



# DEFENCE MANIA

## EDUTECH PVT. LTD

### Decimal Fraction

- What is the value of  $72 \div 9 + 3 - 6(2 \times 3) + 5 \text{ of } 3 - (1 + 5 \times 2 - 2)$   

$$\frac{8 \div 4 + 2 - (6 \times 8 \div 2) + (7 \times 4 - 2 \times 2)}{}$$

(A)  $\frac{11}{4}$  (B)  $\frac{5}{4}$   
 (C) 0 (D)  $\frac{15}{4}$
- $32 \div 4$  of  $2 \times 3 + 5 \text{ of } 6 - \{7 \text{ of } 8(10 + 6 \text{ of } \frac{5}{6} \div 5 - 1) \div 80\} - 7 \times 3 \div 2$   
 (A) 7.5 (B) 17.5  
 (C) 12.5 (D) 24.5
- What is the value of  $\frac{3}{4} \text{ of } (\frac{1}{3} \div \frac{1}{2}) + (2 - \frac{2}{5}) \times \frac{3}{2} + \frac{2}{3}$ ?  
 (A)  $\frac{107}{30}$  (B)  $\frac{101}{6}$   
 (C)  $\frac{109}{17}$  (D)  $\frac{103}{25}$
- Find the value of  $7 \div 2 - [3 \text{ of } 7 \div 4 \div \{(2 \div 5) \times (25 \div 8) \div (5 \div 2)\}]$ .  
 (A) -8 (B) -7  
 (C) -1 (D) -9
- What is the value of  $\frac{3}{7} \div \frac{9}{21} + 2 - \frac{4}{3} + \frac{1}{2} \text{ of } \frac{12}{5} \times \frac{25}{18} \div \frac{5}{9}$ ?  
 (A) 2 (B)  $17/3$   
 (C)  $14/3$  (D) 4
- What is the value of  $\frac{\frac{2}{3} \text{ of } \frac{9}{4} + \frac{1}{2} \div \frac{5}{4}}{1 - \frac{1}{3} + \frac{1}{4} \times (1 + \frac{1}{3})}$ ?  
 (A)  $7/10$  (B)  $9/19$   
 (C)  $19/10$  (D)  $7/11$
- What is the value of  $90 \times 3 \div 9 + 4 \div 2 \times 3$  of  $4 \times 8 \div (18 \times 2 - 4)$ ?  
 (A) 48 (B) 40  
 (C) 36 (D) 42
- If  $A = 40 \div 8 + 5 \times 2 - 4 + 5$  of 3 and  $B = 24 \div 4 (4 + 2) + 19$  of 2, then what is the value of  $A - B$ ?  
 (A) -11 (B) 11  
 (C) 13 (D) -13
- What is the value of  $36 \div 8 \times 4 + 2 \div 4 - 1 + 5$  of  $3 \div (4 \times 2 - 3) - 3$ ?  
 (A) 18 (B) 16  
 (C)  $35/2$  (D)  $31/2$
- If  $A = 7 \times 3 \div (2 + 4) + 4 - 2$ ,  $B = 3 \div 6 \times 4 + 2 - 2$  of 3 and  $C = 6 \div 2 + 4 \times 3 - 2$ . Then what is the value of  $(A + B - C)$ ?  
 (A)  $\frac{-16}{3}$  (B)  $\frac{19}{2}$   
 (C)  $\frac{-19}{2}$  (D)  $\frac{16}{3}$
- What is the value of  $\frac{\frac{3}{4} \div \frac{9}{32} + \frac{4}{3} \times \frac{2}{3} \text{ of } \frac{27}{16}}{\frac{1}{2} \times (\frac{8}{3} - 2) \div \frac{4}{9} + (\frac{1}{3} + \frac{1}{6})}$ ?  
 (A)  $\frac{13}{2}$  (B)  $\frac{12}{3}$   
 (C)  $\frac{10}{3}$  (D)  $\frac{31}{2}$
- What is the value of  $\frac{3 \text{ of } 24 \div 8 \times 3 + 4 \div 2 - 4 \times 5}{36 \div 12 \times 4 \div 2 + 5 \times (6 - 4)}$ ?  
 (A)  $\frac{8}{15}$  (B)  $\frac{9}{16}$   
 (C)  $\frac{3}{10}$  (D)  $\frac{3}{4}$
- What is the value of  $(24 + 16 \times 5 - 8 \text{ of } 4) \div 84 \times 48 \div 24 \times 6 + 4 + 3$ ?  
 (A)  $\frac{139}{3}$  (B)  $\frac{156}{5}$   
 (C)  $\frac{121}{7}$  (D)  $\frac{56}{3}$
- What is the value of  $\frac{39 \div 26 + 22 \div 11 \times 2 + 4 \times 3}{2 \text{ of } 5 - 3(7 + 10 \div 2 - 3 \times 3)}$ ?  
 (A)  $\frac{61}{2}$  (B)  $\frac{49}{2}$   
 (C)  $\frac{39}{2}$  (D)  $\frac{35}{2}$
- If  $A = 8 \div 4 \times (3 - 1) + 6 \times 3 \div 2$  of 3 and  $B = 4 \div 8 \times 2 + 7 \times 3$ , then what is the value of  $A + B$ ?  
 (A) 29 (B) 31  
 (C) 33 (D) 35

16. What is the value of  $(3 \times 4 \text{ of } 12 \div 2) \div 9 \times 4 + 4 \div 8 + 3 \times 2$ ?  
 (A)  $89/3$  (B)  $37/2$   
 (C)  $94/3$  (D)  $77/2$
17. What is the value of  $(6 \text{ of } 4 \div 16 \times 48) \div 8 \times 4 + 2 \times 3 \div 6 + 5(6 - 2)$ ?  
 (A) 63 (B) 79  
 (C) 67 (D) 57
18. What is the value of  $\frac{3}{4} \div \left(\frac{1}{2} + \frac{1}{16}\right) + \frac{2}{3} \text{ of } \frac{4}{9} \div \left(\frac{1}{3} - \frac{11}{81}\right) + \frac{1}{4} \times \frac{2}{3}$ ?  
 (A) 3 (B) 1  
 (C) 2 (D) 4
19. What is the value of  $\frac{\{(0.7)^2 \div 0.14 + (0.6)^2 \div 0.18 + (0.5)^2 \div 0.05\}}{4(2.5 \text{ of } 4 - 13 \times 0.25 \times 3)}$ ?  
 (A)  $25/2$  (B)  $19/2$   
 (C)  $23/2$  (D)  $21/2$
20. What is the value of  $\frac{(1 - \frac{1}{4}) + (\frac{1}{2} \text{ of } \frac{1}{2}) \div \frac{2}{5}}{\frac{2}{5} \div \frac{1}{4} + \frac{3}{2}(2 - \frac{8}{5})}$ ?  
 (A)  $2/3$  (B)  $5/8$   
 (C)  $4/5$  (D)  $5/11$
21. If  $A = 2 \div 3 \times 4$ ,  $B = 3 \text{ of } 4 + (7 - 2)$  and  $C = 4 + 5 - 6$ , then what is the value of  $A + B + C$ ?  
 (A)  $85/3$  (B)  $79/3$   
 (C)  $59/3$  (D)  $68/3$
22. What is the value of  $\left(1 + \frac{3}{4}\right) \times \frac{3}{21} \text{ of } 5\frac{1}{3} \div \frac{128}{49} + \frac{2}{3} \times \frac{7}{11} \times \frac{121}{49} \div \left(\frac{15}{14} - \frac{2}{7}\right)$ ?  
 (A)  $69/25$  (B)  $62/29$   
 (C)  $57/41$  (D)  $59/32$
23. What is the value of  $\frac{(49-13) \times 18 \div 9 + 4 \times 12 \div 6 + 5}{98 \div 14 + 7 \times 4 \text{ of } 6 \div 8 + 4}$ ?  
 (A)  $45/23$  (B)  $37/18$   
 (C)  $85/32$  (D)  $53/17$
24. What is the value of  $\frac{2 \div 3 \times (1+3) + 5-6}{2 \text{ of } 3 \div 5 \times 4 + 3 - 2}$ ?  
 (A)  $36/89$  (B)  $31/73$   
 (C)  $25/87$  (D)  $27/92$
25. What is the value of  $2 \text{ of } 16 \div 48 \times 12 + 4 \div 8 \times 16 + (7 - 2) \times 25 \div 15$ ?  
 (A)  $73/3$  (B)  $59/3$   
 (C)  $49/3$  (D)  $56/3$
26. What is the value of  $\left(\frac{1}{2} \div \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} - \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} \div \frac{1}{2}\right) \text{ of } \left(\frac{1}{2} + \frac{1}{2}\right)$ ?  
 (A)  $3/2$  (B)  $1/2$   
 (C) 1 (D)  $5/2$
27. What is the value of  $5 \text{ of } 5 \text{ of } 5 \div 5 + 5 - 6 \div 3 \times 4 + 2 + (3 \div 6 \times 2)$ ?  
 (A) 21 (B) 25  
 (C) 28 (D) 19
28. What is the value of:  
 $\frac{12 \text{ of } 3 \div 6 + 12 \times 2 - (2 \times 4 - 5)}{12 \div 3 \times 4 + (2 \times 4 - 5)}$ ?  
 (A)  $27/22$  (B)  $23/17$   
 (C)  $27/19$  (D)  $21/9$
29. What is the value of:  
 $(9 \div 30)^2 \times 2.4 + 0.3 \text{ of } 12 \times (1 - 0.3)^2 + 9 \times (0.3)^2$ ?  
 (A) 3.43 (B) 3.69  
 (C) 2.79 (D) 2.17
30. What is the value of:  $2 \text{ of } 3 \div 3 \times 2 + \{4 \times 3 - (5 \times 2 + 3)\}$ ?  
 (A) 3 (B) -24  
 (C) 6 (D) -21
31. The value of  $99\frac{95}{99} \times 99 - 95$  is:  
 (A) 9897 (B) 9993  
 (C) 9999 (D) 9801
32. What is the value of  $\frac{0.56 \times 0.36 + 0.42 \times 0.32}{0.8 \times 0.21}$ ?  
 (A) 1 (B)  $3/2$   
 (C) 3 (D) 2
33. The value of  $(3576 + 4286 + 6593) \div (201 + 105 + 107)$  is:  
 (A) 35 (B) 31  
 (C) 22 (D) 18
34. A fraction is such that the numerator is five less than the denominator. Also four times the numerator is one more than the denominator. The fraction is:  
 (A)  $4/7$  (B)  $3/8$   
 (C)  $7/12$  (D)  $2/7$
35. What is the value of  $1^2 + 2^2 + 3^2 + \dots + 14^2$ ?  
 (A) 1050 (B) 1015  
 (C) 1105 (D) 1225
36. What is the value of  $\sqrt{(1500 + \sqrt{441})}$ ?  
 (A) 37 (B) 39  
 (C) 49 (D) 47
37. What is the value of  $12\frac{1}{2} + 12\frac{1}{3} + 12\frac{1}{6}$ ?  
 (A) 36 (B) 37  
 (C) 39 (D) 38
38. What is the unit digit of  $729 \times 562 + 155$ ?  
 (A) 3 (B) 2  
 (C) 4 (D) 6

