{2}$

   c) $\frac{2}{a-1}$

   d) $\frac{2}{1-a}$

2) If $\log_e^2 . \log_x 625 = \log_{10} 16 . \log_e 10$, then x

   a) 7
   b) 5
   c) 8
   d) 12

3) The third proportional to 15 and 20 is

   a) 80/3
   b) 80
   c) 80/7
   d) None of these

4) The mean proportional between 9 and 25 is

   a) 16
   b) 10
   c) 15
   d) 36

5) The ratio of the number of boys and girls in a school is 2: 5. If there are 280 students in the school, find the number of girls in the school.

   a) 200
   b) 250
   c) 150
   d) 392

6) A bag contains an equal number of one rupee, 50 paise and 25 paise coins respectively. If the total value is Rs. 35, how many coins of each type are there?

   a) 30
   b) 20
   c) 25
   d) 24

7) If $\log_{10} 12.45$ = 1.0952 and $\log_{10} 3.79$ = 0.5786. Find the value of $\log_{10} 124.5$ + $\log_{10} 379$

   a) 5.6738
   b) 4.6738
   c) 6.6738
   d) 3.6738

8) The value of $\frac{\log_{10} 4}{\log_{10} 8}$

   a) $\frac{1}{3}$

   b) $\frac{4}{3}$

   c) $\frac{2}{3}$

   d) 1

9) The value of $\log_{2\sqrt{2}}\left(\frac{1}{256}\right)$

   a) $\frac{16}{3}$

   b) -4

   c) 3

   d) $\frac{-16}{3}$

10) 1230 baskets of mangoes were loaded in three trucks. When unloaded, it was found that 5, 10 and 15 baskets were rotten in the trucks respectively, but the remaining baskets were in the ratio of 3: 4: 5. How many baskets were loaded initially in each truck?

    a) 575
    b) 515
    c) 565
    d) 585

11) Find the ratio x: y: z from 2x + 3y − 5z = 0 and -3x + 2y + 7z = 0

    a) 10: 12: 13
    b) 30: 2: 12
    c) 31: 1: 13
    d) 6: 6: 35

12) The value of $\left(\frac{1}{64}\right)^0 + (64)^{-\frac{1}{2}} + \left(-32^{\frac{4}{5}}\right)$

    a) $17\frac{1}{8}$

    b) $17\frac{3}{8}$

    c) $11\frac{7}{8}$

    d) $17\frac{4}{8}$

13) In what ratio should tea worth Rs. 10 per Kg be mixed with tea worth Rs. 14 per Kg, so that the average price of the mixture may be Rs. 11 per Kg?

    a) 2: 1
    b) 3: 1
    c) 3: 2
    d) 4: 3

14) The ages of two persons are in the ratio 5: 7. Eighteen years ago their ages were in the ratio of 8: 13, their present ages are: -

    a) 50, 70
    b) 70, 50
    c) 40, 56

15) If x = y^a, y = z^b, z = x^c, then abc is

    a) 2
    b) 1
    c) 3
    d) 4

16) If $\log_2 [\log_3 (\log_2 x)] = 1$, then x equals: -
   a) 128
   b) 256
   c) 512
   d) None

17) If $\log \left(\frac{a+b}{4}\right) = \frac{1}{2}$ (log a + log b) then, $\frac{a}{b} + \frac{b}{a}$ is equal to
   a) 12
   b) 14
   c) 16
   d) 8

18) If A, B and C started a business by investing Rs. 1,26,000, Rs. 84,000 and Rs. 2,10,000. If at the end of the year profit is Rs. 2,42,000 then the share of each is: -
   a) Rs. 72,600, Rs. 48,400, Rs. 1,21,000
   b) Rs. 48,400, Rs. 1,21,000, Rs. 72,600
   c) Rs. 72,000, Rs. 49,000, Rs. 1,21,000
   d) Rs. 48,000, Rs. 1,21,400, Rs. 72,600

19) If $\frac{P}{q} = -\frac{2}{3}$ then the value of $\frac{2p+q}{2p-q}$ is
   a) 1
   b) -1/7
   c) 1/7
   d) 7

20) Fourth Proportional to x, 2x, (x+1) is: =
   a) (x + 2)
   b) (x − 2)
   c) (2x + 2)
   d) (2x − 2)

21) If $x = 3^{1/3} + 3^{-1/3}$, then find value of $3x^3 - 9x$
   a) 3
   b) 9
   c) 12
   d) 10

22) Find the value of: $[1 - \{1 - (1 - x^2)^{-1}\}^{-1}]^{-1/2}$
   a) 1/x
   b) x
   c) 1
   d) None of these

23) Log (m + n) = Log m + Log n, m can be expressed as: =
   a) $m = \frac{n}{n-1}$

   b) $m = \frac{n}{n+1}$

   c) $m = \frac{n+1}{n}$

   d) $m = \frac{n+1}{n-1}$

24) $\log_4 (x^2 + x) - \log_4 (x + 1) = 2$. Find x.
   a) 16
   b) 0
   c) -1

   d) None of these

25) If $\log_4 [\log_3 (\log_2 x)] = 0$, then value of x equals: -
   a) 16
   b) 32
   c) 4
   d) None of these