# 13 POWER, INDICES & SURDS

## Year : 1999

1. By how much does $\sqrt{12}+\sqrt{18}$ excced $\sqrt{3}+\sqrt{2}$ ?

$\sqrt{3}+\sqrt{2}$ से $\sqrt{12}+\sqrt{18}$ कितना अधिक है?

(a) $2(\sqrt{3}-\sqrt{2})$ (b) $2(\sqrt{3}+\sqrt{2})$

(c) $\sqrt{3}+2\sqrt{2}$ (d) $\sqrt{3}-2\sqrt{2}$

2. The value of $\sqrt{5+2\sqrt{6}}-\frac{1}{\sqrt{5+2\sqrt{6}}}$ is:

$\sqrt{5+2\sqrt{6}}-\frac{1}{\sqrt{5+2\sqrt{6}}}$ का मान क्या है?

(a) $2\sqrt{2}$ (b) $2\sqrt{3}$

(c) $1+\sqrt{5}$ (d) $\sqrt{5}-1$

3. The value of $\sqrt{2^4}+\sqrt[3]{64}+\sqrt[4]{2^8}$ is :

$\sqrt{2^4}+\sqrt[3]{64}+\sqrt[4]{2^8}$ का मान क्या है?

(a) 12 (b) 16 (c) 18 (d) 24

4. $2\sqrt[3]{32}-3\sqrt[3]{4}+\sqrt[3]{500}$ is equal to :

$2\sqrt[3]{32}-3\sqrt[3]{4}+\sqrt[3]{500}$ के बराबर है?

(a) $4\sqrt[3]{6}$ (b) $3\sqrt{24}$

(c) $6\sqrt[3]{4}$ (d) 916

5. Simplify : $\left(\frac{\frac{3}{2+\sqrt{3}}-\frac{2}{2-\sqrt{3}}}{2-5\sqrt{3}}\right)$

सरल करें : $\left(\frac{\frac{3}{2+\sqrt{3}}-\frac{2}{2-\sqrt{3}}}{2-5\sqrt{3}}\right)$

(a) $\frac{1}{2}-5\sqrt{3}$ (b) $2-5\sqrt{3}$

(c) 1 (d) 0

6. The value of $(243)^{0.16}\times(243)^{0.04}$ is equal to :

$(243)^{0.16}\times(243)^{0.04}$ का मान किसके बराबर है?

(a) 0.16 (b) 3 (c) $\frac{1}{3}$ (d) 0.04

7. The value of $(256)^{0.16}\times(256)^{0.09}$ is

$(256)^{0.16}\times(256)^{0.09}$ का मान क्या है?

(a) 256.25 (b) 64 (c) 16 (d) 4

8. The simplification of

$$\frac{0.06\times0.06\times0.06-0.05\times0.05\times0.05}{0.06\times0.06+0.06\times0.05+0.05\times0.05}$$

$$\frac{0.06\times0.06\times0.06-0.05\times0.05\times0.05}{0.06\times0.06+0.06\times0.05+0.05\times0.05}$$

का सरलीकरण है?

(a) 1 (b) 0.1

(c) 0.01 (d) 0.001

9. Simplify :

$$\frac{0.05\times0.05\times0.05-0.04\times0.04\times0.04}{0.05\times0.05+0.002+0.04\times0.04}$$

सरल करें :

$$\frac{0.05\times0.05\times0.05-0.04\times0.04\times0.04}{0.05\times0.05+0.002+0.04\times0.04}$$

(a) 1 (b) 0.1

(c) 0.01 (d) 0.001

10. Simplify ( सरल करें )

$$\frac{5.32\times56+5.32\times44}{(7.66)^2-(2.34)^2}$$

(a) 7.2 (b) 8.5 (c) 10 (d) 12

11. Which one of the following is the least ?

$\sqrt{3}, \sqrt[3]{2}, \sqrt{2}$ and $\sqrt[4]{4}$

इनमें से सबसे छोटी संख्या कौन सी है?

$\sqrt{3}, \sqrt[3]{2}, \sqrt{2}$ and $\sqrt[4]{4}$

(a) $\sqrt{2}$ (b) $\sqrt[3]{2}$

(c) $\sqrt{3}$ (d) $\sqrt[4]{3}$

12. Which one of the following is the biggest ?

$\sqrt[3]{4}$, $\sqrt[4]{6}$, $\sqrt[6]{15}$, and $\sqrt[12]{245}$.

इनमें से सबसे बड़ा कौन सा है?

$\sqrt[3]{4}$, $\sqrt[4]{6}$, $\sqrt[6]{15}$, and $\sqrt[12]{245}$.

(a) $\sqrt[3]{4}$ (b) $\sqrt[4]{6}$

(c) $\sqrt[6]{15}$ (d) $\sqrt[12]{245}$

13. Simplify (सरल करें ) :

$$\left[\sqrt[3]{\sqrt[6]{5^{-9}}}\right]^4\left[\sqrt[3]{\sqrt[6]{5^{-9}}}\right]^4$$

(a) $5^2$ (b) $5^4$ (c) $5^8$ (d) $5^{12}$

14. If $27^{2n-1}=(243)^3$ then the value of $n$ is :

यदि $27^{2n-1}=(243)^3$ है, तो $n$ का मान ज्ञात करें।

(a) 3 (b) 6 (c) 7 (d) 9

15. If $3^{x+8}=27^{2x+1}$, the value of $x$ is :

यदि $3^{x+8}=27^{2x+1}$ है, तो $x$ का मान क्या है?

(a) 7 (b) 3 (c) –2 (d) 1

## Year : 2000

16. $\left(\sqrt{8}-\sqrt{4}-\sqrt{2}\right)$ equals :

$\left(\sqrt{8}-\sqrt{4}-\sqrt{2}\right)$ के बराबर है?

(a) $2-\sqrt{2}$ (b) $\sqrt{2}-2$

(c) 2 (d) – 2

17. $8^{2/3}$ is equal to :

$8^{2/3}$ के बराबर है?

(a) $5\frac{1}{2}$ (b) $21\frac{1}{3}$

(c) 4 (d) $3\frac{1}{2}$

18. The simplified form of $\left(16^{3/2}+16^{-3/2}\right)$ is :

$\left(16^{3/2}+16^{-3/2}\right)$ का सरलीकृत मान है?

(a) 0 (b) $\frac{4097}{64}$

(c) 1 (d) $\frac{16}{4097}$

19. $16^{3/4}$ is equal to :

$16^{3/4}$ के बराबर है?

(a) $4\sqrt{2}$ (b) 8 (c) $2\sqrt{2}$ (d) 16

20. $(0.01024)^{1/5}$ is equal to :

$(0.01024)^{1/5}$ के बराबर है?

(a) 4.0 (d) 0.04

(c) 0.4 (d) 0.00004

21. $(16^{0.16}\times2^{0.36})$ is equal to

$(16^{0.16}\times2^{0.36})$ के बराबर है?

(a) 2 (b) 16 (c) 32 (d) 64

22. $(64)^{-\frac{2}{3}}\times\left(\frac{1}{4}\right)^{-2}$ is equal to :

$(64)^{-\frac{2}{3}}\times\left(\frac{1}{4}\right)^{-2}$ के बराबर है?

(a) 1 (b) 2 (c) $\frac{1}{2}$ (d) $\frac{1}{16}$

23. $\left(\frac{1+\sqrt{2}}{\sqrt{5}+\sqrt{3}}+\frac{1-\sqrt{2}}{\sqrt{5}-\sqrt{3}}\right)$ simplifies to :

$\left(\frac{1+\sqrt{2}}{\sqrt{5}+\sqrt{3}}+\frac{1-\sqrt{2}}{\sqrt{5}-\sqrt{3}}\right)$ का सरलीकरण है?

(a) $\sqrt{5}+\sqrt{6}$ (b) $2\sqrt{5}+\sqrt{6}$

(c) $\sqrt{5}-\sqrt{6}$ (d) $2\sqrt{5}-3\sqrt{6}$

24. $\left(\frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2-\sqrt{3}}{2+\sqrt{3}}+\frac{\sqrt{3}-1}{\sqrt{3}+1}\right)$ simplifies to :

$\left(\frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2-\sqrt{3}}{2+\sqrt{3}}+\frac{\sqrt{3}-1}{\sqrt{3}+1}\right)$ का सरलीकरण है?

(a) $2-\sqrt{3}$ (b) $2+\sqrt{3}$

(c) $16-\sqrt{3}$ (d) $40-\sqrt{3}$

25. $\left(\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}\right)^2+\left(\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}\right)^2$ is equal to:

$\left(\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}\right)^2+\left(\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}\right)^2$ के बराबर है?

(a) 64 (b) 62 (c) 66 (d) 68

26. (6.5 ×6.5–45.5+3.5×3.5) is equal to :
(6.5 ×6.5–45.5+3.5×3.5) के बराबर है?

(a) 10 (b) 9 (c) 7 (d) 6

27. (7.5 × 7.5 +37.5 +2.5 × 2.5) is equal to:
(7.5 × 7.5 +37.5 +2.5 × 2.5) के बराबर है?

(a) 100 (b) 80 (c) 60 (d) 30

28. $(36)^{\frac{1}{6}}$ is equal to :

$(36)^{\frac{1}{6}}$ के बराबर है?

(a) 1 (b) 6

(c) $\sqrt{6}$ (d) $\sqrt[3]{6}$

29. $\left(\frac{8}{125}\right)^{-\frac{4}{3}}$ simplifies to :

$\left(\frac{8}{125}\right)^{-\frac{4}{3}}$ का सरलीकरण है?

(a) $\frac{625}{16}$ (b) $\frac{625}{8}$

(c) $\frac{625}{32}$ (d) $\frac{16}{625}$

## Year : 2002

30. The value of
$(256)^{0.16}\times(16)^{0.18}$ is :
$(256)^{0.16}\times(16)^{0.18}$ का मान ज्ञात करें।

(a) 4 (b) – 4

(c) 16 (d) 256

31. The value of

$\sqrt{\frac{\left(\sqrt{12}-\sqrt{8}\right)\left(\sqrt{3}+\sqrt{2}\right)}{5+\sqrt{24}}}$ is :

$\sqrt{\frac{\left(\sqrt{12}-\sqrt{8}\right)\left(\sqrt{3}+\sqrt{2}\right)}{5+\sqrt{24}}}$ का मान ज्ञात करें।

(a) $\sqrt{6}-\sqrt{2}$ (b) $\sqrt{6}+\sqrt{2}$

(c) $\sqrt{6}-2$ (d) $2-\sqrt{6}$

32. Simplify ( सरल करें ):

$\left[64^{\frac{2}{3}}\times 2^{-2}\div 8^{0}\right]^{\frac{1}{2}}$

(a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

33. The value of

$\frac{1}{\sqrt{\left(12-\sqrt{140}\right)}}-\frac{1}{\sqrt{\left(8-\sqrt{60}\right)}}-\frac{2}{\sqrt{10+\sqrt{84}}}$

is :

$\frac{1}{\sqrt{\left(12-\sqrt{140}\right)}}-\frac{1}{\sqrt{\left(8-\sqrt{60}\right)}}-\frac{2}{\sqrt{10+\sqrt{84}}}$

का मान ज्ञात करें।

(a) 0 (b) 1 (c) 2 (d) 3

34. The value of

$\sqrt{11+2\sqrt{30}}-\frac{1}{\sqrt{11+2\sqrt{30}}}$ is

$\sqrt{11+2\sqrt{30}}-\frac{1}{\sqrt{11+2\sqrt{30}}}$ का मान ज्ञात करें।

(a) $2\sqrt{5}$ (b) $2\sqrt{6}$

(c) $1+\sqrt{6}$ (d) $1+\sqrt{5}$

35. Simplify ( सरल करें )

$\frac{(1.5)^3+(4.7)^3+(3.8)^3-3\times1.5\times4.7\times3.8}{(1.5)^2+(4.7)^2+(3.8)^2-1.5\times4.7-4.7\times3.8-3.8\times1.5}$

(a) 0 (b) 1 (c) 10 (d) 30

36. Simplify ( सरल करें ) :

$\frac{(6.25)^{\frac{1}{2}}(0.0144)^{\frac{1}{2}}+1}{(0.027)^{\frac{1}{3}}\times(81)^{\frac{1}{4}}}$

(a) 0.14 (b) 1.4 (c) 1 (d) $1.\overline{4}$

37. Simplify ( सरल करें ):

$\frac{0.41\times0.41\times0.41+0.69\times0.69\times0.69}{0.41\times0.41-0.41\times0.69+0.69+0.69}$

(a) 0.28 (b) 1.41

(c) 1.1 (d) 2.8

38. Which of the following number is the least ?

$(0.5)^2$, $\sqrt{0.49}$, $\sqrt[3]{0.008}$, 0.23

इनमें से सबसे छोटी संख्या कौन सी है?

$(0.5)^2$, $\sqrt{0.49}$, $\sqrt[3]{0.008}$, 0.23

(a) $(0.5)^2$ (b) $\sqrt{0.49}$

(c) $\sqrt[3]{0.008}$ (d) 0.23

39. Arrange the following in descending order : $\sqrt[3]{4}, \sqrt{2}, \sqrt[6]{3}, \sqrt[4]{5}$

निम्न संख्याओं को अवरोही क्रम में लिखे:- $\sqrt[3]{4}, \sqrt{2}, \sqrt[6]{3}, \sqrt[4]{5}$

(a) $\sqrt[3]{4} > \sqrt[4]{5} > \sqrt{2} > \sqrt[6]{3}$

(b) $\sqrt[4]{5} > \sqrt[3]{4} > \sqrt[6]{3} > \sqrt{2}$

(c) $\sqrt{2} > \sqrt[4]{5} > \sqrt[3]{4} > \sqrt{2}$

(d) $\sqrt{2} > \sqrt[4]{5} > \sqrt[3]{4} > \sqrt{2}$

40. The greatest of the numbers $(2.89)^{0.5}$, $2-(0.5)^2$,

$1+\frac{0.5}{1-\frac{1}{2}}$, $\sqrt{3}$ is :

इनमें से सबसे बड़ी संख्या कौन-सी है:- $(2.89)^{0.5}$, $2-(0.5)^2$,

$1+\frac{0.5}{1-\frac{1}{2}}$, $\sqrt{3}$

(a) (2.89)0.5 (b) $2-(0.5)^2$

(c) $1+\frac{0.5}{1-\frac{1}{2}}$, (d) $\sqrt{3}$

41. Among $\sqrt{2}, \sqrt[3]{3}, \sqrt[4]{5}, \sqrt[2]{2}$ which one is the greatest ?

इनमें से सबसे बड़ी संख्या कौन-सी है:- $\sqrt{2}, \sqrt[3]{3}, \sqrt[4]{5}, \sqrt[2]{2}$

(a) $\sqrt[4]{5}$ (b) $\sqrt{2}$

(c) $\sqrt[3]{3}$ (d) $\sqrt[2]{2}$

42. If $(125)^{2/3}\times(625)^{-1/4}=(5)^x$, then the value of $x$ is

यदि $(125)^{2/3}\times(625)^{-1/4}=(5)^x$ है, तो $x$ का मान ज्ञात करें।

(a) 3 (b) 2 (c) 0 (d) 1

43. The value of

$\frac{(243)^{0.13}\times(243)^{0.07}}{(7)^{0.25}\times(49)^{0.075}\times(343)^{0.2}}$

$\frac{(243)^{0.13}\times(243)^{0.07}}{(7)^{0.25}\times(49)^{0.075}\times(343)^{0.2}}$ का मान ज्ञात करें।

(a) $\frac{3}{7}$ (b) $\frac{7}{3}$

(c) $1\frac{3}{7}$ (d) $2\frac{2}{7}$

44. The value of :

$\sqrt{-\sqrt{3}+\sqrt{3+8\sqrt{7+4\sqrt{3}}}}$ is

$\sqrt{-\sqrt{3}+\sqrt{3+8\sqrt{7+4\sqrt{3}}}}$ का मान ज्ञात करें।

(a) 1 (b) 2 (c) 3 (d) 8

45. $\sqrt{\sqrt[3]{0.004096}}$ is equal to

$\sqrt{\sqrt[3]{0.004096}}$ के बराबर है।

(a) 4 (b) 0.4
(c) 0.04 (d) 0.004

46. The **approximate** value of

$\frac{3\sqrt{12}}{2\sqrt{28}}\div\frac{2\sqrt{21}}{\sqrt{98}}$ is

$\frac{3\sqrt{12}}{2\sqrt{28}}\div\frac{2\sqrt{21}}{\sqrt{98}}$ का मान लगभग क्या होगा?