39. If  $108^2 = 11664$ , then what is the value of  $\sqrt{1.1667} + \sqrt{116.64}$  ?  
 (A) 10.88 (B) 11.08  
 (C) 11.88 (D) 10.08
40. What is the value of  $\sqrt{15 + 6\sqrt{6}}$  ?  
 (A)  $5 + 3\sqrt{6}$  (B)  $5 - 3\sqrt{6}$   
 (C)  $3 + \sqrt{6}$  (D)  $3 - \sqrt{6}$
41. If  $N = (\sqrt{8} + \sqrt{5})/(\sqrt{8} - \sqrt{5})$ , then what is the simplified value of N?  
 (A)  $13 - 2\sqrt{40}$  (B)  $(13 - 2\sqrt{40})/30$   
 (C)  $(13 + 2\sqrt{40})/3$  (D)  $(3 - 2\sqrt{40})/3$
42. What is the value of  $1^3 + 2^3 + 3^3 + \dots + 10^3$ ?  
 (A) 5500 (B) 3025  
 (C) 6025 (D) 2975
43. What is the value of  $34 \div 17 \times 2 + 4$ ?  
 (A) 8 (B) 16  
 (C) 5 (D) 6
44. What is the value of  $(37 + 23)^2 + (37 - 23)^2$ ?  
 (A) 1898 (B) 3796  
 (C) 2838 (D) 2427
45. What is the value of  $[(1.7)^3 - (1.2)^3] / [(1.7)^2 + (1.7 \times 1.2) + (1.2)^2]$ ?  
 (A) 0.5 (B) 2.9  
 (C) 1.9 (D) 0.7
46. What is the value of  $\sqrt{7 + 4\sqrt{3}}$  ?  
 (A)  $2 - \sqrt{3}$  (B)  $2 + \sqrt{3}$   
 (C)  $3 + \sqrt{3}$  (D)  $3 - \sqrt{3}$
47. What is the unit digit of  $178 \times 593 + 157$ ?  
 (A) 1 (B) 2  
 (C) 3 (D) 7
48. What is the value of  $(3.7)^2 - (1.7)^2$ ?  
 (A) 5.4 (B) 10.8  
 (C) 7.2 (D) 9.6
49. What is the value of  $3^1 + 3^{-1} + 3^2 + 3^{-2}$ ?  
 (A) 112/9 (B) 16/3  
 (C) 4/3 (D) 109/9
50. What is the value of  $38 \div 19 \times 3 + 5$ ?  
 (A) 11 (B) 10  
 (C) 13 (D) 17
51. What is the value of  $(37 + 23)^2 - (37 - 23)^2$ ?  
 (A) 1908 (B) 1602  
 (C) 1702 (D) 3404
52. What is the simplified value of  $\frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}}$  ?  
 (A)  $6 + \sqrt{35}$  (B)  $6 - \sqrt{35}$   
 (C)  $12 + \sqrt{35}$  (D)  $12 - \sqrt{35}$
53. If  $A = 2^7 \times 5^2$  and  $B = 2^3 \times 5^6$ , then what is the value of  $A \times B$ ?  
 (A)  $2^{10}5^8$  (B)  $2^{21}2^{12}$   
 (C)  $2^{21}5^8$  (D)  $2^{10}5^{12}$
54. Which of the following relation (s) is/are true?  
 I  $\sqrt{5} > 3\sqrt{9}$   
 II  $3\sqrt{9} > \sqrt{5}$   
 III  $\sqrt{5} = 3\sqrt{9}$   
 (A) Only I  
 (B) Only II  
 (C) Neither I nor II  
 (D) Either I or II
55. What is the simplified value of  $\frac{(5.2)^3 - (1.7)^3}{(5.2)^2 + 5.2 \times 1.7 + (1.7)^2}$  ?  
 (A) 3.5 (B) 1.7  
 (C) 5.2 (D) 6.9
56. If  $N = 2^3 \times 3^2$ , then what are the positive factors of N?  
 (A) 5 (B) 8  
 (C) 12 (D) 20
57. If  $A = 2^3 \times 3^2$ ,  $B = 2^2 \times 3^5$  and  $C = 2^3 \times 3^2$ , then what is the value of  $A \times B \times C$ ?  
 (A)  $2^8 3^9$  (B)  $2^9 3^{10}$   
 (C)  $2^7 3^{10}$  (D)  $2^{10} 3^{10}$
58. What is the value of  $\sqrt{18 - 2\sqrt{77}}$ ?  
 (A)  $\sqrt{11} + \sqrt{7}$  (B)  $\sqrt{13} - \sqrt{4}$   
 (C)  $\sqrt{11} - \sqrt{7}$  (D)  $\sqrt{13} + \sqrt{4}$
59. What is the value of  $[(0.4)^3 + (0.6)^3]/[(0.4)^2 + (0.6)^2 - (0.4) \times (0.6)]$ ?  
 (A) 1.2 (B) 1.1  
 (C) 1.0 (D) 0.9
60. What is the unit digit of  $2^{47} \times 3^{23}$ ?  
 (A) 2 (B) 4  
 (C) 8 (D) 6
61. If  $A = 2^7 \times 3^5$  and  $B = 3^5 \times 2^3$ , then what is the value of  $A \times B$ ?  
 (A)  $2^{10} \times 3^{10}$  (B)  $2^{12} \times 3^8$   
 (C)  $6^{12} \times 6^8$  (D)  $2^{21} \times 3^{35}$
62. Which of the following is NOT a prime number?  
 (A) 61 (B) 71  
 (C) 69 (D) 67