(a) 1.0727 (b) 1.0606
(c) 1.6026 (d) 1.6007

47. $\frac{2.3\times2.3\times2.3-1}{2.3\times2.3+2.3+1}$ is equal to

$\frac{2.3\times2.3\times2.3-1}{2.3\times2.3+2.3+1}$ के बराबर है।

(a) 1.3 (b) 3.3 (c) 0.3 (d) 2.2

48. The ascending order of

$(2.89)^{0.5}, 2-(0.5)^2, \sqrt{3}$ and $\sqrt[3]{0.008}$ is

$(2.89)^{0.5}, 2-(0.5)^2, \sqrt{3}$ और $\sqrt[3]{0.008}$ को आरोही क्रम में लिखें।

(a) $2-(0.5)^2$, $\sqrt{3}$, $\sqrt[3]{0.008}$, $(2.89)^{0.5}$

(b) $\sqrt[3]{0.008}$, $(2.89)^{0.5}$, $\sqrt{3}$, $2-(0.5)^2$

(c) $\sqrt[3]{0.008}$, $\sqrt{3}$, $(2.89)^{0.5}$, $2-(0.5)^2$

(d) $\sqrt{3}$, $\sqrt[3]{0.008}$, $2-(0.5)^2$

49. The greatest one of $\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[6]{6}$, $\sqrt[5]{5}$ is

इनमें से सबसे बड़ी संख्या कौन सी है:-

$\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[6]{6}$, $\sqrt[5]{5}$

(a) $\sqrt{2}$ (b) $\sqrt[3]{3}$

(c) $\sqrt[6]{6}$ (d) $\sqrt[5]{5}$

50. Given $\sqrt{2}=1.414$. The value of

$\sqrt{8}+2\sqrt{32}-3\sqrt{128}+4\sqrt{50}$ is

दिया गया है $\sqrt{2}=1.414$, तो

$\sqrt{8}+2\sqrt{32}-3\sqrt{128}+4\sqrt{50}$ का मान ज्ञात करें।

(a) 8.484 (b) 8.526
(c) 8.426 (d) 8.876

51. If $\sqrt{15}=3.88$, then what is the value of $\sqrt{\frac{5}{3}}$

यदि $\sqrt{15}=3.88$ है, तो $\sqrt{\frac{5}{3}}$ का मान क्या है?

(a) $1.29\overline{3}$ (b) 1.2934
(c) 1.29 (d) 1.295

52. The rationalising factor of $3\sqrt{3}$ is

$3\sqrt{3}$ का परिमेयकारी गुणनखण्ड ज्ञात करें।

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

(c) $-3$ (d) $\sqrt{3}$

53. $\sqrt{2+\sqrt{2+\sqrt{2+.....}}}$ is equal to

$\sqrt{2+\sqrt{2+\sqrt{2+.....}}}$ के बराबर है।

(a) $\sqrt{2}$ (b) $2\sqrt{2}$

(c) 2 (d) 3

## Year : 2004

54. The value of $2+\sqrt{0.09}-\sqrt[3]{0.008}$ –75% of 2.80 is

$2+\sqrt{0.09}-\sqrt[3]{0.008}$ –75% of 2.80 का मान ज्ञात करें।

(a) [illegible] (b) 0.01
(c) [illegible] (d) 0.001

55. The value of

$\left(\sqrt[3]{3.5}+\sqrt[3]{2.5}\right)$

$\left\{\left(\sqrt[3]{3.5}\right)^2-\sqrt[3]{8.75}+\left(\sqrt[3]{2.5}\right)^2\right\}$ is :

$\left(\sqrt[3]{3.5}+\sqrt[3]{2.5}\right)$

$\left\{\left(\sqrt[3]{3.5}\right)^2-\sqrt[3]{8.75}+\left(\sqrt[3]{2.5}\right)^2\right\}$ का मान ज्ञात करें।

(a) 5.375 (b) 1 (c) 6 (d) 5

56. The value of

$\left(3+2\sqrt{2}\right)^{-3}+\left(3-2\sqrt{2}\right)^{-3}$ is

$\left(3+2\sqrt{2}\right)^{-3}+\left(3-2\sqrt{2}\right)^{-3}$ का मान ज्ञात करें।

(a) 189 (b) 180
(c) 108 (d) 198

57. $\frac{\sqrt{5}}{\sqrt{3}+\sqrt{2}}-\frac{3\sqrt{3}}{\sqrt{5}+\sqrt{2}}+\frac{2\sqrt{2}}{\sqrt{5}+\sqrt{3}}$ is equal to :

$\frac{\sqrt{5}}{\sqrt{3}+\sqrt{2}}-\frac{3\sqrt{3}}{\sqrt{5}+\sqrt{2}}+\frac{2\sqrt{2}}{\sqrt{5}+\sqrt{3}}$ के बराबर है।

(a) 0 (b) $2\sqrt{15}$

(c) $2\sqrt{10}$ (d) $2\sqrt{6}$

58. The value of

$\frac{1}{\sqrt{3.25}+\sqrt{2.25}}-\frac{1}{\sqrt{4.25}+\sqrt{3.25}}+$

$\frac{1}{\sqrt{5.25}+\sqrt{4.25}}+\frac{1}{\sqrt{6.25}+\sqrt{5.25}}$ is :

$\frac{1}{\sqrt{3.25}+\sqrt{2.25}}+\frac{1}{\sqrt{4.25}+\sqrt{3.25}}+$

$\frac{1}{\sqrt{5.25}+\sqrt{4.25}}+\frac{1}{\sqrt{6.25}+\sqrt{5.25}}$ का मान ज्ञात करें।

(a) 1.00 (b) 1.25
(c) 1.50 (d) 2.25

59. $\frac{3^0+3^{-1}}{3^{-1}-3^0}$ is simplified to

$\frac{3^0+3^{-1}}{3^{-1}-3^0}$ का सरलीकरण क्या है?

(a) $-2$ (b) $-1$
(c) 1 (d) 2

60. $\frac{10.3\times10.3\times10.3+1}{10.3\times10.3-10.3+1}$ is equal to

$\frac{10.3\times10.3\times10.3+1}{10.3\times10.3-10.3+1}$ के बराबर है।

(a) 9.3 (b) 10.3
(c) 11.3 (d) 12.3

61. $\frac{1.49\times14.9-0.51\times5.1}{14.9-5.1}$ is equal to:

$\frac{1.49\times14.9-0.51\times5.1}{14.9-5.1}$ के बराबर है।

(a) 0.20 (b) 20.00
(c) 2.00 (d) 22.00

62. $(0.04)^{-1.5}$ on simplification gives :

$(0.04)^{-1.5}$ को हल करने पर प्राप्त होगा:-

(a) 25 (b) 125
(c) 250 (d) 625

63. $\frac{(0.96)^3-(0.1)^3}{(0.96)^2+0.096+(0.1)^2}$ is simplified to :

सरल करें: $\frac{(0.96)^3-(0.1)^3}{(0.96)^2+0.096+(0.1)^2}$

(a) 1.06 (b) 0.95
(c) 0.86 (d) 0.97

64. The value of $\frac{64-0.008}{16+0.8+0.04}$ is :

$\frac{64-0.008}{16+0.8+0.04}$ का मान क्या है?

(a) 2 (b) 3.8
(c) 0.6 (d) 4.2

## Year : 2005

65. When $\left(4+\sqrt{7}\right)$ is presented in the form of perfect square it will be equal to :

जब $\left(4+\sqrt{7}\right)$ को पूर्ण वर्ग के रूप में लिखा जाता है तो वह निम्न में से किसके बराबर होगा?

(a) $\left(2+\sqrt{7}\right)^2$ (b) $\left(\frac{\sqrt{7}}{2}+\frac{1}{2}\right)^2$

(c) $\left\{\frac{1}{\sqrt{2}}\left(\sqrt{7}+1\right)\right\}^2$ (d) $\left(\sqrt{3}+\sqrt{4}\right)^2$

66. The simplified form of

$\frac{2}{\sqrt{7}+\sqrt{5}}+\frac{7}{\sqrt{12}-\sqrt{5}}-\frac{5}{\sqrt{12}-\sqrt{7}}$ is :

$\frac{2}{\sqrt{7}+\sqrt{5}}+\frac{7}{\sqrt{12}-\sqrt{5}}-\frac{5}{\sqrt{12}-\sqrt{7}}$ का सरलीकरण क्या होगा?

(a) 5 (b) 2 (c) 1 (d) 0

67. $\left(\frac{1}{2}\right)^{\frac{1}{2}}$ is equal to

$\left(\frac{1}{2}\right)^{\frac{1}{2}}$ के बराबर है।

(a) $\frac{1}{\sqrt{2}}$ (b) $2\sqrt{2}$

(c) $\sqrt{2}$ (d) $\frac{1}{2}$

68. $\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{4}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{6}}$

$+\frac{1}{\sqrt{6}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{9}}$ is

$\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{4}+\sqrt{5}}+\frac{1}{\sqrt{5}+\sqrt{6}}$

$+\frac{1}{\sqrt{6}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{9}}$

(भाना होगा)

(a) $\sqrt{3}$ (b) $3\sqrt{3}$

(c) $3-\sqrt{3}$ (d) $5-\sqrt{3}$

69. $(16)^{0.16}\times(16)^{0.04}\times(2)^{0.2}$ is equal to :

$(16)^{0.16}\times(16)^{0.04}\times(2)^{0.2}$ के बराबर है।

(a) 1 (b) 2
(c) 4 (d) 16

70. Simplify (सरल करें):-

$\frac{1}{\sqrt{100}-\sqrt{99}}-\frac{1}{\sqrt{99}-\sqrt{98}}$

$+\frac{1}{\sqrt{98}-\sqrt{97}}-\frac{1}{\sqrt{97}-\sqrt{96}}$

$+\ldots+\frac{1}{\sqrt{2}-\sqrt{1}}$

(a) 10 (b) 9 (c) 13 (d) 11

71. $\left[\frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}}+\frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right]$ in simplified form equals to :

$\left[\frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}}+\frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right]$ का सरलीकृत मान किसके बराबर है?

(a) 1 (b) $\sqrt{2}$

(c) $\frac{1}{\sqrt{2}}$ (d) 0

72. $\left[\sqrt[3]{2}\times\sqrt{2}\times\sqrt[3]{3}\times\sqrt{3}\right]$ is equal to

$\left[\sqrt[3]{2}\times\sqrt{2}\times\sqrt[3]{3}\times\sqrt{3}\right]$ के बराबर है।

(a) $6^5$ (b) $6^{5/6}$
(c) 6 (d) None of these (इनमें से कोई नहीं)

73. $\left\{(-2)^{(-2)}\right\}^{(-2)}$ is equal to :

$\left\{(-2)^{(-2)}\right\}^{(-2)}$ के बराबर है।

(a) 16 (b) 8
(c) – 8 (d) –1

74. The value of

$\frac{0.796\times0.796-0.204\times0.204}{0.796-0.204}$ is

$\frac{0.796\times0.796-0.204\times0.204}{0.796-0.204}$ का मान क्या है?

(a) 0.408 (b) 0.59
(c) 0.592 (d) 1

75. $\frac{(2.3)^3+0.027}{(2.3)^2-0.69+0.09}$ is equal to :

$\frac{(2.3)^3+0.027}{(2.3)^2-0.69+0.09}$ के बराबर है।

(a) 2.60 (b) 2.00
(c) 2.33 (d) 2.80

76. $\frac{5.71\times5.71\times5.71-2.79\times2.79\times2.79}{5.71\times5.71+5.71\times2.79+2.79\times2.79}$ in simplified form is :

$\frac{5.71\times5.71\times5.71-2.79\times2.79\times2.79}{5.71\times5.71+5.71\times2.79+2.79\times2.79}$ का सरलीकृत मान क्या है?

(a) 8.5 (b) 8.6
(c) 2.82 (d) 2.92

77. The value of

$\frac{(1.5)^3+(4.7)^3+(3.8)^3-3\times1.5\times4.7\times3.8}{(1.5)^2+(4.7)^2+(3.8)^2-1.5\times4.7-4.7\times3.8-3.8\times1.5}$ is :

$\frac{(1.5)^3+(4.7)^3+(3.8)^3-3\times1.5\times4.7\times3.8}{(1.5)^2+(4.7)^2+(3.8)^2-1.5\times4.7-4.7\times3.8-3.8\times1.5}$ का मान ज्ञात करें।

(a) 0 (b) 1 (c) 10 (d) 30

78. $\left[\frac{(0.73)^3+(0.27)^3}{(0.73)^2+(0.27)^2-(0.73)\times(0.27)}\right]$ simplifies to (का सरलीकरण क्या है?)

(a) 1 (b) 0.4087
(c) 0.73 (d) 0.27

79. $[3-4(3-4)^{-1}]^{-1}$ is equal to :

$[3-4(3-4)^{-1}]^{-1}$ के बराबर है।

(a) 7 (b) –7

(c) $\frac{1}{7}$ (d) $-\frac{1}{7}$

80. What will be the number of two digits made from the units and tens digits of the expression $2^{12n}-6^{4n}$ where n is a positive integer ?