63. Which of the following statement (s) is/are true?  
I. 2 is a prime number  
II. 4 is a composite number.  
(A) Only I  
(B) Only II  
(C) Both I and II  
(D) Neither I nor II
64. What is the value of '?' in the following expression:  
 $(0.2)^2 + (0.02)^2 + (0.002)^2 = ?$   
(A) 2.404404 (B) 0.040404  
(C) 0.00404 (D) 0.00044
65. What is the value of  $\sqrt{231 + \sqrt{81} + \sqrt{256}}$ ?  
(A) 12 (B) 14  
(C) 15 (D) 16
66. How many positive factors of 132 are there?  
(A) 10 (B) 12  
(C) 9 (D) 11
67. Find the square root of 1485961.  
(A) 1213 (B) 1219  
(C) 1229 (D) 1239
68. What is the simplified value of  $\sqrt{12} - \frac{1}{\sqrt{3}}$ ?  
(A)  $5\sqrt{3}$  (B)  $5/\sqrt{3}$   
(C)  $3\sqrt{5}$  (D)  $3/\sqrt{5}$
69. If the value of  $\sqrt{5} = 2.236$  then calculate the value of  $\sqrt{405} - \frac{1}{2}\sqrt{80} - \sqrt{125}$   
(A) 2.236 (B) 4.472  
(C) 1.118 (D) 8.994
70. 1595 is the sum of the square of three consecutive odd numbers. Find the numbers  
(A) 19, 21, 23 (B) 17, 19, 21  
(C) 21, 23, 25 (D) 23, 25, 27
71. What is the value of  $\sqrt[3]{1331} + \sqrt{729} - \sqrt[3]{512}$ ?  
(A) 15 (B) 20  
(C) 30 (D) 23
72. Find the remainder in the expression  $\frac{550 \times 651 \times 662}{7}$   
(A) 2 (B) 4  
(C) 0 (D) 3
73. Simplify  $(11.998)^3 = ?$   
(A) 1727.136 (B) 1331.136  
(C) 1685.136 (D) 1700.136
74. What is the value of  $\sqrt[3]{729} + \sqrt{441} - \sqrt[3]{343}$ ?  
(A) 48 (B) 23  
(C) 7 (D) 41
75. Find the value of  $3\sqrt[3]{\frac{4913}{2197}}$   
(A) 17/13 (B) 13/17  
(C) 13/7 (D) 17/7
76. The sum of two numbers is 25 and sum of their square is 313. Calculate the numbers.  
(A) 15, 10 (B) 18, 7  
(C) 11, 14 (D) 12, 13
77. What is the value of  $\frac{\sqrt{96} + \sqrt{216}}{\sqrt{24}}$ ?  
(A) 8 (B) 4  
(C) 5 (D) 10
78. The sum of a proper fraction and its reciprocal is 61/30. Find the fraction.  
(A) 1/3 (B) 5/6  
(C) 3/10 (D) 3/5
79. Sum of four consecutive odd numbers is 208. Find the largest number.  
(A) 55 (B) 57  
(C) 59 (D) 61
80. What is the simplified value of  $2\sqrt[3]{243} + 3\sqrt[3]{9} + \sqrt[3]{1125}$ ?  
(A)  $5\sqrt[3]{9}$  (B)  $14\sqrt[3]{9}$   
(C)  $7\sqrt[3]{9}$  (D)  $11\sqrt[3]{9}$
81. Find the number that is as much greater than 39 as is less than 79.  
(A) 42 (B) 49  
(C) 55 (D) 59
82. If  $(1/3.197) = 0.3127$ , find the value of  $(1/0.0003197)$ .  
(A) 3127 (B) 3197  
(C) 312.7 (D) 0.3127
83. If  $9^x = \sqrt[11]{243}$ , then what is the value of x?  
(A) 5/11 (B) 5/22  
(C) 5/7 (D) 5/33
84. Represent the 0.000256 in regular fraction.  
(A) 4/15625 (B) 2/15625  
(C) 16/15625 (D) 8/15625
85. Assume  $57 + 59 + 109 = 0$ , then find the value of  $57^3 + 59^3 + 109^3$ .  
(A) 1099701 (B) 1099601  
(C) 1099801 (D) 1098701



86. What is the simplified value of  $\sqrt[3]{3125} + 4\sqrt[3]{25} + 3\sqrt[3]{675}$ ?
- (A)  $18\sqrt[3]{25}$  (B)  $5\sqrt[3]{25}$   
(C)  $9\sqrt[3]{125}$  (D)  $\sqrt[3]{125}$
87. If  $\frac{7x+9y}{3x-4y} = \frac{19}{8}$ , then the value of x/y is \_\_\_\_.
- (A) 148/1 (B) 1/148  
(C) 145/1 (D) 1/145
88. What is the positive square root of  $[25 + 4\sqrt{39}]$
- (A)  $\sqrt{13} + 2\sqrt{3}$  (B)  $\sqrt{13} + 3\sqrt{2}$   
(C)  $\sqrt{11} + 2\sqrt{3}$  (D)  $11 + 3\sqrt{2}$
89. Find the unit place digit in the expression  $(159)^{144} + (114)^{123} - (110)^{510} + (213)^{25}$
- (A) 3 (B) 4  
(C) 7 (D) 8
90. If  $\frac{256}{0.256} = \frac{25.6}{x}$  then what will be the value of x?
- (A) 2.56 (B) 25.6  
(C) 0.256 (D) 0.0256
91. What is the value of  $[(\sqrt{529}) + (\sqrt{5.29}) + (\sqrt{0.0529})]$ ?
- (A) 25.323 (B) 25.53  
(C) 23.253 (D) 23.53
92. Find the remainder in the expression  $557 \times 653 \times 672$
- 9  
(A) 0 (B) 3  
(C) 5 (D) 6
93. Calculate the value of x, if  $\sqrt{1 - \left(\frac{x}{529}\right)} = \left(\frac{16}{23}\right)$
- (A) 283 (B) 276  
(C) 273 (D) 374
94. If  $\sqrt{3} = 1.7323$ , then what is the value of  $\left(\sqrt{3} - \frac{10}{\sqrt{3}} + \sqrt{27}\right)$ ?
- (A) 1.154 (B) 1.577  
(C) 1.464 (D) 2.358
95. If  $x = [1/(\sqrt{5} + \sqrt{3})]$ ,  $y = [1/(\sqrt{7} + \sqrt{5})]$  and  $z = [1/(\sqrt{7} + \sqrt{3})]$ , then what is the value of  $(x + y + z)$ ?
- (A)  $3/4(\sqrt{7} - \sqrt{3})$  (B)  $\sqrt{5} - \sqrt{3}$   
(C)  $\sqrt{7} + \sqrt{5}$  (D)  $1/2(\sqrt{7} + \sqrt{3})$
96. Find the unit place digit in  $(82)^{102} + (183)^{103}$ .
- (A) 1 (B) 6  
(C) 8 (D) 9
97. Find the value of  $\sqrt{5\sqrt{5\sqrt{5\sqrt{5}}}}$
- (A)  $5^{1/16}$  (B)  $5^{16/32}$   
(C)  $5^{15/16}$  (D)  $5^{1/32}$
98. If  $202.4 \div x = 5.06$ , then find the value of X -
- (A) 30 (B) 42  
(C) 43 (D) 40
99. Evaluate  $\sqrt{19600} + \sqrt{0.0196} + \sqrt{0.00000196}$
- (A) 142.1414 (B) 140.1414  
(C) 143.1414 (D) 141.1414
100.  $x = ?$   
 $\frac{144}{1.44} = \frac{14.4}{x}$
- (A) 0.144 (B) 1.44  
(C) 0.00144 (D) 0.0144

## Decimal Fraction (Solution)

1. **Answer: (B)**

$$\begin{aligned} &= \frac{72 \div 9 + 3 - 6 - (2 \times 3) + 5 \text{ of } 3 - (1 + 5 \times 2 - 2)}{8 \div 4 + 2 - (6 \times 8 \div 2) + (7 \times 4 - 2 \times 2)} \\ &= \frac{8 + 3 - 6 - 6 + 15 - 9}{2 + 2 - 24 + 24} \\ &= \frac{5}{4} \end{aligned}$$

2. **Answer: (D)**

$$\begin{aligned} &32 \div 4 \text{ of } 2 \times 3 + [5 \text{ of } 6 - \{7 \text{ of } 8 (10 + 6 \text{ of } \frac{5}{6} \div 5 - 1) \div 80\}] - 7 \times 3 \div 2 \\ &= 32 \div 8 \times 3 + [30 - (56 (10 + 5 \div 5 - 1) \div 80)] - \frac{21}{2} \\ &= 12 + [30 - 7] - \frac{21}{2} \\ &= 12 + 23 - \frac{21}{2} \\ &= 12 + \frac{25}{2} \\ &= 24.5 \end{aligned}$$

3. **Answer: (A)**

$$\begin{aligned} &\frac{3}{4} \left( \frac{1}{3} \times 2 \right) + \left( \frac{8}{5} \right) \times \frac{3}{2} + \frac{2}{3} \\ &= \frac{3}{4} \times \frac{2}{3} + \frac{24}{10} + \frac{2}{3} \\ &= \frac{1}{2} + \frac{12}{5} + \frac{2}{3} \\ &= \frac{107}{30} \end{aligned}$$

4. **Answer: (B)**

$$\begin{aligned} &\frac{7}{2} \div \left[ \frac{21}{4} \div \left\{ \frac{2}{5} \times \frac{25}{8} \times \frac{2}{5} \right\} \right] \\ &= \frac{7}{2} - \left[ \frac{21}{4} \times 2 \right] \\ &= \frac{7}{2} - \frac{21}{2} \\ &= -\frac{14}{2} = -7 \end{aligned}$$