दो अंको को वह कौन सी संख्या है जो व्यंजक $2^{12n}-6^{4n}$ के ईकाई तथा दहाई अंक से बना है, जहाँ n एक धनात्मक पूर्णांक है।

(a) 10 (b) 100
(c) 30 (d) 02

81. The smallest of $\sqrt{8}+\sqrt{5}$, $\sqrt{7}+\sqrt{6}$, $\sqrt{10}+\sqrt{3}$ and $\sqrt{11}+\sqrt{2}$ is :

इनमें से सबसे छोटी संख्या क्या है:- $\sqrt{8}+\sqrt{5}$, $\sqrt{7}+\sqrt{6}$, $\sqrt{10}+\sqrt{3}$ तथा $\sqrt{11}+\sqrt{2}$

(a) $\sqrt{8}+\sqrt{5}$ (b) $\sqrt{7}+\sqrt{6}$
(c) $\sqrt{10}+\sqrt{3}$ (d) $\sqrt{11}+\sqrt{2}$

82. Which of the followinng is the largest number ?

$\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[4]{4}$, $\sqrt[6]{6}$

$\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[4]{4}$, $\sqrt[6]{6}$ इनमें से सबसे बड़ी संख्या कौन-सी है?

(a) $\sqrt{2}$ (b) $\sqrt[3]{3}$

(c) $\sqrt[4]{4}$ (d) $\sqrt[6]{6}$

83. Which is the greatest among

$(\sqrt{19}-\sqrt{17})$, $(\sqrt{13}-\sqrt{11})$, $(\sqrt{7}-\sqrt{5})$ and $(\sqrt{5}-\sqrt{3})$ ?

$(\sqrt{19}-\sqrt{17})$, $(\sqrt{13}-\sqrt{11})$, $(\sqrt{7}-\sqrt{5})$ तथा $(\sqrt{5}-\sqrt{3})$ ? इनमें से सबसे बड़ी संख्या कौन-सी है।

(a) $\sqrt{19}-\sqrt{17}$ (b) $\sqrt{13}-\sqrt{11}$

(c) $\sqrt{7}-\sqrt{5}$ (d) $\sqrt{5}-\sqrt{3}$

84. The greatest number among $\sqrt[3]{2}, \sqrt{3}, \sqrt[3]{5}$ and 1.5 is :

$\sqrt[3]{2}, \sqrt{3}, \sqrt[3]{5}$ और 1.5 इनमें से सबसे बड़ी संख्या कौन-सी है।

(a) $\sqrt[3]{2}$ (b) $\sqrt[3]{5}$

(c) $\sqrt{3}$ (d) 1.5

85. The greatest of

$\sqrt{2}$, $\sqrt[6]{3}$, $\sqrt[3]{4}$, $\sqrt[4]{5}$ is

$\sqrt{2}$, $\sqrt[6]{3}$, $\sqrt[3]{4}$, $\sqrt[4]{5}$ इनमें से सबसे बड़ी संख्या है:

(a) $\sqrt{2}$ (b) $\sqrt[6]{6}$

(c) $\sqrt[3]{4}$ (d) $\sqrt[6]{8}$

86. If $x = \dfrac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$ and $y = \dfrac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$ then (x+y) equals:

यदि $x = \dfrac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$ और $y = \dfrac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$ है, (x+y) का मान क्या है?

(a) 8 (b) 16

(c) $2\sqrt{15}$ (d) $2(\sqrt{5}+\sqrt{3})$

87. Which of the following is closest to $\sqrt{3}$ ?

इनमें से कौन-सी संख्या $\sqrt{3}$ के निकटतम है?

(a) $\dfrac{9}{5}$ (b) 1.75

(c) $\dfrac{173}{100}$ (d) 1.69

## Year : 2006

88. $0.75 \times 0.75 - 2 \times 0.75 \times 0.25 + 0.25 \times 0.25$ is equal to

$0.75 \times 0.75 - 2 \times 0.75 \times 0.25 + 0.25 \times 0.25$ के बराबर है।

(a) 250 (b) 2500

(c) 2.5 (d) 0.25

89. The greatest one of $\sqrt{4}$, $\sqrt[3]{4}$, $\sqrt[4]{6}$ and $\sqrt[6]{8}$ is

इनमें से सबसे बड़ी संख्या कौन सी है:- $\sqrt{4}$, $\sqrt[3]{4}$, $\sqrt[4]{6}$ और $\sqrt[6]{8}$

(a) $\sqrt{4}$ (b) $\sqrt[3]{4}$

(c) $\sqrt[4]{6}$ (d) $\sqrt[6]{8}$

## Year : 2007

90. $\dfrac{12}{3+\sqrt{5}+2\sqrt{2}}$ is equal to

$\dfrac{12}{3+\sqrt{5}+2\sqrt{2}}$ के बराबर है।

(a) $1-\sqrt{5}+\sqrt{2}+\sqrt{16}$

(b) $1+\sqrt{5}+\sqrt{2}-\sqrt{10}$

(c) $1+\sqrt{5}+\sqrt{2}+\sqrt{10}$

(d) $1-\sqrt{5}-\sqrt{2}+\sqrt{10}$

91. $\left(3+\dfrac{1}{\sqrt{3}}+\dfrac{1}{3+\sqrt{3}}+\dfrac{1}{\sqrt{3}-3}\right)$ is equal to

$\left(3+\dfrac{1}{\sqrt{3}}+\dfrac{1}{3+\sqrt{3}}+\dfrac{1}{\sqrt{3}-3}\right)$ के बराबर है।

(a) 1 (b) 3

(c) $3+\sqrt{3}$ (d) $3-\sqrt{3}$

92. $\sqrt{8-2\sqrt{15}}$ is equal to :

$\sqrt{8-2\sqrt{15}}$ के बराबर है।

(a) $\sqrt{5}+\sqrt{3}$ (b) $5-\sqrt{3}$

(c) $\sqrt{5}-\sqrt{3}$ (d) $3-\sqrt{5}$

93. $\left[8-\left(\dfrac{\frac{9}{4}\sqrt{2.2^2}}{2\sqrt{2^{-2}}}\right)^{\frac{1}{2}}\right]$ is equal to

$\left[8-\left(\dfrac{\frac{9}{4}\sqrt{2.2^2}}{2\sqrt{2^{-2}}}\right)^{\frac{1}{2}}\right]$ के बराबर है।

(a) 32 (b) 8 (c) 1 (d) 0

94. $\dfrac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}}-\dfrac{2\sqrt{6}}{\sqrt{3}+1}+\dfrac{2\sqrt{3}}{\sqrt{6}+2}$ is equal to

$\dfrac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}}-\dfrac{2\sqrt{6}}{\sqrt{3}+1}+\dfrac{2\sqrt{3}}{\sqrt{6}+2}$ के बराबर है।

(a) 3 (b) 2 (c) 0 (d) $\sqrt{3}$

95. $\left(\dfrac{1}{1.4}+\dfrac{1}{4.7}+\dfrac{1}{7.10}+\dfrac{1}{10.13}+\dfrac{1}{13.16}\right)$ is equal to

$\left(\dfrac{1}{1.4}+\dfrac{1}{4.7}+\dfrac{1}{7.10}+\dfrac{1}{10.13}+\dfrac{1}{13.16}\right)$ के बराबर है।

(a) $\dfrac{1}{3}$ (b) $\dfrac{5}{16}$

(c) $\dfrac{3}{8}$ (d) $\dfrac{41}{7280}$

96. $\dfrac{137\times137+133\times133+18221}{137\times137\times137-133\times133\times133}$ is equal to

$\dfrac{137\times137+133\times133+18221}{137\times137\times137-133\times133\times133}$ के बराबर है।

(a) 4 (b) 270

(c) $\dfrac{1}{4}$ (d) $\dfrac{1}{270}$

97. $\left(\dfrac{2.75\times2.75\times2.75-2.25\times2.25\times2.25}{2.75\times2.75+2.75\times2.25+2.25\times2.25}\right)$ is equal to :

$\left(\dfrac{2.75\times2.75\times2.75-2.25\times2.25\times2.25}{2.75\times2.75+2.75\times2.25+2.25\times2.25}\right)$ के बराबर है।

(a) – 5 (b) 0.5

(c) – 0.5 (d) 5

98. The greatest among

$\sqrt{7}-\sqrt{5}$, $\sqrt{5}-\sqrt{3}$, $\sqrt{9}-\sqrt{7}$, $\sqrt{11}-\sqrt{9}$ is :

इनमें से कौन-सा परिमेय सबसे बड़ा है:

$\sqrt{7}-\sqrt{5}$, $\sqrt{5}-\sqrt{3}$, $\sqrt{9}-\sqrt{7}$, $\sqrt{11}-\sqrt{9}$

(a) $\sqrt{7}-\sqrt{5}$ (b) $\sqrt{5}-\sqrt{3}$

(c) $\sqrt{9}-\sqrt{7}$ (d) $\sqrt{11}-\sqrt{9}$

99. Greatest among the numbers $\sqrt[3]{9}, \sqrt{3}, \sqrt[4]{16}, \sqrt[6]{80}$ is

इनमें से सबसे बड़ा कौन है: $\sqrt[3]{9}, \sqrt{3}, \sqrt[4]{16}, \sqrt[6]{80}$

(a) $\sqrt[3]{9}$ (b) $\sqrt{3}$

(c) $\sqrt[4]{16}$ (d) $\sqrt[6]{80}$

100. The least one of $2\sqrt{3}$, $2\sqrt[3]{5}$, $\sqrt{8}$ and $3\sqrt{2}$ is

इनमें से सबसे छोटा कौन है: $2\sqrt{3}$, $2\sqrt[3]{5}$, $\sqrt{8}$ और $3\sqrt{2}$

(a) $2\sqrt{3}$ (b) $2\sqrt[3]{5}$

(c) $\sqrt{8}$ (d) $3\sqrt{2}$

101. Given that $\sqrt{3}$ =1.732, the value of $\frac{3+\sqrt{6}}{5\sqrt{3}-2\sqrt{12}-\sqrt{32}+\sqrt{50}}$ is :

दिया गया है $\sqrt{3}$ = 1.732 है, तो $\frac{3+\sqrt{6}}{5\sqrt{3}-2\sqrt{12}-\sqrt{32}+\sqrt{50}}$ का मान ज्ञात करें।

(a) 4.899 (b) 2.551

(c) 1.414 (d) 1.732

102. Given that $\sqrt{5}$ = 2.236 and $\sqrt{3}$ =1.732 : the value of $\frac{1}{\sqrt{5}+\sqrt{3}}$ is

$\sqrt{5}$ = 2.236 और $\sqrt{3}$ =1.732 दिया गया है, तो $\frac{1}{\sqrt{5}+\sqrt{3}}$ का मान क्या है?

(a) 0.564 (b) 0.504

(c) 0.252 (d) 0.202

103. $2\sqrt[3]{32}-3\sqrt[3]{4}+\sqrt[3]{500}$ = ?

(a) $4\sqrt[3]{6}$ (b) $3\sqrt{24}$

(c) $6\sqrt[3]{4}$ (d) 916

104. $\sqrt{12+\sqrt{12+\sqrt{12+\ldots\ldots}}}$ is equal to

$\sqrt{12+\sqrt{12+\sqrt{12+\ldots\ldots}}}$ के बराबर है।

(a) 3 (b) 4 (c) 6 (d) 2

105. If $a=\frac{\sqrt{3}}{2}$, then the value of $\sqrt{1+a}+\sqrt{1-a}$ is :

यदि $a=\frac{\sqrt{3}}{2}$ है, तो $\sqrt{1+a}+\sqrt{1-a}$ का मान ज्ञात करें।

(a) $\sqrt{3}$ (b) $\sqrt{2}$

(c) $2+\sqrt{3}$ (d) $2-\sqrt{3}$

106. If $a=\frac{\sqrt{5}+1}{\sqrt{5}-1}$, $b=\frac{\sqrt{5}-1}{\sqrt{5}+1}$, the value of $\left(\frac{a^2+ab+b^2}{a^2-ab+b^2}\right)$ is

यदि $a=\frac{\sqrt{5}+1}{\sqrt{5}-1}$, $b=\frac{\sqrt{5}-1}{\sqrt{5}+1}$ है, तो $\left(\frac{a^2+ab+b^2}{a^2-ab+b^2}\right)$ का मान ज्ञात करें।

(a) $\frac{3}{4}$ (b) $\frac{4}{3}$ (c) $\frac{3}{5}$ (d) $\frac{5}{3}$

## Yeaer : 2008

107. $(0.04)^{-(1.5)}$ is equal to

$(0.04)^{-(1.5)}$ के बराबर है।

(a) 25 (b) 125 (c) 60 (d) 5

108. The value of

$\sqrt[3]{1372}\times\sqrt[3]{1458}+\sqrt[3]{343}$ is .

$\sqrt[3]{1372}\times\sqrt[3]{1458}\div\sqrt[3]{343}$ का मान क्या है?

(a) 18 (b) 15 (c) 13 (d) 12

109. $\left(\frac{2}{\sqrt{5}+\sqrt{3}}-\frac{3}{\sqrt{6}-\sqrt{3}}+\frac{1}{\sqrt{6}+\sqrt{5}}\right)$ is equal to

$\left(\frac{2}{\sqrt{5}+\sqrt{3}}-\frac{3}{\sqrt{6}-\sqrt{3}}+\frac{1}{\sqrt{6}+\sqrt{5}}\right)$ के बराबर है।

(a) $-2\sqrt{6}$ (b) $+2\sqrt{5}$

(c) $-2\sqrt{3}$ (d) 0

110. $\left[\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}-\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}\right]$ simplifies to

(को सरल करें।)

(a) $2\sqrt{5}$ (b) $4\sqrt{6}$

(c) $2\sqrt{3}$ (d) $3\sqrt{2}$

111. $\frac{1}{\sqrt{9}-\sqrt{8}}-\frac{1}{\sqrt{8}-\sqrt{7}}+\frac{1}{\sqrt{7}-\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}+\frac{1}{\sqrt{5}-\sqrt{4}}$ is equal to :

$\frac{1}{\sqrt{9}-\sqrt{8}}-\frac{1}{\sqrt{8}-\sqrt{7}}+\frac{1}{\sqrt{7}-\sqrt{6}}-\frac{1}{\sqrt{6}-\sqrt{5}}+\frac{1}{\sqrt{5}-\sqrt{4}}$ के बराबर है।

(a) 5 (b) 1 (c) 3 (d) 0

112. $\left(\sqrt{2}+\sqrt{7-2\sqrt{10}}\right)$ is equal to

$\left(\sqrt{2}+\sqrt{7-2\sqrt{10}}\right)$ के बराबर है।

(a) $\sqrt{2}$ (b) $\sqrt{7}$

(c) $\sqrt{5}$ (d) $2\sqrt{5}$

113. By how much does $\left(\sqrt{12}+\sqrt{18}\right)$ exceed $\left(2\sqrt{3}+2\sqrt{2}\right)$ ?

$\left(\sqrt{12}+\sqrt{18}\right)$ से $\left(2\sqrt{3}+2\sqrt{2}\right)$ कितना अधिक है?

(a) 2 (b) $\sqrt{3}$

(c) $\sqrt{2}$ (d) 3

114. $\frac{(5.624)^3+(4.376)^3}{5.624\times5.624-(5.624\times4.376)+4.376\times4.376}$ is equal to (का बराबर है।)

(a) 10 (b) 1.248

(c) 20.44 (d) 1

115. $\frac{(998)^2-(997)^2-45}{(98)^2-(97)^2}$ = ?