5. **Answer: (C)**

$$\begin{aligned} &\frac{3}{7} \times \frac{21}{9} + 2 - \frac{4}{3} + \frac{1}{2} \times \frac{12}{5} \times \frac{25}{18} \times \frac{9}{5} \\ &= 1 + 2 - \frac{4}{3} + 3 \\ &= 6 - \frac{4}{3} \\ &= \frac{14}{3} \end{aligned}$$

6. **Answer: (C)**

$$\begin{aligned} &\frac{\frac{2}{3} \times \frac{9}{4} + \frac{1}{2} \times \frac{4}{5}}{1 - \frac{1}{3} + \frac{1}{4} \times \frac{4}{3}} = \frac{\frac{3}{2} + \frac{2}{5}}{1} = \frac{19}{10} \end{aligned}$$

7. **Answer: (C)**

$$\begin{aligned} &\frac{90 \times 3}{9} + \frac{4}{2} \times \frac{12 \times 8}{32} \\ &\Rightarrow 30 + 2 \times 3 \\ &= 36 \end{aligned}$$

8. **Answer: (D)**

$$\begin{aligned} &A = \frac{40}{8} + 10 - 4 + 15 \\ &= 26 \\ &B = \frac{24}{24} + 38 \\ &= 39 \\ &\text{So, } A - B = 26 - 39 = -13 \end{aligned}$$

9. **Answer: (C)**

$$\begin{aligned} &\frac{36 \times 4}{8} + 24 - 1 + \frac{15}{5} - 3 \\ &= 18 - 12 + 3 - 3 \\ &= \frac{35}{2} \end{aligned}$$

10. **Answer: (C)**

$$\begin{aligned} &A = \frac{21}{6} + 2 \\ &= \frac{33}{6} \\ &B = \frac{3 \times 4}{6} + 2 - 6 \\ &= -2 \\ &C = \frac{6}{2} + 4 \times 3 - 2 \\ &= 13 \\ &\text{So, } (A + B - C) = \frac{33}{6} - 2 - 13 \\ &= \frac{33 - 12 - 78}{6} \\ &= \frac{-57}{6} \\ &= \frac{-19}{2} \end{aligned}$$

11. **Answer: (C)**

$$\frac{\frac{3}{4} \times \frac{32}{9} + \frac{4}{3} \times \frac{2}{3} \times \frac{27}{16}}{\frac{1}{2} \times \frac{2}{3} \times \frac{9}{4} + \frac{1}{2}} = \frac{10}{3}$$

12. **Answer: (B)**

$$\frac{\frac{3 \times 24 \times 3}{8} + \frac{4}{2} - 20}{\frac{36}{12} \times \frac{4}{2} + 5 \times 2} = \frac{9}{16}$$

13. **Answer: (C)**

$$\begin{aligned} &(24 + 16 \times 5 - 8 \text{ of } 4) \div 84 \times 48 \div 24 \times 6 + 4 + 3 \\ &= (24 + 80 - 32) \div 84 \times 48 \div 24 \times 6 + 7 \\ &= 72 \div 84 \times 2 \times 6 + 7 \\ &= \frac{72}{7} + 7 \\ &= \frac{121}{7} \end{aligned}$$

14. **Answer: (D)**

$$\begin{aligned} &\frac{39 \div 26 + 22 \div 11 \times 2 + 4 \times 3}{2 \text{ of } 5 - 3(7 + 10 \div 2 - 3 \times 3)} \\ &= \frac{\frac{3}{2} + 4 + 2}{10 - 3(3)} \\ &= \frac{\frac{3}{2} + 16}{2} \\ &= \frac{35}{2} \end{aligned}$$

15. **Answer: (A)**

$$\begin{aligned} &A = 8 \div 4 \times (3 - 1) + 6 \times 3 \div 2 \text{ of } 3 \\ &A = 2 \times 2 + 3 \\ &A = 7 \\ &B = 4 \div 8 \times 2 + 7 \times 3 \\ &= 1 + 21 \\ &= 22 \\ &\text{ATQ} \\ &= A + B \\ &= 7 + 22 \\ &= 29 \end{aligned}$$

16. **Answer: (D)**

$$\begin{aligned} &(3 \times 4 \text{ of } 12 \div 2) \div 9 \times 4 + 4 \div 8 + 3 \times 2 \\ &= 72 \div 9 \times 4 + 12 \div 8 + 6 \\ &= 32 + 1\frac{1}{2} + 6 \\ &= 77\frac{1}{2} \end{aligned}$$

17. **Answer: (D)**

$$\begin{aligned} &6 \text{ of } 4 \div 16 \times 48) \div 8 \times 4 + 2 \times 3 \div 6 + 5 (6 - 2) \\ &= 72 \div 8 \times 4 + 1 + 20 \\ &= 36 + 1 + 20 \\ &= 57 \end{aligned}$$

18. Answer: (A)

$$\begin{aligned} & \frac{3}{4} \div \left( \frac{1}{2} + \frac{1}{16} \right) + \frac{2}{3} \text{ of } \frac{4}{9} \div \left( \frac{1}{3} - \frac{11}{81} \right) + \frac{1}{4} \times \frac{2}{3} \\ &= \frac{3}{4} \div \frac{9}{16} + \frac{8}{27} \div \frac{16}{81} + \frac{1}{6} \\ &= \frac{4}{3} + \frac{3}{2} + \frac{1}{6} \\ &= 3 \end{aligned}$$

19. Answer: (D)

$$\begin{aligned} & \left\{ \frac{(0.7)^2 \div 0.14 + (0.6)^2 \div 0.18 + (0.5)^2 \div 0.05}{4(2.5 \text{ of } 4 - 13 \times 0.25 \times 3)} \right\} \\ &= \frac{\frac{7}{2} + 2 + 5}{4 \left[ 10 - \frac{19}{4} \right]} \\ &= 21/2 \end{aligned}$$

20. Answer: (B)

$$\begin{aligned} & \frac{(1 - \frac{1}{4}) + (\frac{1}{2} \text{ of } \frac{1}{2}) \div \frac{2}{3}}{\frac{2}{5} \div \frac{1}{4} + \frac{3}{2} (2 - \frac{8}{5})} \\ &= \frac{\frac{3}{4} + \frac{1}{2} \div \frac{2}{3}}{\frac{2}{5} \div \frac{1}{4} + \frac{3}{2} \times \frac{2}{5}} \\ &= \frac{\frac{3}{4} + \frac{3}{4}}{\frac{8}{20} + \frac{3}{5}} \\ &= \frac{\frac{6}{4}}{\frac{11}{10}} \\ &= \frac{5}{8} \end{aligned}$$

21. Answer: (D)

$$\begin{aligned} A &= 2 \div 3 \times 4 \\ A &= 8/3 \\ B &= 3 \text{ of } 4 + (7 - 2) \\ B &= 12 + 5 \\ B &= 17 \\ C &= 4 + 5 - 6 \\ C &= 3 \\ \text{ATQ} \\ &= A + B + C \\ &= \frac{8}{3} + 17 + 13 \\ &= 68/3 \end{aligned}$$

22. Answer: (D)

$$\begin{aligned} & \left( 1 + \frac{3}{4} \right) \times \frac{3}{21} \text{ of } 5 \frac{1}{3} \div \frac{128}{49} + \frac{2}{3} \times \frac{7}{11} \times \frac{121}{49} \div \left( \frac{15}{14} - \frac{2}{7} \right) \\ &= \frac{7}{4} \times \frac{3}{21} \times \frac{16}{3} \div \frac{128}{49} + \frac{2}{3} \times \frac{7}{11} \times \frac{121}{49} \div \frac{11}{14} \\ &= \frac{7}{4} \times \frac{16}{21} \div \frac{128}{49} + \frac{2}{3} \times \frac{7}{11} \times \frac{22}{7} \\ &= \frac{7}{4} \times \frac{7}{24} \times \frac{4}{3} \\ &= \frac{59}{32} \end{aligned}$$

23. Answer: (C)

$$\begin{aligned} &= \frac{(49-13) \times 18 \div 9 + 4 \times 12 \div 6 + 5}{98 \div 14 + 7 \times 4 \text{ of } 6 \div 8 + 4} \\ &= \frac{36 \times 2 + 8 + 5}{7 + 21 + 4} \\ &= \frac{85}{32} \end{aligned}$$

24. Answer: (C)

$$\begin{aligned} &= \frac{2 \div 3 \times (1+3) + 5 - 6}{2 \text{ of } 3 \div 5 \times 4 + 3 - 2} \\ &= \frac{2 \div 3 \times 4 + 5 - 6}{6 \div 5 \times 4 + 1} \\ &= \frac{\frac{8}{5} - 1}{\frac{24}{5} + 1} \\ &= \frac{25}{87} \end{aligned}$$