(a) 1995 (b) 195

(c) 95 (d) 10

116. Given that $\sqrt{5}$ = 2.24 , then the value of $\frac{3\sqrt{5}}{2\sqrt{5}-0.48}$ is

दिया गया है $\sqrt{5}$ = 2.24 तो $\frac{3\sqrt{5}}{2\sqrt{5}-0.48}$ का मान क्या है?

(a) 0.168 (b) 1.68

(c) 16.8 (d) 168

117. Given that $\sqrt{2}$ =1.414, then the value of $\frac{1}{\sqrt{2}+1}$

दिया गया है $\sqrt{2}$ =1.414 , तो $\frac{1}{\sqrt{2}+1}$ का मान क्या है?

(a) 0.414 (b) 2.414

(c) 3.414 (d) 5.414

118. If $\sqrt{3}$ = 1.732, is given, then the value of $\frac{2+\sqrt{3}}{2-\sqrt{3}}$ is

यदि $\sqrt{3}$ = 1.732 दिया गया है, तो $\frac{2+\sqrt{3}}{2-\sqrt{3}}$ का मान क्या है?

(a) 11.732 (b) 13.928

(c) 12.928 (d) 13.925

119. If $x=1+\sqrt{2}+\sqrt{3}$, then the value of $\left(x+\frac{1}{x-1}\right)$ is

यदि $x = 1 + \sqrt{2} + \sqrt{3}$ है, तो $\left(x + \frac{1}{x-1}\right)$ का मान क्या है?

(a) $1 + 2\sqrt{3}$ (b) $2 + \sqrt{3}$

(c) $3 + \sqrt{2}$ (d) $2\sqrt{3} - 1$

120. If $x + \frac{1}{x} = -2$ then the value of $x^{2n+1} + \frac{1}{x^{2n+1}}$ where $n$ is a positive integer is

यदि $x + \frac{1}{x} = -2$ है, तो $x^{2n+1} + \frac{1}{x^{2n+1}}$ का मान क्या है, जहाँ n एक धनात्मक पूर्णांक है।

(a) 0 (b) 2

(c) −2 (d) −5

121. If $m$ and $n(n > 1)$ are whole numbers such that $m^n = 121$, the value of $(m-1)^{n+1}$ is

यदि $m$ और $n(n > 1)$ पूर्ण संख्याएँ इस प्रकार हैं कि $m^n = 121$ है, तो $(m-1)^{n+1}$ का मान ज्ञात करें।

(a) 1 (b) 10

(c) 121 (d) 1000

## Year : 2009

122. $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = ?$

(a) 5 (b) 4 (c) 3 (d) 2

123. $(256)^{0.16} \times (4)^{0.36}$ is equal to

$(256)^{0.16} \times (4)^{0.36}$ के बराबर है।

(a) 64 (b) 16

(c) 256.25 (d) 4

124. The value of

$$\frac{(0.337+0.126)^2 - (0.337-0.126)^2}{0.337 \times 0.126}$$ is

$$\frac{(0.337+0.126)^2 - (0.337-0.126)^2}{0.337 \times 0.126}$$

मान क्या है?

(a) 4 (b) 0.211

(c) 0.463 (d) 0.4246

125. Evaluate (सरल करें) :

$16\sqrt{\frac{3}{4}} - 9\sqrt{\frac{4}{3}}$ if $\sqrt{12} = 3.46$

(a) 3.46 (b) 13.38

(c) 13.84 (d) 14.22

126. If $3^{x+y} = 81$ and $81^{x-y} = 3$, then the value of $x$ is

यदि $3^{x+y} = 81$ और $81^{x-y} = 3$ है, तो $x$ का मान ज्ञात करें।

(a) 42 (b) $\frac{15}{8}$

(c) $\frac{17}{8}$ (d) 39

## Year : 2010

127. $\frac{3\sqrt{2}+2\sqrt{3}}{3\sqrt{2}-2\sqrt{3}}$ is equal to

$\frac{3\sqrt{2}+2\sqrt{3}}{3\sqrt{2}-2\sqrt{3}}$ के बराबर है।

(a) $5 + 2\sqrt{6}$ (b) $\frac{3+2\sqrt{6}}{2}$

(c) $5 - 2\sqrt{3}$ (d) $5 + 2\sqrt{3}$

128. Simplified form of

$\left[\left(\sqrt[5]{x^{-3/5}}\right)^{-5/3}\right]^{-5}$ is

$\left[\left(\sqrt[5]{x^{-3/5}}\right)^{-5/3}\right]^{-5}$ का सरलीकृत रूप क्या है?

(a) $x^5$ (b) $x^{-5}$ (c) $x$ (d) $\frac{1}{x}$

129. $\left[\frac{\sqrt{3}+1}{\sqrt{3}-1} + \frac{\sqrt{2}+1}{\sqrt{2}-1} + \frac{\sqrt{3}-1}{\sqrt{3}+1} + \frac{\sqrt{2}-1}{\sqrt{2}+1}\right]$ is simplified to

$\left[\frac{\sqrt{3}+1}{\sqrt{3}-1} + \frac{\sqrt{2}+1}{\sqrt{2}-1} + \frac{\sqrt{3}-1}{\sqrt{3}+1} + \frac{\sqrt{2}-1}{\sqrt{2}+1}\right]$ का सरलीकृत मान है।

(a) 10 (b) 12 (c) 14 (d) 18

130. Find the value of $x$ in the expression : $\sqrt[4]{3x+1} = 2$

व्यंजक : $\sqrt[4]{3x+1} = 2$ में $x$ का मान ज्ञात करें।

(a) 5 (b) 6 (c) 4 (d) 5

131. $\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}} + \frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}$ is equal to :

$\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}} + \frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}$ के बराबर है।

(a) 12 (b) $6\sqrt{35}$

(c) 6 (d) $2\sqrt{35}$

132. $\left(\frac{2}{\sqrt{6}+2} + \frac{1}{\sqrt{7}+\sqrt{6}} + \frac{1}{\sqrt{8}-\sqrt{7}} + 2 - 2\sqrt{2}\right)$ is equal to

$\left(\frac{2}{\sqrt{6}+2} + \frac{1}{\sqrt{7}+\sqrt{6}} + \frac{1}{\sqrt{8}-\sqrt{7}} + 2 - 2\sqrt{2}\right)$ के बराबर है।

(a) 0 (b) $2\sqrt{2}$

(c) $\sqrt{2}$ (d) $2\sqrt{7}$

133. $\left[\left\{\left(-\frac{1}{2}\right)^2\right\}^{-2}\right]^{-1}$ is equal to :

$\left[\left\{\left(-\frac{1}{2}\right)^2\right\}^{-2}\right]^{-1}$ के बराबर है।

(a) $\frac{1}{16}$ (b) 16

(c) $-\frac{1}{16}$ (d) −16

134. $\frac{256 \times 256 - 144 \times 144}{112}$ is equal to

$\frac{256 \times 256 - 144 \times 144}{112}$ के बराबर है।

(a) 420 (b) 400

(c) 360 (d) 320

135. $[8.7 \times 8.7 + 2 \times 8.7 \times 1.3 + 1.3 \times 1.3]$ is equal to

$[8.7 \times 8.7 + 2 \times 8.7 \times 1.3 + 1.3 \times 1.3]$ के बराबर है।

(a) 1.69 (b) 10

(c) 75.69 (d) 100

136. $\frac{(3.06)^3 - (1.98)^3}{(3.06)^2 + 3.06 \times 1.98 + (1.98)^2}$ is equal to

$\frac{(3.06)^3 - (1.98)^3}{(3.06)^2 + 3.06 \times 1.98 + (1.98)^2}$ के बराबर है।

(a) 1.08 (b) 5.04

(c) 2.16 (d) 1.92

137. $\frac{3.25 \times 3.25 + 1.75 \times 1.75 - 2 \times 3.25 \times 1.75}{3.25 \times 3.25 - 1.75 \times 1.75}$ is simplified to

$\frac{3.25 \times 3.25 + 1.75 \times 1.75 - 2 \times 3.25 \times 1.75}{3.25 \times 3.25 - 1.75 \times 1.75}$ का सरलीकृत मान क्या है?

(a) 0.5 (b) 0.4 (c) 0.3 (d) 0.2

138. $\frac{0.08 \times 0.08 \times 0.08 + 0.02 \times 0.02 \times 0.02}{0.08 \times 0.08 - 0.0016 + 0.02 \times 0.02}$ is simplified to :

$\frac{0.08 \times 0.08 \times 0.08 + 0.02 \times 0.02 \times 0.02}{0.08 \times 0.08 - 0.0016 + 0.02 \times 0.02}$ का सरलीकृत मान क्या है?

(a) 0.001 (b) 0.1

(c) 0.0016 (d) 0.016

139. The greatest number among $2^{60}, 3^{48}, 4^{36}$ and $5^{24}$ is

इनमें से सबसे बड़ी संख्या कौन-सी है:- $2^{60}, 3^{48}, 4^{36}$ और $5^{24}$

(a) $2^{60}$ (b) $3^{48}$ (c) $4^{36}$ (d) $5^{24}$

140. The greatest among the numbers $\sqrt{2}, \sqrt[3]{3}, \sqrt[5]{5}, \sqrt[6]{6}$ is

इनमें से सबसे बड़ी संख्या कौन-सी है:-

$\sqrt{2}, \sqrt[3]{3}, \sqrt[5]{5}, \sqrt[6]{6}$

(a) $\sqrt{2}$ (b) $\sqrt[3]{3}$

(c) $\sqrt[6]{6}$ (d) $\sqrt[5]{5}$

141. The largest among the numbers 0.9, $(0.9)^2$, $\sqrt{0.9}, 0.\overline{9}$ is :

इनमें से सबसे बड़ी संख्या कौन-सी है:-0.9, $(0.9)^2$, $\sqrt{0.9}, 0.\overline{9}$

(a) 0.9 (b) $(0.9)^2$

(c) $\sqrt{0.9}$ (d) $0.\overline{9}$

142. $\sqrt{12+\sqrt{12+\sqrt{12+.....}}}$ is equal to

$\sqrt{12+\sqrt{12+\sqrt{12+.....}}}$ के बराबर है।

(a) 3 (b) 4 (c) 6 (d) 2

143. $\sqrt{3\sqrt{3\sqrt{3.....}}}$ is equal to

$\sqrt{3\sqrt{3\sqrt{3.....}}}$ के बराबर है।

(a) $\sqrt{3}$ (b) 3

(c) $2\sqrt{3}$ (d) $3\sqrt{3}$

144. The number which when multiplied with $(\sqrt{3}+\sqrt{2})$ gives $(\sqrt{12}+\sqrt{18})$ is

वह कौन सी संख्या है जिसे $(\sqrt{3}+\sqrt{2})$ से गुणा करने पर परिणाम $(\sqrt{12}+\sqrt{18})$ प्राप्त होता है।

(a) $3\sqrt{2}-2\sqrt{3}$ (b) $3\sqrt{2}+2\sqrt{3}$

(c) $\sqrt{6}$ (d) $2\sqrt{3}-3\sqrt{2}$

## Year : 2011

145. The value of

$\frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2-\sqrt{3}}{2+\sqrt{3}}+\frac{\sqrt{3}+1}{\sqrt{3}-1}$ is

$\frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2-\sqrt{3}}{2+\sqrt{3}}+\frac{\sqrt{3}+1}{\sqrt{3}-1}$ का मान क्या है।

(a) $16+\sqrt{3}$ (b) $4+\sqrt{3}$

(c) $2-\sqrt{3}$ (d) $2+\sqrt{3}$

146. The square root of $14+6\sqrt{5}$

$14+6\sqrt{5}$ का वर्गमूल ज्ञात करें।

(a) $2+\sqrt{5}$ (b) $3+\sqrt{5}$

(c) $5+\sqrt{3}$ (d) $3+2\sqrt{5}$

147. The value of

$\frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}-\frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}+\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}$ is

$\frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}-\frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}+\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}$ का मान ज्ञात करें।

(a) 4 (b) 0

(c) $\sqrt{2}$ (d) $3\sqrt{6}$

148. The value of

$\frac{1}{\sqrt{2}+1}+\frac{1}{\sqrt{3}+\sqrt{2}}+\frac{1}{\sqrt{4}+\sqrt{3}}+....+\frac{1}{\sqrt{100}+\sqrt{99}}$ is

$\frac{1}{\sqrt{2}+1}+\frac{1}{\sqrt{3}+\sqrt{2}}+\frac{1}{\sqrt{4}+\sqrt{3}}+....+\frac{1}{\sqrt{100}+\sqrt{99}}$ का मान ज्ञात करें।

(a) 1 (b) 9

(c) $\sqrt{199}$ (d) $\sqrt{99}-1$

149. $\frac{(0.05)^2+(0.41)^2+(0.073)^2}{(0.005)^2+(0.041)^2+(0.0073)^2}$ =?

(a) 10 (b) 100

(c) 1000 (d) None of these
इनमें से कोई नहीं

150. The smallest among $\sqrt[6]{12}, \sqrt[3]{3}, \sqrt[4]{4}$ is:

(a) $\sqrt[6]{12}$ (b) $\sqrt[3]{3}$

(c) $\sqrt[4]{4}$ (d) All are equal

151. Among the numbers $\sqrt{2}$, $\sqrt[3]{9}, \sqrt[4]{16}, \sqrt[5]{32}$ the greatest one is

निम्न संख्याओं में से सबसे बड़ी संख्या ज्ञात करें।

$\sqrt{2}, \sqrt[3]{9}, \sqrt[4]{16}, \sqrt[5]{32}$

(a) $\sqrt{2}$ (b) $\sqrt[3]{9}$

(c) $\sqrt[4]{16}$ (d) $\sqrt[5]{32}$

152. The greatest among the numbers $\sqrt[4]{3}, \sqrt[5]{4}, \sqrt[10]{12}$, 1 is

निम्न में से सबसे बड़ी संख्या कौन सी है :

$\sqrt[4]{3}, \sqrt[5]{4}, \sqrt[10]{12}$, 1

(a) 1 (b) $\sqrt[5]{4}$

(c) $\sqrt[4]{3}$ (d) $\sqrt[10]{12}$

153. The greatest among the numbers $3\sqrt{2}, 3\sqrt{7}, 6\sqrt{5}, 2\sqrt{20}$ is

निम्न में से सबसे बड़ी संख्या कौन सी है:

$3\sqrt{2}, 3\sqrt{7}, 6\sqrt{5}, 2\sqrt{20}$

(a) $3\sqrt{2}$ (b) $3\sqrt{7}$

(c) $6\sqrt{5}$ (d) $2\sqrt{20}$

154. The greatest among the numbers $\sqrt{0.09}, \sqrt[3]{0.064}$, 0.5 and $\frac{3}{5}$

निम्न में से सबसे बड़ी संख्या कौन सी है:

$\sqrt{0.09}, \sqrt[3]{0.064}$, 0.5 और $\frac{3}{5}$

(a) $\sqrt{0.09}$ (b) $\sqrt[3]{0.064}$

(c) 0.5 (d) $\frac{3}{5}$

155. The greatest of the following numbers

0.16, $\sqrt{0.16}$, $(0.16)^2$, 0.04 is

निम्न में से सबसे बड़ी संख्या कौन सी है :

0.16, $\sqrt{0.16}$, $(0.16)^2$, 0.04

(a) 0.16 (b) $\sqrt{0.16}$

(c) 0.04 (d) $(0.16)^2$

156. The greatest of the numbers $\sqrt[3]{8}$, $\sqrt[4]{13}$, $\sqrt[5]{16}$, $\sqrt[10]{41}$ is :

निम्न में से सबसे बड़ी संख्या कौन सी है:

$\sqrt[3]{8}$, $\sqrt[4]{13}$, $\sqrt[5]{16}$, $\sqrt[10]{41}$

(a) $\sqrt[4]{13}$ (b) $\sqrt[5]{16}$

(c) $\sqrt[10]{41}$ (d) $\sqrt[3]{8}$

157. If $\sqrt{2}$ = 1.4142, find the value of

$2\sqrt{2}+\sqrt{2}+\frac{1}{2+\sqrt{2}}-\frac{1}{2-\sqrt{2}}$

यदि $\sqrt{2}$ = 1.4142 है, तो

$2\sqrt{2}+\sqrt{2}+\frac{1}{2+\sqrt{2}}-\frac{1}{2-\sqrt{2}}$ का मान ज्ञात करें।

(a) 1.4144 (b) 2.8284

(c) 28.284 (d) 2.4142

158. The square root of $\left(\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}\right)$ is

$\left(\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}\right)$ का वर्गमूल ज्ञात करें।

(a) $\sqrt{3}+\sqrt{2}$ (b) $\sqrt{3}-\sqrt{2}$

(c) $\sqrt{2}\pm\sqrt{3}$ (d) $\sqrt{2}-\sqrt{3}$

159. If $0.42 \times 100^k = 42$, then the value of $k$ is :

यदि $0.42 \times 100^k = 42$ है, तो $k$ का मान ज्ञात करें।

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

160. If $2^x = 3^y = 6^{-z}$ then $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)$ is equal to

यदि $2^x = 3^y = 6^{-z}$ है, तो $\left(\frac{1}{x}+\frac{1}{y}+\frac{1}{z}\right)$ किसके बराबर है?

(a) 0 (b) 1

(c) $\frac{3}{2}$ (d) $-\frac{1}{2}$

**Year : 2012**

161. $\left(\frac{1+\sqrt{2}}{\sqrt{5}+\sqrt{3}}+\frac{1-\sqrt{2}}{\sqrt{5}-\sqrt{3}}\right)$ simplifies to

(का सरलीकरण है)

(a) $\sqrt{5}+\sqrt{6}$ (b) $2\sqrt{5}+\sqrt{6}$

(c) $\sqrt{5}-\sqrt{6}$ (d) $2\sqrt{5}-3\sqrt{6}$

**SSC FCI Assistant Grade III 25/02/2012**

162. When simplified equal to $256^{-\left[4^{-\frac{1}{2}}\right]}$ is

$256^{-\left[4^{-\frac{1}{2}}\right]}$ का सरलीकृत मान क्या है?

(a) 8 (b) $\frac{1}{8}$

(c) 2 (d) $\frac{1}{2}$

**SSC FCI Assistant Grade III 25/02/2012**

163. $2\sqrt[3]{40}-4\sqrt[3]{320}+3\sqrt[3]{625}-3\sqrt[3]{5}$ is equal to

$2\sqrt[3]{40}-4\sqrt[3]{320}+3\sqrt[3]{625}-3\sqrt[3]{5}$ के बराबर है।

(a) $-2\sqrt[3]{340}$ (b) 0

(c) $\sqrt[3]{340}$ (d) $\sqrt[3]{660}$

**SSC CGL TIER 16/09/2012**

164. The value of $\sqrt[3]{0.000125}$ is

$\sqrt[3]{0.000125}$ का मान क्या है?

(a) 0.005 (b) 0.05

(c) 0.5 (d) 0.005

**SSC FCI Assistant Grade III 11/11/2012**

165. $\frac{0.355\times0.5555\times2.025}{0.225\times1.775\times0.2222}$ is equal to

$\frac{0.355\times0.5555\times2.025}{0.225\times1.775\times0.2222}$ के बराबर है।

(a) 5.4 (b) 4.58

(c) 4.5 (d) 5.45

**SSC CHSL DEO & LDC 04/11/2012**

**Year : 2013**

166. The value of $\sqrt{40+\sqrt{9\sqrt{81}}}$ is

$\sqrt{40+\sqrt{9\sqrt{81}}}$ का मान क्या है?

(a) $\sqrt{111}$ (b) 9 (c) 7 (d) 11

**SSC CHSL DEO & LDC 20/10/2013**

167. If $\frac{\left(x-\sqrt{24}\right)\left(\sqrt{75}+\sqrt{50}\right)}{\sqrt{75}-\sqrt{50}}=1$, then the value of $x$ is

यदि $\frac{\left(x-\sqrt{24}\right)\left(\sqrt{75}+\sqrt{50}\right)}{\sqrt{75}-\sqrt{50}}=1$ है, तो $x$ का मान ज्ञात करें।

(a) $\sqrt{5}$ (b) 5

(c) $2\sqrt{5}$ (d) $3\sqrt{5}$

**SSC CHSL DEO & LDC 27/10/2013**

168. Evaluate (सरल करें।)

$$\sqrt{20}+\sqrt{12}+\sqrt[3]{729}-\frac{4}{\sqrt{5}-\sqrt{3}}-\sqrt{81}$$

(a) $\sqrt{2}$ (b) $\sqrt{3}$

(c) 0 (d) $2\sqrt{2}$

**SSC CHSL DEO & LDC 27/10/2013**

169. Let $a=\frac{1}{2-\sqrt{3}}+\frac{1}{3-\sqrt{8}}+\frac{1}{4-\sqrt{15}}$ then we have

माना कि $a=\frac{1}{2-\sqrt{3}}+\frac{1}{3-\sqrt{8}}+\frac{1}{4-\sqrt{15}}$ है, तो:

(a) a < 18 but $a \neq 9$

(b) a > 18

(c) a = 18

(d) a =9

**SSC CHSL DEO & LDC 10/11/2013**

170. If a, b are rationals and $a\sqrt{2}+b\sqrt{3}=\sqrt{98}+\sqrt{108}-\sqrt{48}-\sqrt{72}$, then the values of a, b are respectively

यदि a, b परिमेय है और $a\sqrt{2}+b\sqrt{3}=\sqrt{98}+\sqrt{108}-\sqrt{48}-\sqrt{72}$, है, तो a, b का मान क्रमशः क्या होगा?

(a) 1, 2 (b) 1, 3

(c) 2, 1 (d) 2 , 3

**SSC CHSL DEO & LDC 10/11/2013**

171. Let $\sqrt[3]{a}=\sqrt[3]{26}+\sqrt[3]{7}+\sqrt[3]{63}$ then

माना कि $\sqrt[3]{a}=\sqrt[3]{26}+\sqrt[3]{7}+\sqrt[3]{63}$ है, तो:

(a) $a < 729$ but $a > 216$

(b) $a < 216$

(c) $a > 729$

(d) $a = 729$

**SSC CHSL DEO & LDC 10/11/2013**

172. The value of

$\frac{\sqrt{72}\times\sqrt{363}\times\sqrt{175}}{\sqrt{32}\times\sqrt{147}\times\sqrt{252}}$ is

$\frac{\sqrt{72}\times\sqrt{363}\times\sqrt{175}}{\sqrt{32}\times\sqrt{147}\times\sqrt{252}}$ का मान क्या है?

(a) $\frac{55}{42}$ (b) $\frac{45}{56}$

(c) $\frac{45}{28}$ (d) $\frac{55}{28}$

**SSC MTS 10/03/2013**

173. $2+\frac{6}{\sqrt{3}}+\frac{1}{2+\sqrt{3}}+\frac{1}{\sqrt{3}-2}$ equals to

$2+\frac{6}{\sqrt{3}}+\frac{1}{2+\sqrt{3}}+\frac{1}{\sqrt{3}-2}$ के बराबर है।

(a) $\left(2\sqrt{3}\right)$ (b) $-\left(2+\sqrt{3}\right)$

(c) 1 (d) 2

**SSC CGL TIER 21/04/2013**

174. If $\frac{4+3\sqrt{3}}{\sqrt{7+4\sqrt{3}}}=A+\sqrt{B}$, then B – A is

यदि $\frac{4+3\sqrt{3}}{\sqrt{7+4\sqrt{3}}}=A+\sqrt{B}$ है, तो B – A का मान ज्ञात करें।

(a) – 13 (b) $2\sqrt{13}$

(c) 13 (d) $3\sqrt{3}-\sqrt{7}$

**SSC CGL TIER 19/05/2013**

175. Find the simplest value of $2\sqrt{50}+\sqrt{18}-\sqrt{72}$ (given $\sqrt{2}=1.414$).

$2\sqrt{50}+\sqrt{18}-\sqrt{72}$ का सधारणीकृत मान ज्ञात करें।

(दिया गया है: $\sqrt{2}=1.414$).

(a) 4.242 (b) 9.898

(c) 10.6312 (d) 8.484

**SSC CGL TIER 19/05/2013**

176. The greatest value of the following numbers

0.16, $\sqrt{0.16}$, $(0.16)^2$, 0.04 is

इनमें से सबसे बड़ी संख्या कौन सी है:

0.16, $\sqrt{0.16}$, $(0.16)^2$, 0.04

(a) 0.16 (b) $\sqrt{0.16}$

(c) 0.04 (d) $(0.16)^2$

**SSC CHSL DEO & LDC 10/11/2013**

177. The smallest among the numbers $2^{250}, 3^{150}, 5^{100}$ and $4^{200}$

इनमें से सबसे छोटी संख्या कौन सी है: $2^{250}, 3^{150}, 5^{100}$ और $4^{200}$

(a) $4^{200}$ (b) $5^{100}$

(c) $3^{150}$ (d) $2^{250}$

**SSC CHSL DEO & LDC 10/11/2013**

178. Which is greater $\sqrt[3]{2}$ or $\sqrt{3}$ ?

$\sqrt[3]{2}$ या $\sqrt{3}$ में बड़ा कौन है?

(a) Cannot be compared (तुलना नहीं की जा सकती)

(b) $\sqrt[3]{2}$

(c) $\sqrt{3}$

(d) Equal (बराबर)

**SSC CHSL DEO & LDC 20/10/2013**

179. The total number of prime factors in $4^{10} \times 7^3 \times 16^2 \times 11 \times 10^2$ is

$4^{10} \times 7^3 \times 16^2 \times 11 \times 10^2$ के कितने अभाज्य गुणनखण्ड है?

(a) 34 (b) 35 (c) 36 (d) 37

**SSC CHSL DEO & LDC 27/11/2013**

180. The number of prime factors in $6^{333} \times 7^{222} \times 8^{111}$

$6^{333} \times 7^{222} \times 8^{111}$ के कितने अभाज्य गुणनखण्ड है?

(a) 1221 (b) 1222

(c) 1111 (d) 1211

**SSC CHSL DEO & LDC 10/11/2013**

181. Find the value of

$\sqrt{30 + \sqrt{30 + \sqrt{30 + ....}}}$

$\sqrt{30 + \sqrt{30 + \sqrt{30 + ....}}}$ का मान क्या है?

(a) 5 (b) $3\sqrt{10}$

(c) 6 (d) 7

**SSC CGL TIER II EXAM 29/09/2014**

182. The value of $\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4}}}}$ ..... is

$\sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4}}}}$ ..... का मान क्या है?

(a) 2 (b) $2^2$ (c) $2^3$ (d) $2^5$

**SSC CGL TIER II EXAM 29/09/2014**

183. $55^3 + 17^3 - 72^3 + 201960$ is equal to

$55^3 + 17^3 - 72^3 + 201960$ के बराबर है।

(a) – 1 (b) 0 (c) 1 (d) 17

**SSC CGL TIER I RE EXAM(2013) 27/04/2014**

184. What is the value of

$$\frac{2.75 \times 2.75 \times 2.75 - 2.25 \times 2.25 \times 2.25}{2.75 \times 2.75 + 2.75 \times 2.25 + 2.25 \times 2.25} \text{ is}$$

$$\frac{2.75 \times 2.75 \times 2.75 - 2.25 \times 2.25 \times 2.25}{2.75 \times 2.75 + 2.75 \times 2.25 + 2.25 \times 2.25}$$ का मान क्या है?

(a) 2 (b) $\frac{3}{2}$

(c) 1 (d) $\frac{1}{2}$

**SSC CGL TIER I EXAM 26/10/2014**

185. The value of $\frac{(243)^{\frac{n}{5}} \times 3^{2n+1}}{9^n \times 3^{n-1}}$ is

$\frac{(243)^{\frac{n}{5}} \times 3^{2n+1}}{9^n \times 3^{n-1}}$ का मान क्या है?

(a) 3 (b) 9 (c) 6 (d) 12

**SSC CGL TIER I EXAM 26/10/2014**

186. The simplified value of

$(\sqrt{3}+1)(10+\sqrt{12})(\sqrt{12}-2)(5-\sqrt{3})$ is

$(\sqrt{3}+1)(10+\sqrt{12})(\sqrt{12}-2)(5-\sqrt{3})$

का सरलीकृत मान क्या है?

(a) 16 (b) 88

(c) 176 (d) 132

**SSC CAPFs, CISF ASI & DELHI POLICE EXAM 16/11/2014**

187. The simplified value of $(0.2)^3 \times 200 \div 2000$ of $(0.2)^2$ is

$(0.2)^3 \times 200 \div 2000$ of $(0.2)^2$ का सरलीकृत मान क्या है?

(a) $\frac{1}{100}$ (b) $\frac{1}{50}$ (c) $\frac{1}{10}$ (d) 1

**SSC CHSL DEO EXAM 16/11/2014**

188. Arranging the following in descending order, we get

$\sqrt[3]{4}, \sqrt{2}, \sqrt[6]{3}, \sqrt[4]{5}$

निम्न को अवरोही क्रम में सजाएं:-

$\sqrt[3]{4}, \sqrt{2}, \sqrt[6]{3}, \sqrt[4]{5}$

(a) $\sqrt[3]{4} > \sqrt[4]{5} > \sqrt{2} > \sqrt[6]{3}$

(b) $\sqrt[4]{5} > \sqrt[3]{4} > \sqrt[6]{3} > \sqrt{2}$

(c) $\sqrt{2} > \sqrt[6]{3} > \sqrt[3]{4} > \sqrt[4]{5}$

(d) $\sqrt[6]{3} > \sqrt[4]{5} > \sqrt[3]{4} < \sqrt{2}$

**SSC CGL TIER EXAM 19/10/2014**

189. What is the product of the roots of the equation $x^2 - \sqrt{3} = 0$ ?

समीकरण $x^2 - \sqrt{3} = 0$ के मूलों का गुणनफल क्या है?