25. Answer: (A)

$$\begin{aligned} &= 2 \text{ of } 16 \div 48 \times 12 + 4 \div 8 \times 16 + (7-2) \times 25 \div 15 \\ &= 32 \div 48 \times 12 + 8 + 25/3 \end{aligned}$$

$$= 16 + 25/3$$

$$= 73/3$$

26. Answer: (C)

$$\begin{aligned} &= \left( \frac{1}{2} \div \frac{1}{2} \times \frac{1}{2} + \frac{1}{2} - \frac{1}{2} + \frac{1}{2} \times \frac{1}{2} \div \frac{1}{2} \right) \text{ of } \left( \frac{1}{2} + \frac{1}{2} \right) \\ &= \left( \frac{1}{2} + \frac{1}{2} \right) \times 1 \\ &= 1 \end{aligned}$$

27. Answer: (B)

$$\begin{aligned} & 5 \text{ of } 5 \text{ of } 5 \div 5 + 5 - 6 \div 3 \times 4 + 2 + (3 \div 6 \times 2) \\ &= 125 \div 5 + 5 - 2 \times 4 + 2 + 1 \\ &= 25 + 5 - 8 + 3 \\ &= 25 \end{aligned}$$

28. Answer: (C)

$$\begin{aligned} & \frac{12 \text{ of } 3 \div 6 + 12 \times 2 - (2 \times 4 - 5)}{12 \div 3 \times 4 + (2 \times 4 - 5)} \\ &= \frac{36 \div 6 + 24 - 3}{16 + 3} \\ &= \frac{27}{19} \end{aligned}$$

29. Answer: (C)

$$\begin{aligned} & (9 \div 30)^2 \times 2.4 + 0.3 \text{ of } 12 \times (1 - 0.3)^2 + 9 \times (0.3)^2 \\ &= \frac{9}{100} \times 2.4 + 3.6 \times \frac{49}{100} + 9 \times \frac{9}{100} \\ &= \frac{21.6}{100} + \frac{176.4}{100} + \frac{81}{100} \\ &= \frac{279}{100} \\ &= 2.79 \end{aligned}$$

30. Answer: (A)

$$\begin{aligned} & 2 \text{ of } 3 \div 3 \times 2 + [4 \times 3 - (5 \times 2 + 3)] \\ &= 4 + [12 - 13] \\ &= 4 - 1 \\ &= 3 \end{aligned}$$

31. Answer: (D)

$$\begin{aligned} & 99 \frac{95}{99} \times 99 - 95 \\ &= \left[ 99 + \frac{95}{99} \right] 99 - 95 \\ &= 99 \times 99 + 95 - 95 \\ &= 9801 \end{aligned}$$

32. Answer: (D)

$$\begin{aligned} & \frac{0.56 \times 0.36 + 0.42 \times 0.32}{\frac{0.8 \times 0.21}{0.2016 + 0.1344}} \\ &= \frac{0.168}{0.168} \\ &= 2 \end{aligned}$$

33. Answer: (A)

$$\begin{aligned} & (3576 + 4286 + 6593) \div (201 + 105 + 107) \\ &= 14455 \div 413 \\ &= 35 \end{aligned}$$

34. Answer: (D)

Let the numerator = x  
and in these type of question go through option from option d satisfy the result

35. Answer: (B)

$$\begin{aligned} & \text{We know,} \\ & 1^2 + 2^2 + 3^2 + \dots + 14^2 = [n(n+1)(2n+1)]/6 \\ & 1^2 + 2^2 + 3^2 + \dots + 14^2 = [14(14+1)(28+1)]/6 = \\ & [14 \times 15 \times 29]/6 \\ &= 7 \times 5 \times 29 \\ &= 1015 \end{aligned}$$

36. Answer: (B)

$$\begin{aligned} & \sqrt{(1500 + \sqrt{441})} = \sqrt{1500 + \sqrt{(21)^2}} \\ &= \sqrt{1500 + 21} = \sqrt{1521} = 39 \end{aligned}$$

37. Answer: (B)

$$12\frac{1}{2} + 12\frac{1}{3} + 12\frac{1}{6}$$

$$= 25/2 + 37/3 + 73/6$$

$$= (75 + 74 + 73)/6$$

$$= 222/6$$

$$= 37$$

Alternative method :

$$12\frac{1}{2} + 12\frac{1}{3} + 12\frac{1}{6}$$

$$= 12 + 12 + 12 + (1/2 + 1/3 + 1/6)$$

$$= 36 + 1 = 37$$

38. Answer: (A)

The unit digit of  $729 \times 562 = 8$   
(Since  $9 \times 2 = 18$  & unit digit = 8)  
And unit digit of the expression =  $8 + 5 = 3$

39. Answer: (C)

$$108^2 = 11664$$

Then,  $\sqrt{1.1667} = 1.08$  (approx)

$\sqrt{116.67} = 10.8$  (approx)

$$\text{So, } \sqrt{1.667} + \sqrt{116.64} = 1.08 + 10.8 = 11.88$$

40. Answer: (C)

$$\text{Let } \sqrt{15 + 6\sqrt{6}} = X$$

Squaring both sides

$$15 + 6\sqrt{6} = X^2$$

$$9 + 6 + 6\sqrt{6} = X^2$$

$$(3 + \sqrt{6})^2 = X^2$$

$$X = 3 + \sqrt{6}$$

41. Answer: (C)

$$N = \frac{\sqrt{8} + \sqrt{5}}{\sqrt{8} - \sqrt{5}}$$

Rationalizing

$$N = \frac{(\sqrt{8} + \sqrt{5})^2}{(\sqrt{8})^2 - (\sqrt{5})^2} = \frac{8 + 5 + 2\sqrt{40}}{8 - 5}$$

$$N = \frac{13 + 2\sqrt{40}}{3}$$

42. Answer: (B)

Formula for sum of cubes of consecutive Numbers  
 $= n^2(n+1)^2/4$

Where, n is the number of consecutive numbers

Where n = 10

$$\text{Sum} = 10^2(10+1)^2/4 = 100 \times 121/4 = 3025$$

43. Answer: (A)

$$34 \div 17 \times 2 + 4$$

We use BODMAS Rule for this

$$2 \times 2 + 4 = 4 + 4 = 8$$

44. Answer: (B)

$$(a + b)^2 = a^2 + b^2 + 2ab$$

$$(a - b)^2 = a^2 + b^2 - 2ab$$

$$(a + b)^2 + (a - b)^2 = 2a^2 + 2b^2$$

$$(37 + 23)^2 + (37 - 23)^2 = 2(37)^2 + 2(23)^2$$

$$= 2 \times 1369 + 2 \times 529$$

$$= 2738 + 1058$$

$$= 3796$$

45. Answer: (A)

$$(a^3 - b^3) = (a - b)(a^2 + b^2 + ab)$$

$$[(1.7)^3 - (1.2)^3] = (1.7 - 1.2)(1.7^2 + 1.2^2 + 1.7 \times 1.2)$$

$$[(1.7)^3 - (1.2)^3] / [(1.7)^2 + (1.7 \times 1.2) + (1.2)^2]$$

$$= (1.7 - 1.2)(1.7^2 + 1.2^2 + 1.7 \times 1.2) / [(1.7)^2 + (1.7 \times 1.2) + (1.2)^2]$$

$$= 1.7 - 1.2 = 0.5$$

46. Answer: (B)

$$\sqrt{7 + 4\sqrt{3}}$$

Multiplying and dividing by  $\sqrt{7 - 4\sqrt{3}}$

$$\sqrt{7 + 4\sqrt{3}} \times \frac{\sqrt{7 - 4\sqrt{3}}}{\sqrt{7 - 4\sqrt{3}}} = \frac{1}{\sqrt{7 - 4\sqrt{3}}}$$

Let a be  $7 + 4\sqrt{3}$

$$a = 7 + 4\sqrt{3} = 4 + 3 + 4\sqrt{3}$$

$$a = 4 + (\sqrt{3})^2 + 2 \times (2) \times (\sqrt{3})$$

$$x^2 + y^2 + 2xy = (x + y)^2$$

$$(2)^2 + (\sqrt{3})^2 + 2 \times (2) \times (\sqrt{3}) = (2 + \sqrt{3})^2$$

$$A = (2 + \sqrt{3})^2$$

$$\sqrt{7 + 4\sqrt{3}} = \sqrt{(2 + \sqrt{3})^2} = (2 + \sqrt{3})$$

47. Answer: (A)

The given expression:  $178 \times 593 + 157$

$$\Rightarrow 178 \times 593 + 157 = 105554 + 157 = 105711$$

Hence, the unit digit of the given expression is 1.