(a) $+\sqrt{3}$ (b) $\sqrt{3}t$

(c) $-\sqrt{3}t$ (d) $-\sqrt{3}$

**SSC CGL TIER I RE EXAM(2013) 27/07/2014**

190. If $2^{n+1} + 2^{n+1} = 320$, then the value of $n$ is

यदि $2^{n+1} + 2^{n+1} = 320$ है, तो $n$ का मान ज्ञात करें।

(a) 6 (b) 8 (c) 5 (d) 7

**SSC CGL TIER I RE EXAM (2013) 27/07/2014**

191. $4^{61}+4^{62}+4^{63}+4^{64}$ is divisible by

$4^{61}+4^{62}+4^{63}+4^{64}$ किससे विभाजित है?

(a) 17 (b) 3 (c) 11 (d) 13

**SSC CGL TIER I RE EXAM (2013) 20/07/2014**

192. If $5\sqrt{5} \times 5^3 \div 5^{-\frac{3}{2}} = 5^{a+2}$, then the value of $a$ is

यदि $5\sqrt{5} \times 5^3 \div 5^{-\frac{3}{2}} = 5^{a+2}$, है, तो $a$ का मान ज्ञात करें।

(a) 4 (b) 5 (c) 6 (d) 8

**SSC CGL EXAM 19/10/2014**

193. The value of

$(3+2\sqrt{2})^{-3} + (3-2\sqrt{2})^{-3}$ is

$(3+2\sqrt{2})^{-3} + (3-2\sqrt{2})^{-3}$ का मान क्या है?

(a) 198 (b) 180

(c) 108 (d) 189

**SSC CGL EXAM 19/10/2014**

194. $3^x - 3^{x-1} = 486$, Find $x$

$3^x - 3^{x-1} = 486$ में $x$ का मान ज्ञात करें।

(a) 7 (b) 9 (c) 5 (d) 6

**SSC CGL EXAM 26/10/2014**

195. A tap is dripping at a constant rate into a container. The level (L cm) of the water in the container is given by the equation $L = 2 - 2^t$, where t is time taken in hours . Then the level of water in the container at the level of water in the container at the start is

एक नल से एक पात्र में लगातार पानी रिस रहा है, पात्र में पानी का स्तर (L से.मी.) समीकरण $L=2-2^t$ के द्वारा दर्शाया गया है, जहाँ t समय (घंटों में) दर्शाता है, तो आरंभ पात्र में पानी का स्तर क्या था?

(a) 0 cm (b) 1 cm

(c) 2 cm (d) 4 cm

**SSC CAPFs, CISF ASI & DP SI EXAM 21/06/2014**

196. The value of

$$\frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{3-\sqrt{8}} \text{ is}$$

$$\frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{3-\sqrt{8}}$$ का मान ज्ञात करें?

(a) 0 (b) 1 (c) 5 (d) 7

**(SSC CGL 09-06-2015, Morning)**

197. Choose the incorrect relation(s) from the following;

निम्न में से गलत संबंध का चुनाव करें?

(i) $\sqrt{6}+\sqrt{2} = \sqrt{5}+\sqrt{3}$

(ii) $\sqrt{6}+\sqrt{2} < \sqrt{5}+\sqrt{3}$

(iii) $\sqrt{6}+\sqrt{2} > \sqrt{5}+\sqrt{3}$

(a) (i) (b) (ii)

(c) (i) and (iii) (d) (ii) and (iii)

**(SSC CGL 09-06-2015, Morning)**

198. $$\frac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}}{\sqrt[3]{8}} = ?$$

(a) 8 (b) 4 (c) 1/2 (d) 2

**(CPO 21-06-2015, Morning)**

199. The simplified value of

$$\frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}} + \frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}$$

$$\frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}} + \frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}$$

का सरलीकृत मान क्या होगा ?

(a) 0 (b) 1

(c) $\sqrt{2}$ (d) $\frac{1}{\sqrt{2}}$

**(CPO 21-06-2015, Evening)**

200. The Simplified value of

$$\frac{\sqrt{6}+2}{\sqrt{2}+\sqrt{2+\sqrt{3}}}-\frac{\sqrt{6}-2}{\sqrt{2}-\sqrt{2-\sqrt{3}}}-\frac{2\sqrt{2}}{2+\sqrt{2}}$$

$$\frac{\sqrt{6}+2}{\sqrt{2}+\sqrt{2+\sqrt{3}}}-\frac{\sqrt{6}-2}{\sqrt{2}-\sqrt{2-\sqrt{3}}}-\frac{2\sqrt{2}}{2+\sqrt{2}}$$

का सरलीकृत मान क्या होगा ?

(a) $2\sqrt{6}$ (b) 2 (c) $\sqrt{3}$ (d) 0

(CPO 21-06-2015, Evening)

201. $\frac{6^2+7^2+8^2+9^2+10^2}{\sqrt{7+4\sqrt{3}}-\sqrt{4+2\sqrt{3}}}$ is equal to/ बराबर है

(a) 330 (b) 355 (c) 305 (d) 366

(CGL Mains 25-10-2015)

202. $(3x-2y) : (2x+3y) = 5 : 6$, then one of the value of $\left(\frac{\sqrt[3]{x}+\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}\right)^2$ is

यदि $(3x-2y) : (2x+3y) = 5 : 6$, तो $\left(\frac{\sqrt[3]{x}+\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}\right)^2$ का एक मान क्या होगा?

(a) $\frac{1}{25}$ (b) 5 (c) $\frac{1}{5}$ (d) 25

(CGL Mains 25-10-2015)

203. The value of

$$\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{5}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{9}}$$ is

$$\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\frac{1}{\sqrt{5}+\sqrt{6}}+\frac{1}{\sqrt{6}+\sqrt{7}}+\frac{1}{\sqrt{7}+\sqrt{8}}+\frac{1}{\sqrt{8}+\sqrt{9}}$$ का मान क्या होगा?

(a) 2 (b) 4
(c) 0 (d) 1

(CGL Mains 12-04-2015)

204. The value of

$\sqrt{72+\sqrt{72+\sqrt{72+....}}}$ is

$\sqrt{72+\sqrt{72+\sqrt{72+....}}}$ का मान क्या होगा?

(a) 9 (b) 18 (c) 8 (d) 12

(CGL Mains 12-04-2015)

205. If $\sqrt{33} = 5.745$, then the value of the following is approximately:

यदि $\sqrt{33} = 5.745$, तो निम्नलिखित का मान लगभग कितना है?

$\sqrt{\frac{3}{11}}$

(a) 0.5223 (b) 6.32
(c) 2.035 (d) 1

(SSC LDC 12-04-2015, Evening)

206. The exponential form of $\sqrt{2}\times\sqrt{3}$ is:

$\sqrt{2}\times\sqrt{3}$ का घातांक रूप क्या है?

(a) $6^{-1/2}$ (b) $6^{1/2}$ (c) $6^{1/4}$ (d) 6

(SSC LDC 15-11-2015, Morning)

207. The value of $\frac{1}{1+\sqrt{2}+\sqrt{3}}+\frac{1}{1-\sqrt{2}+\sqrt{3}}$ is:

$\frac{1}{1+\sqrt{2}+\sqrt{3}}+\frac{1}{1-\sqrt{2}+\sqrt{3}}$ का मान क्या है?

(a) $\sqrt{2}$ (b) $\sqrt{3}$

(c) 1 (d) $4\left(\sqrt{3}+\sqrt{2}\right)$

(SSC LDC 06-12-2015, Morning)

208. The value of the expression

$\sqrt{6+\sqrt{6+\sqrt{6+...+\text{upto}\infty}}}$ is

$\sqrt{6+\sqrt{6+\sqrt{6+...+\text{upto}\infty}}}$ is त क व्यंजक का मान क्या होगा?

(a) 30 (b) 5 (c) 3 (d) 2

(SSC LDC 20-12-2015, Morning)

209. The value of

$$\frac{3\sqrt{7}}{\sqrt{5}+\sqrt{2}}-\frac{5\sqrt{5}}{\sqrt{2}+\sqrt{7}}+\frac{2\sqrt{2}}{\sqrt{7}+\sqrt{5}}$$

is:

$\frac{3\sqrt{7}}{\sqrt{5}+\sqrt{2}}-\frac{5\sqrt{5}}{\sqrt{2}+\sqrt{7}}+\frac{2\sqrt{2}}{\sqrt{7}+\sqrt{5}}$ का मान क्या है?

(a) 1 (b) 0

(c) $2\sqrt{3}$ (d) $\sqrt{7}$

(SSC LDC 20-12-2015, Evening)

210. $\sqrt{4032}\times\sqrt{7} =$

(a) $36\sqrt{2}$ (b) $24\sqrt{7}$

(c) 196 (d) 252

(SSC LDC 20-12-2015, Evening)

211. If $11\sqrt{n} = \sqrt{112}+\sqrt{343}$, then the value of $n$ is:

यदि $11\sqrt{n} = \sqrt{112}+\sqrt{343}$, तो $n$ का मान क्या होगा?

(a) 3 (b) 11 (c) 13 (d) 7

(SSC LDC 20-12-2015, Evening)

212. If $3^{x+y} = 81$ and $81^{x-y} = 3$, then the value of $\frac{x}{y}$ is

(a) $\frac{15}{17}$ (b) $\frac{17}{30}$

(c) $\frac{15}{34}$ (d) $\frac{17}{15}$

(SSC CPO 20-03-2016, Morning)

213. If $3^{x+3}\times9^{2x-5}=3^{3x+7}$ then the value of × is:

यदि $3^{x+3}\times9^{2x-5}=3^{3x+7}$ तो × का मान है-

(a) 5 (b) 6

(c) 7 (d) 8

(SSC CPO(Re) 07-06-2016, Evening)

## ANSWER KEY

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | (c) | 10. | (c) | 19. | (b) | 28. | (d) | 37. | (c) | 46. | (b) | 55. | (c) | 64. | (b) | 73. | (a) | 82. | (b) |
| 2. | (a) | 11. | (b) | 20. | (c) | 29. | (a) | 38. | (c) | 47. | (a) | 56. | (d) | 65. | (c) | 74. | (d) | 83. | (d) |
| 3. | (a) | 12. | (a) | 21. | (a) | 30. | (a) | 39. | (a) | 48. | (b) | 57. | (a) | 66. | (d) | 75. | (a) | 84. | (c) |
| 4. | (c) | 13. | (b) | 22. | (a) | 31. | (c) | 40. | (c) | 49. | (b) | 58. | (a) | 67. | (a) | 76. | (d) | 85. | (c) |
| 5. | (c) | 14. | (a) | 23. | (c) | 32. | (c) | 41. | (a) | 50. | (a) | 59. | (a) | 68. | (c) | 77. | (c) | 86. | (a) |
| 6. | (b) | 15. | (d) | 24. | (c) | 33. | (a) | 42. | (d) | 51. | (a) | 60. | (c) | 69. | (b) | 78. | (a) | 87. | (c) |
| 7. | (d) | 16. | (b) | 25. | (b) | 34. | (a) | 43. | (a) | 52. | (d) | 61. | (c) | 70. | (d) | 79. | (c) | 88. | (d) |
| 8. | (c) | 17. | (c) | 26. | (b) | 35. | (c) | 44. | (b) | 53. | (c) | 62. | (b) | 71. | (c) | 80. | (b) | 89. | (a) |
| 9. | (c) | 18. | (b) | 27. | (a) | 36. | (d) | 45. | (b) | 54. | (a) | 63. | (c) | 72. | (b) | 81. | (d) | 90. | (b) |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91. | (b) | 104. | (b) | 117. | (a) | 130. | (d) | 142. | (b) | 154. | (d) | 166. | (c) | 178. | (c) | 190. | (d) | 202. | (d) |
| 92. | (c) | 105. | (a) | 118. | (b) | 131. | (a) | 143. | (b) | 155. | (b) | 167. | (b) | 179. | (c) | 191. | (a) | 203. | (a) |
| 93. | (d) | 106. | (b) | 119. | (a) | 132. | (d) | 144. | (c) | 156. | (d) | 168. | (c) | 180. | (a) | 192. | (a) | 204. | (a) |
| 94. | (c) | 107. | (b) | 120. | (c) | 133. | (a) | 145. | (a) | 157. | (b) | 169. | (a) | 181. | (c) | 193. | (a) | 205. | (a) |
| 95. | (b) | 108. | (a) | 121. | (d) | 134. | (b) | 146. | (b) | 158. | (a) | 170. | (a) | 182. | (a) | 194. | (d) | 206. | (c) |
| 96. | (c) | 109. | (c) | 122. | (a) | 135. | (d) | 147. | (b) | 159. | (c) | 171. | (a) | 183. | (b) | 195. | (b) | 207. | (c) |
| 97. | (b) | 110. | (b) | 123. | (d) | 136. | (a) | 148. | (b) | 160. | (a) | 172. | (d) | 184. | (d) | 196. | (c) | 208. | (c) |
| 98. | (b) | 111. | (a) | 124. | (a) | 137. | (c) | 149. | (b) | 161. | (c) | 173. | (d) | 185. | (b) | 197. | (c) | 209. | (b) |
| 99. | (a) | 112. | (c) | 125. | (a) | 138. | (b) | 150. | (c) | 162. | (d) | 174. | (c) | 186. | (c) | 198. | (d) | 210. | (c) |
| 100. | (c) | 113. | (c) | 126. | (c) | 139. | (b) | 151. | (b) | 163. | (b) | 175. | (b) | 187. | (b) | 199. | (d) | 211. | (d) |
| 101. | (d) | 114. | (a) | 127. | (a) | 140. | (d) | 152. | (b) | 164. | (b) | 176. | (b) | 188. | (a) | 200. | (d) | 212. | (d) |
| 102. | (c) | 115. | (d) | 128. | (d) | 141. | (d) | 153. | (c) | 165. | (c) | 177. | (b) | 189. | (d) | 201. | (a) | 213. | (c) |
| 103. | (c) | 116. | (b) | 129. | (a) | | | | | | | | | | | | | | |

# SOLUTION

1. (c) $\left(\sqrt{12}+\sqrt{18}\right)-\left(\sqrt{3}+\sqrt{2}\right)$

$\Rightarrow 2\sqrt{3}+3\sqrt{2}-\sqrt{3}-\sqrt{2}$

$\Rightarrow \boldsymbol{\sqrt{3}+2\sqrt{2}}$

2. (a) $\sqrt{5+2\sqrt{6}}-\dfrac{1}{\sqrt{5+2\sqrt{6}}}$

$\Rightarrow \left(\sqrt{3}+\sqrt{2}\right)-\dfrac{1}{\left(\sqrt{3}+\sqrt{2}\right)}$

$\left[\sqrt{5+2\sqrt{6}}=\sqrt{\left(\sqrt{3}+\sqrt{2}\right)^2}\Rightarrow\sqrt{3}+\sqrt{2}\right.$

$\left.a^2+b^2+2ab=(a+b)^2\right]$

$\Rightarrow \sqrt{3}+\sqrt{2}-\left(\dfrac{1}{\sqrt{3}+\sqrt{2}}\times\dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}\right)$