48. Answer: (B)

The given expression:  $(3.7)^2 - (1.7)^2$

We know that,

$$(a^2 - b^2) = (a + b)(a - b)$$

$$\Rightarrow (3.7^2 - 1.7^2) = (3.7 + 1.7)(3.7 - 1.7)$$

$$\Rightarrow (3.7^2 - 1.7^2) = 5.4 \times 2 = 10.8$$

49. Answer: (A)

The given expression:  $3^1 + 3^{-1} + 3^2 + 3^{-2}$

$$\Rightarrow 3^1 + 3^{-1} + 3^2 + 3^{-2} = 3 + 1/3 + 9 + 1/9$$

$$\Rightarrow 3^1 + 3^{-1} + 3^2 + 3^{-2} = (27 + 3 + 81 + 1)/9$$

$$\Rightarrow 3^1 + 3^{-1} + 3^2 + 3^{-2} = 112/9$$

50. Answer: (A)

Follow BODMAS rules to solve the equation

Step-1: The part of the equation containing 'Brackets' must be solved first, and in the bracket,  
Step-2: Any mathematical 'Of' or 'Exponent' must be solved next,

Step-3: Next, the parts of the equation that contain 'Division' and 'Multiplication' are solved  
Step-4: At last, the part of the equation that contains 'Addition' and 'Subtraction' should be solved.

$$\Rightarrow (38 \div 19) \times 3 + 5 = 2 \times 3 + 5$$

$$\Rightarrow (2 \times 3) + 5 = 5 + 6 = 11$$

$$\therefore (38 \div 19) \times 3 + 5 = 2 \times 3 + 5 = 11$$

51. Answer: (D)

$$(37 + 23)^2 - (37 - 23)^2 = (60)^2 - (14)^2 = 3600 - 196 = 3404$$

52. Answer: (A)

$$\text{Expression: } \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}}$$

Rationalising the given expression

$$\Rightarrow \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}} = \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}} \times \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} + \sqrt{5}}$$

$$\Rightarrow \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}} = \frac{(\sqrt{7} + \sqrt{5})^2}{(\sqrt{7})^2 - (\sqrt{5})^2}$$

$$\Rightarrow \frac{\sqrt{7} + \sqrt{5}}{\sqrt{7} - \sqrt{5}} = \frac{7 + 5 + 2\sqrt{35}}{7 - 5} = \frac{12 + 2\sqrt{35}}{2} = 6 + \sqrt{35}$$

53. Answer: (A)

Given,

$$A = 2^7 \times 5^2 \text{ and } B = 2^3 \times 5^6$$

$$\Rightarrow A \times B = 2^7 \times 5^2 \times 2^3 \times 5^6$$

$$\Rightarrow A \times B = 2^{(7+3)} \times 5^{(2+6)}$$

$$\Rightarrow A \times B = 2^{10} \times 5^8$$



54. Answer: (A)

Let  $X = \sqrt{5}$  and  $Y = 3\sqrt{9}$

$$X = \sqrt{5} \quad \text{----(1)}$$

By squaring above equation, we get

$$X^2 = 5 \quad \text{----(2)}$$

Now, by cubing the above equation,

$$(X^2)^3 = X^6 = 125$$

Similarly,

$$Y = 3\sqrt{9}$$

By cubing above equation, we get

$$Y^3 = 9 \quad \text{----(2)}$$

Now, by squaring the above equation,

$$(Y^3)^2 = Y^6 = 81$$

$$\therefore X^6 > Y^6$$

$$\text{Hence, } Y > X$$

$$\therefore \sqrt{5} > 3\sqrt{9}$$

55. Answer: (A)

$$\text{Expression: } \frac{(5.2)^3 - (1.7)^3}{(5.2)^2 + 5.2 \times 1.7 + (1.7)^2}$$

We know that,

$$a^3 - b^3 = (a-b)(a^2 + b^2 + ab)$$

$$\Rightarrow \frac{(5.2)^3 - (1.7)^3}{(5.2)^2 + 5.2 \times 1.7 + (1.7)^2}$$

$$= \frac{(5.2-1.7)(5.2)^2 + 5.2 \times 1.7 + (1.7)^2}{(5.2)^2 + 5.2 \times 1.7 + (1.7)^2}$$

$$\Rightarrow \frac{(5.2)^3 - (1.7)^3}{(5.2)^2 + 5.2 \times 1.7 + (1.7)^2} = (5.2-1.7) = 3.5$$

56. Answer: (C)

A number to be a positive factor of  $(2^3 \times 3^2)$  it should be a positive factor of both 2 and 3.

Prime factorisation

$$5 = 5$$

$$8 = 2 \times 2 \times 2$$

$$12 = 2 \times 2 \times 3$$

$$20 = 2 \times 2 \times 5$$

Out of the above numbers, 12 is only one with factors both 2 and 3

$\therefore$  12 in positive factor of  $2^3 \times 3^2$ .

57. Answer: (A)

$$A \times B \times C = 2^3 \times 3^2 \times 2^2 \times 3^5 \times 2^3 \times 3^2$$

$$\Rightarrow A \times B \times C = 2^{3+2+3} \times 3^{2+5+2} = 2^8 \times 3^9$$

58. Answer: (C)

$$\sqrt{18 - 2\sqrt{77}}$$

$$\sqrt{(11 + 7 - 2 \times \sqrt{11} \times \sqrt{7})}$$

$$\sqrt{[(\sqrt{11})^2 + (\sqrt{7})^2 - 2 \times \sqrt{11} \times \sqrt{7}]}$$

$$\therefore a^2 + b^2 - 2ab = (a - b)^2$$

$$\sqrt{(\sqrt{11} - \sqrt{7})^2}$$

$$= \sqrt{11} - \sqrt{7}$$

59. Answer: (C)

$$[(0.4)^3 + (0.6)^3] / [(0.4)^2 + (0.6)^2 - (0.4) \times (0.6)]$$

$$\therefore a^3 + b^3 = (a + b)(a^2 + b^2 - ab)$$

$$(0.4 + 0.6)[(0.4)^2 + (0.6)^2 - (0.4) \times (0.6)] / [(0.4)^2 + (0.6)^2 - (0.4) \times (0.6)]$$

$$= 0.4 + 0.6$$

$$= 1.0$$

60. Answer: (D)

$$\text{Unit digit of } 2^1 = 2$$

$$\text{Unit digit of } 2^2 = 4$$

$$\text{Unit digit of } 2^3 = 8$$

$$\text{Unit digit of } 2^4 = 6$$

$$\text{Unit digit of } 2^5 = 2$$

$$\text{Unit digit of } 2^6 = 4$$

After every fourth multiplication of 2 the same unit digit is repeated.

Dividing 47 by 4 we get remainder 3

So Unit digit of  $2^{47}$  will be equal to unit digit of  $2^3$

$$\text{Unit digit of } 2^{47} = 8$$

$$\text{Unit digit of } 3^1 = 3$$

$$\text{Unit digit of } 3^2 = 9$$

$$\text{Unit digit of } 3^3 = 7$$

$$\text{Unit digit of } 3^4 = 1$$

$$\text{Unit digit of } 3^5 = 3$$

$$\text{Unit digit of } 3^6 = 9$$

As after every fourth multiplication of 3 the same unit digit is repeated.

Dividing 23 by 4 we get remainder 3

Unit digit of  $3^{23}$  will be equal to unit digit of  $3^3$

$$\text{Unit digit of } 3^{23} = 7$$

$$\therefore \text{Unit digit of } 2^{47} \times 3^{23} = \text{Unit digit of } (8 \times 7) = 6$$

61. Answer: (A)

To solve questions of this type, follow the laws of "Surds and indices" given below:

Laws of Indices:

1.  $a^m \times a^n = a^{(m+n)}$
2.  $a^m \div a^n = a^{(m-n)}$
3.  $(a^m)^n = a^{mn}$
4.  $(a)^{-m} = 1/a^m$
5.  $a^0 = 1$
6.  $(a)^{m/n} = n\sqrt[n]{a^m}$

Given:

$$A = 2^7 \times 3^5 \text{ and } B = 3^5 \times 2^3$$

Using laws of indices:

$$A \times B =$$

$$= (2^7 \times 3^5) \times (3^5 \times 2^3)$$

$$= (2)^{7+3} \times (3)^{5+5}$$

$$= 2^{10} \times 3^{10}$$

$$\therefore A \times B = 2^{10} \times 3^{10}$$

62. Answer: (C)

Prime number: A natural number larger than unity is a prime number if it does not have other divisors except for itself and unity.

As properties of prime number (p):

$p > 3$ ,  $p^2 - 1$  is completely divisible by 24.

From options:

$$1) 61$$

$$\Rightarrow (61^2 - 1)/24 = (3721 - 1)/24 = 155$$

$$2) 71$$

$$\Rightarrow (71^2 - 1)/24 = (5041 - 1)/24 = 210$$

$$3) 69$$

$$\Rightarrow (69^2 - 1)/24 = (4761 - 1)/24 = 198.33$$

$$4) 67$$

$$\Rightarrow (67^2 - 1)/24 = (4489 - 1)/24 = 187$$

$\therefore$  From above calculation 69 is not a prime number as it does not satisfy prime number properties.

63. Answer: (C)

1) 2 is a prime number:

Prime number: A natural number larger than unity is a prime number if it does not have other divisors except for itself and unity.

⇒ Factors of 2 = 2 and 1 only.

As it satisfy prime number properties so 2 is a prime number.

2) 4 is a composite number.

Composite number: It is a natural number that has at least one divisor different from unity.

⇒ Factors of 4 = 4, 2 and 1.

So, 4 is a composite number.

∴ Both statements are true.

64. **Answer: (B)**

The given expression is:

$$\Rightarrow ? = (0.2)^2 + (0.02)^2 + (0.002)^2$$

$$\Rightarrow ? = (2 \times 10^{-1})^2 + (0.2 \times 10^{-1})^2 + (0.02 \times 10^{-1})^2$$

$$\Rightarrow ? = (10^{-1})^2 \times [2^2 + 0.2^2 + 0.02^2]$$

$$\Rightarrow ? = 10^{-2} \times [4 + 0.04 + 0.0004]$$

$$\Rightarrow ? = 10^{-2} \times (4.0404)$$

$$\therefore ? = 0.040404$$

65. **Answer: (D)**

$$? = \sqrt{231 + \sqrt{81} + \sqrt{256}}$$

Taking square root

$$? = \sqrt{231 + 9 + 16}$$

$$\Rightarrow ? = \sqrt{256}$$

$$\therefore ? = 16$$

66. **Answer: (B)**

Factors of 132:

$$132 = 132 \times 1 \text{ and } 132 = 66 \times 2$$

$$132 = 44 \times 3 \text{ and } 132 = 33 \times 4$$

$$132 = 22 \times 6 \text{ and } 132 = 11 \times 12$$

$$132 = 12 \times 11 \text{ and } 132 = 6 \times 22$$

$$132 = 3 \times 44 \text{ and } 132 = 2 \times 66$$

Factors of 132 = 132, 66, 44, 33, 22, 12, 11, 6, 4, 3, 2, and 1

∴ Number of factors: 12

67. **Answer: (B)**

Here we use elimination method for finding the square root of 1485961

The unit digit of no. 1485961 is 1

We have 4 options 1213, 1219, 1229 and 1239

We get unit digit 1 when we square a no. that ends with 1 or 9. So, option (1) 1213 is eliminated.

Now we take the square of 1220 that is > 1219 and < 1229

$$\Rightarrow (1220)^2 = 1488400$$

This value 1488400 > 1485961, so we can say that 1485961 is the square of 1219.

68. **Answer: (B)**

$$\sqrt{12} - \frac{1}{\sqrt{3}} = 2\sqrt{3} - \frac{1}{\sqrt{3}} = \frac{6-1}{\sqrt{3}} = \frac{5}{\sqrt{3}}$$

69. **Answer: (B)**

$$\sqrt{405} - \frac{1}{2}\sqrt{80} - \sqrt{125}$$

$$\Rightarrow \sqrt{81 \times 5} - \frac{1}{2}\sqrt{16 \times 5} - \sqrt{25 \times 5}$$

$$\Rightarrow 9\sqrt{5} - \frac{1}{2} \times 4\sqrt{5} - 5\sqrt{5}$$

$$\Rightarrow 9\sqrt{5} - 2\sqrt{5} - 5\sqrt{5}$$

$$\Rightarrow 2\sqrt{5} = 2 \times 2.236 = 4.472$$

70. **Answer: (C)**

Let 3 consecutive odd no. are a, (a + 2) and (a + 4)

$$a^2 + (a + 2)^2 + (a + 4)^2 = 1595$$

$$\Rightarrow a^2 + a^2 + 4 + 4a + a^2 + 16 + 8a = 1595$$

$$\Rightarrow 3a^2 + 12a + 20 = 1595$$

$$\Rightarrow 3a^2 + 12a + 20 - 1595 = 0$$

$$\Rightarrow 3a^2 + 12a - 1575 = 0$$

$$\Rightarrow a^2 + 4a - 525 = 0$$

$$\Rightarrow a^2 + (25 - 21)a - 525 = 0$$

$$\Rightarrow a^2 + 25a - 21a - 525 = 0$$

$$\Rightarrow a(a + 25) - 21(a + 25) = 0$$

$$\Rightarrow (a + 25)(a - 21) = 0$$

$$\Rightarrow a + 25 = 0$$

$$\Rightarrow a = -25$$

$$\Rightarrow a - 21 = 0$$

$$\Rightarrow a = 21$$

So, three consecutive odd no. are a = 21, a + 2 = 23 and a + 4 = 25

71. **Answer: (C)**

$$\text{Value of } 3\sqrt{1331} + \sqrt{729} - 3\sqrt{512} = 11 + 27 - 8 = 30$$

72. **Answer: (C)**

Now, in the above expression, 651 is completely divisible by 7

$$\Rightarrow 651/7 = 93$$

So, the remainder for

$$\frac{550 \times 651 \times 662}{7} = 0$$

73. **Answer: (A)**

We know that

$$(a - b)^3 = a^3 - b^3 - 3ab(a - b)$$

So, (11.998)<sup>3</sup>

$$\Rightarrow (12 - 0.002)^3$$

$$\Rightarrow (12)^3 - (0.002)^3 - 3(12)(0.002)(12 - 0.002)$$

$$\Rightarrow 1728 - 0.000000008 - 0.863856$$

$$\Rightarrow 1727.136$$

74. **Answer: (B)**

$$\sqrt[3]{729} + \sqrt{441} - \sqrt[3]{343} = \sqrt[3]{9^3} + \sqrt{21^2} - \sqrt[3]{7^3} = 9 + 21 - 7 = 23$$

75. **Answer: (A)**

$$\sqrt[3]{\frac{4913}{2197}} = \sqrt[3]{\frac{17 \times 17 \times 17}{13 \times 13 \times 13}} = \frac{17}{13}$$

76. **Answer: (D)**

Let the number be x and y

$$(x + y) = 25 \quad \text{---(1)}$$

$$\Rightarrow (x^2 + y^2) = 313$$

$$\Rightarrow (x + y)^2 = x^2 + y^2 + 2xy$$

$$\Rightarrow (25)^2 = 313 + 2xy$$

$$\Rightarrow xy = 156$$

$$(x + y)^2 - (x - y)^2 = 4xy$$

$$625 - (x - y)^2 = 4 \times 156$$

$$(x - y) = 1 \quad \text{---(2)}$$

From equation 1 & equation 2

$$\therefore x = 13 \text{ \& } y = 12$$

77. Answer: (C)

$$\frac{\sqrt{96} + \sqrt{216}}{\sqrt{24}} = \frac{4\sqrt{6} + 6\sqrt{6}}{2\sqrt{6}} = \frac{10\sqrt{6}}{2\sqrt{6}} = 5$$

78. Answer: (B)

Let the proper fraction be  $x/y$  and its reciprocal be  $y/x$

According to the Question

$$x/y + y/x = 61/30$$

$$\Rightarrow (x^2 + y^2)/xy = 61/30$$

Dividing numerator and denominator by  $y^2$

$$\Rightarrow (x^2/y^2 + 1)/(xy/y^2) = 61/30$$

Let  $x/y = a$

$$\Rightarrow (a^2 + 1)/a = 61/30$$

$$\Rightarrow 30a^2 + 30 - 61a = 0$$

On solving we get

$$a = 1.2 = 6/5 \text{ or, } a = 0.83 = 5/6$$

$$\therefore a = x/y = 5/6$$

79. Answer: (A)

Let the consecutive odd numbers be  $x, x + 2, x + 4, x + 6$

According to the question,

$$x + x + 2 + x + 4 + x + 6 = 208$$

$$\Rightarrow 4x + 12 = 208$$

$$\Rightarrow 4x = 208 - 12$$

$$\Rightarrow 4x = 196$$

$$\Rightarrow x = 196/4 = 49$$

$$\therefore \text{The largest odd number is } x + 6 = 49 + 6 = 55$$

80. Answer: (B)

Given that,

$$2\sqrt[3]{243} + 3\sqrt[3]{9} + \sqrt[3]{1125}$$

$$\Rightarrow 2\sqrt[3]{27 \times 9} + 3\sqrt[3]{9} + \sqrt[3]{125 \times 9}$$

$$\Rightarrow 6\sqrt[3]{9} + 3\sqrt[3]{9} + 5\sqrt[3]{9} = 14\sqrt[3]{9}$$

81. Answer: (D)

Let the number be  $x$

According to the question,

$$x - 39 = 79 - x$$

$$\Rightarrow 2x = 118$$

$$\Rightarrow x = 118/2$$

$$\Rightarrow x = 59$$

$$\therefore \text{the number} = 59$$

**Short trick:**

$$\text{Difference between both no.} = 79 - 39 = 40$$

$$\therefore \text{Required No.} = 39 + \text{difference}/2 = 39 + 40/2 = 59$$

82. Answer: (A)

$$\text{Given, } (1/3.197) = 0.3127$$

$$\therefore (1/0.0003197) = (1/3.197) \times 10000 = 0.3127 \times 10000 = 3127$$