$\Rightarrow \sqrt{3}+\sqrt{2}-\left(\dfrac{\sqrt{3}-\sqrt{2}}{3-2}\right)$

$\Rightarrow \sqrt{3}+\sqrt{2}-\sqrt{3}+\sqrt{2}$

$\Rightarrow \boldsymbol{2\sqrt{2}}$

3. (a) $\sqrt{2^4}+\sqrt[3]{64}+\sqrt[4]{2^8}$

$\Rightarrow 2^{4\times\frac{1}{2}}+4^{3\times\frac{1}{3}}+2^{8\times\frac{1}{4}}$

$\Rightarrow 2^2+4^1+2^2$

$\Rightarrow 4+4+4=12$

4. (c) $2\sqrt[3]{32}-3\sqrt[3]{4}+\sqrt[3]{500}$

$\Rightarrow 2\sqrt[3]{2\times2\times2\times4}-3\sqrt[3]{4}+\sqrt[3]{5\times5\times5\times4}$

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

$\Rightarrow 9\sqrt[3]{4}-3\sqrt[3]{4}$

$\Rightarrow \boldsymbol{6\sqrt[3]{4}}$

5. (c) $\dfrac{\frac{3}{2+\sqrt{3}}-\frac{2}{2-\sqrt{3}}}{2-5\sqrt{3}}$

$\Rightarrow \dfrac{\dfrac{3(2-\sqrt{3})-2(2+\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})}}{2-5\sqrt{3}}$

$\Rightarrow \dfrac{6-3\sqrt{3}-4-2\sqrt{3}}{(2+\sqrt{3})(2-\sqrt{3})(2-5\sqrt{3})}$

$=\dfrac{2-5\sqrt{3}}{2-5\sqrt{3}}=1$

6. (b) $(243)^{0.16}\times(243)^{0.04}$

$\Rightarrow (243)^{0.16+0.04}\quad\left[a^m\times a^n=a^{m+n}\right]$

$\Rightarrow 243^{0.20}$

$\Rightarrow 243^{\frac{20}{100}}$

$\Rightarrow 243^{\frac{1}{5}}$

$\Rightarrow \sqrt[5]{243}=3$

7. (d) $(256)^{0.16}\times(256)^{0.09}$

$\Rightarrow (256)^{0.16+0.09}$

$\Rightarrow 256^{0.25}\qquad\Rightarrow 256^{\frac{1}{4}}$

$\Rightarrow \sqrt[4]{256}=4$

8. (c)

$\dfrac{0.06\times0.06\times0.06-0.05\times0.05\times0.05}{0.06\times0.06+0.06\times0.05+0.05\times0.05}$

$\Rightarrow \dfrac{0.06^3-0.05^3}{0.06^2+0.06\times0.05+0.05^2}$

$\Rightarrow \dfrac{a^3-b^3}{a^2+ab+b^2}$

$\Rightarrow \dfrac{(a-b)(a^2+ab+b^2)}{(a^2+ab+b^2)}$

$\Rightarrow a-b$

Sol. $a=0.06\ ,\qquad b=0.05$

$\Rightarrow 0.06-0.05\qquad\Rightarrow\quad 0.01$

9. (c)

$\dfrac{0.05\times0.05\times0.05-0.04\times0.04\times0.04}{0.05\times0.05+0.002+0.04\times0.04}$

$\Rightarrow \dfrac{(0.05)^3-(0.04)^3}{0.05^2+0.002+0.04^2}$

$a=0.05$ (Description: same as above question

$b=0.04$

$\Rightarrow a-b\qquad\Rightarrow 0.05-0.04$

$\Rightarrow 0.01$

10. (c) $\dfrac{5.32\times56+5.32\times44}{(7.66)^2-(2.34)^2}$

$\Rightarrow \dfrac{5.32(56+44)}{(7.66-2.34)(7.66+2.34)}$

$\Rightarrow \dfrac{5.32(100)}{(5.32)(10)}$

$\Rightarrow \dfrac{100}{10}=10$

11. (b) $\sqrt{6}\ ,\ \sqrt[3]{2}\ ,\ \sqrt{2}\ ,\ \sqrt[3]{4}$

$\Rightarrow 3^{\frac{1}{2}}\ ,\ 2^{\frac{1}{3}}\ ,\ 2^{\frac{1}{2}}\ ,\ 4^{\frac{1}{3}}$

(take LCM of 3 &2)

$\Rightarrow 3^{\frac{3}{6}}\ ,\ 2^{\frac{2}{6}}\ ,\ 2^{\frac{3}{6}}\ ,\ 4^{\frac{2}{6}}$

$\Rightarrow \sqrt[6]{3^3}\ ,\ \sqrt[6]{2^2}\ ,\ \sqrt[6]{2^3}\ ,\ \sqrt[6]{4^2}$

$\Rightarrow \sqrt[6]{27}\ ,\ \sqrt[6]{4}\ ,\ \sqrt[6]{8}\ ,\ \sqrt[6]{16}$

$\Rightarrow \boldsymbol{\sqrt[3]{2}}$

12. (a) $\sqrt[3]{4}\ ,\ \sqrt[4]{6}\ ,\ \sqrt[6]{15}\ ,\ \sqrt[12]{245}$

$\Rightarrow 4^{\frac{1}{3}}\ ,\ 6^{\frac{1}{4}}\ ,\ 15^{\frac{1}{6}}\ ,\ 245^{\frac{1}{12}}$

(take LCM of 3,4,12& 6)

$\Rightarrow 4^{\frac{4}{12}}\ ,\ 6^{\frac{3}{12}}\ ,\ 15^{\frac{2}{12}}\ ,\ 245^{\frac{1}{12}}$

$\Rightarrow \sqrt[12]{4^4}\ ,\ \sqrt[12]{6^3}\ ,\ \sqrt[12]{15^2}\ ,\ \sqrt[12]{245}$

$\Rightarrow \sqrt[12]{256}\ ,\ \sqrt[12]{216}\ ,\ \sqrt[12]{225}\ ,\ \sqrt[12]{245}$

$\Rightarrow$ Biggest $=\sqrt[3]{4}$

13. (b) $\left[\sqrt[3]{\sqrt{5^9}}\right]^4\left[\sqrt[3]{\sqrt{5^9}}\right]^4$

$\Rightarrow \left[5^{9\times\frac{1}{6}\times\frac{1}{3}}\right]^4\left[5^{9\times\frac{1}{3}\times\frac{1}{6}}\right]^4$

$\Rightarrow \left[5^{\frac{1}{2}}\right]^4\left[5^{\frac{1}{2}}\right]^4$

$\Rightarrow 5^2\times5^2$

$\Rightarrow 5^{2+2}\qquad\Rightarrow 5^4$

14. (a) $27^{2n-1}=243^3$

$3^{3(2n-1)}=3^{5\times3}$

$3^{6n-3}=3^{15}$

$6n-3=15$

$6n=18$

$n=\dfrac{18}{6},\qquad n=3$

15. (d) $3^{x+8} = 27^{2x+1}$

$3^{x+8} = (3^3)^{2x+1}$

$3^{x+8} = 3^{6x+3}$

$x + 8 = 6x + 3$

$5x = 5, \quad x = 1$

16. (b) $\left(\sqrt{8} - \sqrt{4} - \sqrt{2}\right)$

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

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

$\Rightarrow \sqrt{2} - 2$

17. (c) $8^{\frac{2}{3}} \Rightarrow (2^3)^{\frac{2}{3}}$

$\Rightarrow 2^{3\times\frac{2}{3}}$

$\Rightarrow 2^2 = 4$

18. (b) $\left(16^{\frac{3}{2}} + 16^{\frac{-3}{2}}\right)$

$\Rightarrow \left(16^{\frac{3}{2}} + \frac{1}{16^{\frac{3}{2}}}\right)$

$\Rightarrow \left(4^{2\times\frac{3}{2}} + \frac{1}{4^{2\times\frac{3}{2}}}\right)$

$\Rightarrow 4^3 + \frac{1}{4^3} \Rightarrow \frac{4097}{64}$

19. (b) $16^{\frac{3}{4}}$

$\Rightarrow \left(2^4\right)^{\frac{3}{4}}$

$\Rightarrow 2^{4\times\frac{3}{4}} \Rightarrow 2^3 = 8$

20. (c) $(0.01024)^{\frac{1}{5}}$

$\Rightarrow (0.4^5)^{\frac{1}{5}}$

$\Rightarrow 0.4^{5\times\frac{1}{5}} \Rightarrow 0.4$

21. (a) $(16^{0.16} \times 2^{0.64}) \div (2^{0.36})$

$\Rightarrow (2^4)^{0.16} \times (2)^{0.64} \div (2)^{0.36}$

$\Rightarrow 2^{0.64} \times 2^{0.36}$

$\Rightarrow 2^{0.64+0.36}$

$\Rightarrow 2^1 \Rightarrow 2$

22. (a) $64^{\frac{-2}{3}} \times \left(\frac{1}{4}\right)^{-2}$

$\Rightarrow \left(4^3\right)^{\frac{-2}{3}} \times \left(\frac{1}{4}\right)^{-2}$

$\Rightarrow 4^{-2} \times \left(\frac{1}{4}\right)^{-2}$

$\Rightarrow \left(\frac{1}{4}\right)^2 \times \left(\frac{1}{4}\right)^{-2} \left(\frac{1}{4}\right)^{2-2} \left(\frac{1}{4}\right)^{2-2}$

$\Rightarrow \left(\frac{1}{4}\right)^0 = 1$

23. (c) $\left(\frac{1+\sqrt{2}}{\sqrt{5}+\sqrt{3}} + \frac{1-\sqrt{2}}{\sqrt{5}-\sqrt{3}}\right)$

$\Rightarrow \frac{(1+\sqrt{2})(\sqrt{5}-\sqrt{3}) + (1-\sqrt{2})(\sqrt{5}+\sqrt{3})}{(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{2})}$

$\Rightarrow \frac{\sqrt{5}-\sqrt{3}+\sqrt{10}-\sqrt{6}+\sqrt{5}+\sqrt{3}-\sqrt{10}+\sqrt{6}}{(\sqrt{5})^2-(\sqrt{3})^2}$

$\Rightarrow \frac{2\sqrt{5}-2\sqrt{6}}{2} \Rightarrow \frac{2(\sqrt{5}-\sqrt{6})}{2}$

$\Rightarrow (\sqrt{5}-\sqrt{6})$

24. (c)

$\Rightarrow \left(\frac{2+\sqrt{3}}{\sqrt{3}(\sqrt{3}+1)} + \frac{\sqrt{3}-1}{\sqrt{3}+1}\right)$

$\Rightarrow \left(\frac{(2+\sqrt{3})^2 + (2-\sqrt{3})^2}{(2-\sqrt{3})(2+\sqrt{3})} + \frac{\sqrt{3}-1}{\sqrt{3}+1} \times \frac{\sqrt{3}-1}{\sqrt{3}-1}\right)$

$\Rightarrow \left(\frac{4+3+4\sqrt{3}+4+3-4\sqrt{3}}{4-3} + \frac{(\sqrt{3}-1)^2}{3-1}\right)$

$\Rightarrow \left(14 + \frac{3+1-2\sqrt{3}}{2}\right)$

$\Rightarrow 14 + \frac{2(2-\sqrt{3})}{2}$

$\Rightarrow 14 + 2 - \sqrt{3} = 16 - \sqrt{3}$

25. (b) $\left(\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}\right)^2 \Rightarrow \frac{(\sqrt{5}+\sqrt{3})^2}{(\sqrt{5}-\sqrt{3})^2}$

$\Rightarrow \frac{5+3+2\sqrt{15}}{5+3-2\sqrt{15}} \Rightarrow \frac{8+2\sqrt{15}}{8-2\sqrt{15}}$

$\Rightarrow \frac{4+\sqrt{15}}{4-\sqrt{15}}$

**Similarly:** $\left(\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}\right)^2 = \frac{4-\sqrt{15}}{4+\sqrt{15}}$

Thus, the expression.

$\Rightarrow \frac{4+\sqrt{15}}{4-\sqrt{15}} + \frac{4-\sqrt{15}}{4+\sqrt{15}}$

$\Rightarrow \frac{16+15+8\sqrt{15}+16+15-8\sqrt{15}}{(16-15)}$

$\Rightarrow 62$

26. (a) $a = 6.5$

$b = 3.5$

$(a \times a - 2 \times a \times b + b \times b)$

$\Rightarrow a^2 - 2ab + b^2$

$\Rightarrow (a-b)^2$

$\Rightarrow (6.5 - 3.5)^2 \Rightarrow 3^2 = 9$

27. (a) $a = 7.5$ and $b = 2.5$

$\Rightarrow a \times a + 2ab + b \times b$

$\Rightarrow a^2 + 2ab + b^2$

$\Rightarrow (a+b)^2 = (7.5 + 2.5)^2$

$\Rightarrow (10)^2 \Rightarrow 100$

28. (d) $36^{\frac{1}{6}} \Rightarrow (6^2)^{\frac{1}{6}} \Rightarrow 6^{2\times\frac{1}{6}}$

$\Rightarrow 6^{\frac{1}{3}} \Rightarrow \sqrt[3]{6}$

29. (a) $\left(\frac{8}{125}\right)^{\frac{-4}{3}}$

$\Rightarrow \left(\frac{125}{8}\right)^{\frac{4}{3}} \Rightarrow \left[\left(\frac{5}{2}\right)^3\right]^{\frac{4}{3}}$

$\Rightarrow \left(\frac{5}{2}\right)^4 \Rightarrow \frac{625}{16}$

30. (a) $(256)^{0.16} \times (16)^{0.18}$

$\Rightarrow (4)^{4\times0.16} \times (4)^{2\times0.18}$

$\Rightarrow 4^{0.64} \times 4^{0.36} \Rightarrow 4^{0.64+0.36}$

$\Rightarrow 4$

31. (c) $\sqrt{\frac{\left[\left(\sqrt{12}-\sqrt{8}\right)\left(\sqrt{3}+\sqrt{2}\right)\right]}{5+\sqrt{24}}}$

$\Rightarrow \sqrt{\frac{\sqrt{36}+\sqrt{24}-\sqrt{24}-\sqrt{16}}{5+\sqrt{24}}}$

$\Rightarrow \sqrt{\frac{6-4}{5+\sqrt{24}}}$

$\Rightarrow \sqrt{\frac{2}{5+\sqrt{24}}\times\frac{5-\sqrt{24}}{5-\sqrt{24}}}$

$\Rightarrow \sqrt{\frac{2\left(5-\sqrt{24}\right)}{25-24}}$

$\Rightarrow \sqrt{2\left(5-2\sqrt{6}\right)}$

$\Rightarrow \sqrt{2\left(\left(\sqrt{3}\right)^2+\left(\sqrt{2}\right)^2-2\sqrt{3}\times\sqrt{2}\right)}$

$\Rightarrow \sqrt{2\left(\sqrt{3}-\sqrt{2}\right)^2}$

$\Rightarrow \sqrt{2}\left(\sqrt{3}-\sqrt{2}\right)$

$\Rightarrow \sqrt{6}-2$

32. (c) $\left[64^{\frac{2}{3}}\times 2^{-2}+8^0\right]^{\frac{1}{2}}$

$\Rightarrow \left((4)^{3\times\frac{2}{3}}\times\left(\frac{1}{2}\right)^2+1\right)^{\frac{1}{2}}$

$\Rightarrow \left(4^2\times\frac{1}{4}+1\right)^{\frac{1}{2}}$

$\Rightarrow \left(16\times\frac{1}{4}\right)^{\frac{1}{2}}=\sqrt{4}=2$

33. (a) $\frac{1}{\sqrt{\left(12-\sqrt{140}\right)}}-\frac{2}{\sqrt{\left(10+\sqrt{84}\right)}}$

$\Rightarrow \frac{1}{\sqrt{12-\sqrt{4\times 35}}}-\frac{1}{\sqrt{8-\sqrt{4\times 15}}}$

$-\frac{2}{\sqrt{10+\sqrt{4\times 21}}}$

$\Rightarrow \frac{1}{\sqrt{12-2\sqrt{35}}}-\frac{1}{\sqrt{8-2\sqrt{15}}}-\frac{2}{\sqrt{10+2\sqrt{21}}}$

$\Rightarrow \frac{1}{\sqrt{\left(\sqrt{7}\right)^2+\left(\sqrt{5}\right)^2-2\sqrt{7}\sqrt{5}}}-$

$\frac{1}{\sqrt{(5)^2+\left(\sqrt{3}\right)^2-2\sqrt{5}\sqrt{3}}}-$

$\frac{2}{\sqrt{\left(\sqrt{7}\right)^2+\left(\sqrt{3}\right)^2+2\sqrt{7}\sqrt{3}}}$

$\Rightarrow \frac{1}{\sqrt{\left(\sqrt{7}-\sqrt{5}\right)^2}}-\frac{1}{\sqrt{\left(\sqrt{5}-\sqrt{3}\right)^2}}-$

$\frac{2}{\sqrt{\left(\sqrt{7}+\sqrt{3}\right)^2}}$

$\Rightarrow \frac{1}{\sqrt{7}-\sqrt{5}}-\frac{1}{\sqrt{5}-\sqrt{3}}-\frac{2}{\sqrt{7}+\sqrt{3}}$

Rationalizing in above equation.