83. Answer: (B)

$$9^x = \sqrt[11]{243}$$

$$\Rightarrow (3)^{22x} = (3)^5$$

$$\Rightarrow x = 5/22$$

$$\therefore \text{The value of } x = 5/22$$

84. Answer: (A)

$$0.000256 = 256/1000000 = 4/15625$$

85. Answer: (A)

We know that,

$$a^3 + b^3 + c^3 = [(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ac)] + 3abc$$

So,

$$57^3 + 59^3 + 109^3$$

$$\Rightarrow [(57 + 59 + 109)(57^2 + 59^2 + 109^2 - 57 \times 59 - 59 \times 109 - 57 \times 109)] + 3 \times 57 \times 59 \times 109$$

$$\Rightarrow 0 + 1099701$$

$$\Rightarrow 1099701$$

86. Answer: (A)

$$\sqrt[3]{3125} + 4\sqrt[3]{25} + 3\sqrt[3]{675}$$

$$\Rightarrow \sqrt[3]{3}(5 \times 5 \times 525) + 4\sqrt[3]{25}$$

$$+ 3\sqrt[3]{(3 \times 3 \times 3 \times 25)}$$

$$\Rightarrow 5\sqrt[3]{25} + 4\sqrt[3]{25} + 9\sqrt[3]{25}$$

$$\Rightarrow 18\sqrt[3]{25}$$

87. Answer: (A)

$$\frac{7x + 9y}{3x - 4y} = \frac{19}{8}$$

$$\Rightarrow 56x + 72y = 57x - 76y$$

$$\Rightarrow 72y + 76y = 57x - 56x$$

$$\Rightarrow 148y = x$$

$$\therefore x/y = 148/1$$

88 Answer: (A)

Let  $[25 + 4\sqrt{39}] = (a + b)^2$ , so square root of this value is  $(a + b)$

$$\text{So } (a + b)^2 = 25 + 4\sqrt{39} = 13 + 12 + 2 \times 2 \times \sqrt{13} \times \sqrt{3}$$

$$\Rightarrow (a + b)^2 = (\sqrt{13})^2 + (2\sqrt{3})^2 + 2 \times \sqrt{13} \times 2\sqrt{3}$$

$$\Rightarrow (a + b)^2 = (\sqrt{13} + 2\sqrt{3})^2$$

$$\therefore (a + b) = \sqrt{13} + 2\sqrt{3}$$

89. Answer: (D)

$$(159)^{144} + (114)^{123} - (110)^{510} + (213)^{25}$$

We will consider the unit digit of each number

$$\Rightarrow (9)^{144} + (4)^{123} - (0)^{510} + (3)^{25}$$

$$\Rightarrow 1 + 4 - 0 + 3$$

(consider only unit place digit of each sum)

$$\Rightarrow 8$$

$\therefore$  The unit place digit in the expression is 8

90. Answer: (D)

Given that,

$$\frac{256}{0.256} = \frac{25.6}{X}$$

$$\Rightarrow x = (25.6 \times 0.256) / 256$$

$$\therefore x = 0.0256$$

91. Answer: (B)

Given that,

$$[(\sqrt{529}) + (\sqrt{5.29}) + (\sqrt{0.0529})]$$

$$\Rightarrow (23 + 2.3 + 0.23) = 25.53$$

$$\therefore \text{answer is } 25.53$$

92. Answer: (D)

Given,

$$\frac{557 \times 653 \times 672}{9}$$

$$(557/9), \text{ then remainder} = 8$$

$$(653/9), \text{ then remainder} = 5$$

$$(672/9), \text{ then remainder} = 6$$

$$\text{Now, } (8 \times 5 \times 6)/9 = 240/9$$

$$\text{If } (240/9), \text{ then remainder} = 6$$

$$\therefore \text{Remainder is } 6$$

93. Answer: (C)

$$\sqrt{1 - \frac{x}{529}} = \frac{16}{23}$$

Squaring on both sides

$$\Rightarrow 1 - (x/529) = (256/529)$$

$$\Rightarrow (x/529) = \{1 - (256/529)\}$$

$$\Rightarrow x/529 = 273/529$$

$$\Rightarrow x = 273$$

$\therefore$  the value of x is 273

94. **Answer: (A)**

$$\therefore \left( \sqrt{3} - \frac{10}{\sqrt{3}} + \sqrt{27} \right) = \frac{3-10}{\sqrt{3}} + 3\sqrt{3} = \frac{7+9}{\sqrt{3}} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{2}}{3} \times \frac{1.732}{3} = 1.154$$

95. **Answer: (A)**

Rationalising each of the values by multiplying and dividing with its conjugate

$$x = [1/(\sqrt{5} + \sqrt{3})] \times [(\sqrt{5} - \sqrt{3}) / (\sqrt{5} - \sqrt{3})] = (\sqrt{5} - \sqrt{3})/2$$

$$y = [1/(\sqrt{7} + \sqrt{5})] \times [(\sqrt{7} - \sqrt{5}) / (\sqrt{7} - \sqrt{5})] = (\sqrt{7} - \sqrt{5})/2$$

$$z = [1/(\sqrt{7} + \sqrt{3})] \times [(\sqrt{7} - \sqrt{3}) / (\sqrt{7} - \sqrt{3})] = (\sqrt{7} - \sqrt{3})/4$$

Adding all the three

$$(x + y + z) = (\sqrt{5} - \sqrt{3})/2 + (\sqrt{7} - \sqrt{5})/2 + (\sqrt{7} - \sqrt{3})/4$$

$$\Rightarrow (x + y + z) = [(2\sqrt{5} - 2\sqrt{3}) + (2\sqrt{7} - 2\sqrt{5}) + (\sqrt{7} - \sqrt{3})]/4$$

$$\Rightarrow (x + y + z) = (3\sqrt{7} - 3\sqrt{3})/4 = (3/4) (\sqrt{7} - \sqrt{3})$$

$$\therefore \text{Value of } x + y + z = (3/4) (\sqrt{7} - \sqrt{3})$$

96. **Answer: (A)**

$$(82)^{102} + (183)^{103}$$

Let's take unit digit of both the no. with their powers

$$(2)^{102} + (3)^{103}$$

The power cycle of 2 and 3 is 4

Now divide their powers by 4 and take their remainder.

$$102 \div 4 \text{ then remainder} = 2$$

$$103 \div 4 \text{ then remainder} = 3$$

Now use these remainder as their power.

$$(2)^2 + (3)^3 = 4 + 27 = 31$$

$$\therefore \text{Unit digit of given equation is} = 1$$

97. **Answer: (C)**

$$\sqrt{5 \sqrt{5 \sqrt{5 \sqrt{5}}}}$$

$$\Rightarrow \sqrt{5 \sqrt{5 \sqrt{5 \times 5^{1/2}}}} = \sqrt{5 \sqrt{5 \sqrt{5^{3/2}}}}$$

$$\Rightarrow \sqrt{5 \sqrt{5 \times 5^{3 \times \frac{1}{2}}}} = \sqrt{5 \sqrt{5^{\frac{7}{2}}}}$$

$$\Rightarrow \sqrt{5 \times 5^{\frac{7}{4}} \times \frac{1}{2}} = \sqrt{5^{\frac{15}{8}}}$$

$$\Rightarrow 5^{\frac{15}{8} \times \frac{1}{2}} = 5^{\frac{15}{16}}$$

98. **Ans.(D)**

$$202.4 \div x = 5.06$$

$$\Rightarrow \frac{202.4}{x} = 5.06$$

$$\Rightarrow x = \frac{202.4}{5.06}$$

$$\Rightarrow x = \frac{20240}{506}$$

$$x = 40$$

99. **Ans.(B) :**

$$\sqrt{19600} + \sqrt{0.0196} + \sqrt{0.00000196}$$

$$= 140 + 0.14 + 0.0014$$

$$= 140.1414$$

100. **Ans.(A)**

By question -

$$\frac{144}{144 \times 100} = \frac{14.4}{x}$$

$$\frac{1.44}{144 \times 100} = \frac{x}{144} \Rightarrow \frac{144}{x \times 10} \text{ or } x = \frac{144 \times 144}{144 \times 100 \times 10}$$

$$x = 0.144$$