$\Rightarrow \frac{1}{\sqrt{7}-\sqrt{5}}\times\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}+\sqrt{5}}-$

$\frac{1}{\sqrt{5}-\sqrt{3}}\times\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}+\sqrt{3}}-$

$\frac{2}{\sqrt{7}+\sqrt{3}}+\frac{\sqrt{7}-\sqrt{3}}{\sqrt{7}-\sqrt{3}}$

$\Rightarrow \frac{\sqrt{7}+\sqrt{5}}{2}-\frac{\left(\sqrt{5}+\sqrt{3}\right)}{2}-\frac{\left(\sqrt{7}-\sqrt{3}\right)}{2}$

$\Rightarrow \frac{\sqrt{7}+\sqrt{5}-\sqrt{5}-\sqrt{3}-\sqrt{7}+\sqrt{3}}{2}$

$\Rightarrow 0$

34. (a) $\sqrt{11+2\sqrt{30}}-\frac{1}{\sqrt{11+2\sqrt{30}}}$

$\Rightarrow \sqrt{\left(\sqrt{6}\right)^2+\left(\sqrt{5}\right)^2+2\sqrt{6}.\sqrt{5}}$

$-\frac{1}{\sqrt{\left(\sqrt{6}\right)^2+\left(\sqrt{5}\right)^2+2\sqrt{6}.\sqrt{5}}}$

$\Rightarrow \sqrt{\left(\sqrt{6}+\sqrt{5}\right)^2}-\frac{1}{\sqrt{\left(\sqrt{6}+\sqrt{5}\right)^2}}$

$\Rightarrow \sqrt{6}+\sqrt{5}-\frac{1}{\sqrt{6}+\sqrt{5}}$

Rationalising above equation

$\Rightarrow \sqrt{6}+\sqrt{5}-\frac{1}{\sqrt{6}+\sqrt{5}}\times\frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}-\sqrt{5}}$

$\Rightarrow \sqrt{6}+\sqrt{5}-\left(\sqrt{6}-\sqrt{5}\right)$

$\Rightarrow \sqrt{6}+\sqrt{5}-\sqrt{6}+\sqrt{5}$

$\Rightarrow 2\sqrt{5}$

35. (c) $\frac{(1.5)^3+(4.7)^3+(3.8)^3-3\times 1.5\times}{(1.5)^2+(4.7)^2+(3.8)^2--1.5\times 4.7-}$

$\frac{4.7\times 3.8}{4.7\times 3.8-3.8\times 1.5}$

$(1.5+4.7+3.8)$

$\Rightarrow \frac{(1.5+4.7^2+3.8^2-1.5\times 4.7-4.7\times}{(1.5^2+4.7^2+3.8^2-1.5\times 4.7-4.7\times}$

$\frac{3.8-3.8\times 1.5)}{3.7-3.8\times 1.5)}$

$\therefore (a^3+b^3+c^3-3abc=(a+b+c)(a^2+b^2+c^2-ab-bc-ca)$

$\Rightarrow 1.5+4.7+3.8 \Rightarrow 10.0$

$\Rightarrow 10$

36. (d) $\frac{(6.25)^{\frac{1}{2}}\times(0.0144)^{\frac{1}{2}}+1}{(0.027)^{\frac{1}{3}}\times(81)^{\frac{1}{4}}}$

$\Rightarrow \frac{(2.5\times 0.12)+1}{0.3\times 3} \Rightarrow \frac{0.3+1}{0.9} \Rightarrow \frac{1.3}{0.9}$

$\Rightarrow 1.44..... \Rightarrow 1.\overline{4}$

37. (c)

$\frac{0.41\times 0.41\times 0.41+0.69\times 0.69\times 0.69}{0.41\times 0.41-0.41\times 0.69+0.69\times 0.69}$

$\Rightarrow \frac{(0.41)^3+(0.69)^3}{(0.41)^2-0.41\times 0.69+(0.69)^2}$

$\because \left[a^3+b^3=(a+b)(a^2+b^2-ab)\right]$

$\Rightarrow 0.41+0.69=1.10$

38. (c)

$(0.5)^2$, $\sqrt{0.49}$, $\sqrt[3]{0.008}$, $0.23$

$\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$

$0.25$ $0.7$ $\boxed{0.2}$ $0.23$

$\downarrow$

least

39. (a)

$\sqrt[3]{4}$ $\sqrt{2}$ $\sqrt[6]{3}$ $\sqrt[4]{5}$

↓ ↓ ↓ ↓

$4^{1/3}$ $2^{1/2}$ $3^{1/6}$ $5^{1/4}$

↓ ↓ ↓ ↓

$4^{4/12}$ $2^{6/12}$ $3^{2/12}$ $5^{3/12}$

↓ ↓ ↓ ↓

$\sqrt[12]{4^4}$ $\sqrt[12]{2^6}$ $\sqrt[12]{3^2}$ $\sqrt[12]{5^3}$

↓ ↓ ↓ ↓

$\sqrt[12]{256}$ $\sqrt[12]{64}$ $\sqrt[12]{9}$ $\sqrt[12]{125}$

**Descending order:**

$\sqrt[12]{256} > \sqrt[12]{125} > \sqrt[12]{64} > \sqrt[12]{9}$

$\sqrt[3]{4} > \sqrt[4]{5} > \sqrt{2} > \sqrt[6]{3}$

40. (c)

$(2.89)^{0.5}$ → $(2.89)^{5/10}$ → $\sqrt{2.89}$ → 1.7

$2-(0.5)^2$ → $2-0.25$ → 1.75

$1+\frac{0.5}{1-1/2}$ → $1+\frac{0.5}{0.5}$ → 1+1 → 2 ↑ **Greatest**

$\sqrt{3}$ → 1.732

41. (a)

$\sqrt{2}$ → $2^{1/2}$ → $2^{6/12}$ → $\sqrt[12]{2^6}$ → $\sqrt[12]{64}$

$\sqrt[3]{3}$ → $3^{1/3}$ → $3^{4/12}$ → $\sqrt[12]{3^4}$ → $\sqrt[12]{81}$

$\sqrt[4]{5}$ → $5^{1/4}$ → $5^{3/12}$ → $\sqrt[12]{5^3}$ → $\sqrt[12]{125}$ ↑ Greatest

$\sqrt[3]{2}$ → $2^{1/3}$ → $2^{4/12}$ → $\sqrt[12]{2^4}$ → $\sqrt[12]{16}$

42 (d) $125^{2/3} \times 625^{-1/4} = 5^{\square}$

$5^{3\times 2/3} \times 5^{4\times -1/4} = 5^{\square}$

$5^2 \times 5^{-1} = 5^{\square}$

$5^{\square} = 5^{\square}$

$x = 2^{\square} = x^{\square}$

43. (a) $\dfrac{(243)^{0.13} \times (243)^{0.07}}{7^{0.25} \times 49^{0.075} \times 343^{0.2}}$

$\Rightarrow \dfrac{243^{0.13+0.07}}{7^{0.25} \times 7^{2\times 0.075} \times 7^{3\times 0.2}}$

$\Rightarrow \dfrac{3^{5\times 0.20}}{7^{0.25+0.150+0.6}} \Rightarrow \dfrac{3^1}{7^1} = \dfrac{3}{7}$

44. (b) $\sqrt{-\sqrt{3}+\sqrt{3+8\sqrt{7+4\sqrt{3}}}}$

$\Rightarrow \sqrt{-\sqrt{3}+\sqrt{3+8\sqrt{4+3+2\times 2\times \sqrt{3}}}}$

$\Rightarrow \sqrt{-\sqrt{3}+\sqrt{3+8\sqrt{(2+\sqrt{3})^2}}}$

$\Rightarrow \sqrt{-\sqrt{3}+\sqrt{3+8(2+\sqrt{3})}}$

$\Rightarrow \sqrt{-\sqrt{3}+\sqrt{3+16+8\sqrt{3}}}$

$\Rightarrow \sqrt{-\sqrt{3}+\sqrt{(\sqrt{3})^2+(4)^2+2\times 4\times \sqrt{3}}}$

$\Rightarrow \sqrt{-\sqrt{3}+\sqrt{(4+\sqrt{3})^2}}$

$\Rightarrow \sqrt{-\sqrt{3}+4+\sqrt{3}} \Rightarrow \sqrt{4} = 2$

45. (b) $\sqrt{\sqrt[3]{0.004096}}$

$\Rightarrow \sqrt{0.16}$ $(16^3 = 4096)$

$\Rightarrow \sqrt{0.4\times 0.4}$

$\Rightarrow 0.4$

46. (b) $\dfrac{3\sqrt{12}}{2\sqrt{28}} \div \dfrac{2\sqrt{21}}{\sqrt{98}}$

$\Rightarrow \dfrac{3\times 2\times \sqrt{3}}{2\times 2\times \sqrt{7}} \div \dfrac{2\times \sqrt{3}\times \sqrt{7}}{7\sqrt{2}}$

$\Rightarrow \dfrac{3\times 2\times \sqrt{3}}{2\times 2\times \sqrt{7}} \times \dfrac{7\times \sqrt{2}}{2\times \sqrt{3}\times \sqrt{7}} \Rightarrow \dfrac{3\sqrt{2}}{4}$

$\Rightarrow \dfrac{3\times 1.414}{4} = 1.0605$

$\Rightarrow$ Approx = 1.0606

47. (a)

$\dfrac{2.3\times 2.3\times 2.3-1}{2.3\times 2.3+2.3+1}$

$a = 2.3$

$b = 1$

$\Rightarrow \dfrac{a^3-b^3}{a^2+ab+b^2}$

$\Rightarrow \dfrac{(a-b)(a^2+ab+b^2)}{(a^2+ab+b^2)}$

$\Rightarrow 2.3-1 = 1.3$

48. (b)

$(2.89)^{0.5}$ → $2.89^{1/2}$ → $\sqrt{2.89}$ → 1.7

$2-(0.5)^2$ → $2-0.25$ → 1.75

$\sqrt{3}$ → **1.732**

$\sqrt[3]{0.008}$ → 0.2

Assending order :

$0.2 < 1.7 < 1.732 < 1.75$

$\sqrt[3]{0.008} < (2.89)^{0.5} < \sqrt{3} < 2-(0.5)^2$

49. (b) $\sqrt{2} \to 2^{1/2} \to 2^{15/30} = \sqrt[30]{2^{15}}$

$= \sqrt[30]{32768}$

$\sqrt[3]{3} \to 3^{1/3} \to 3^{10/30} = \sqrt[30]{3^{10}}$

$= \sqrt[30]{59049}$

$\sqrt[6]{6} \to 6^{1/6} \to 6^{5/30} = \sqrt[30]{6^5}$

$= \sqrt[30]{7776}$

$\sqrt[5]{5} \to 5^{1/5} \to 5^{6/30} = \sqrt[30]{5^6}$

$= \sqrt[30]{15625}$

So $\sqrt[3]{3}$ is the greatest

50. (a) $\sqrt{2} = 1.414$

$\Rightarrow \sqrt{8}+2\sqrt{32}-3\sqrt{128}+4\sqrt{50}$

$\Rightarrow 2\sqrt{2}+2\times 4\sqrt{2}-3\times 8\sqrt{2}+4\times 5\sqrt{2}$

$\Rightarrow 2\sqrt{2}+8\sqrt{2}-24\sqrt{2}+20\sqrt{2}$

$\Rightarrow 6\sqrt{2}$

$\Rightarrow 6\times 1.414 \Rightarrow 8.484$

51. (a) $\sqrt{\dfrac{5}{3}} \Rightarrow \sqrt{\dfrac{5\times 3}{3\times 3}} = \sqrt{\dfrac{15}{9}}$

$= \dfrac{\sqrt{15}}{3}$

$\Rightarrow \dfrac{3.88}{3} = 1.29\overline{3}$

52. (d) $3\sqrt{3}\ \sqrt{3} = 3\times 3 = 9$

$\therefore$ Required rationalising factor is $\sqrt{3}$

53. (c) $x = \sqrt{2+\sqrt{2+\sqrt{2+}}}$ .....

$x^2 = 2 + \sqrt{2+\sqrt{2+}}$ .....

$x^2 = 2 + x$

$x^2 - x - 2 = 0$

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

$x(x-2) + 1(x-2) = 0$

$(x+1)(x-2) = 0$

$x = 2$

Shortcut Method

When the question is in this form

i.e $\sqrt{x+\sqrt{x+\sqrt{x}}}$ .....

Then factor the $\overset{x}{\underset{n1 \quad n2}{\swarrow \quad \searrow}}$ $n1 > n2$

mi.diff.

So n1 is answer $\sqrt{2+\sqrt{2+2}}$

$\overset{2}{\swarrow} \quad \overset{1}{\searrow}$

2 × 1

54. (a)

$2 + \sqrt{0.09} - \sqrt[3]{0.008} - 75\% \text{ of } 2.80$

$\Rightarrow 2 + 0.3 - 0.2 - \left(\frac{3}{4} \times 2.80\right)$

$\Rightarrow 2 + 0.3 - 0.2 - 2.10$

$\Rightarrow 2.3 - 2.3 = 0$

55. (c) $\left(\sqrt[3]{3.5} + \sqrt[3]{2.5}\right)$

$\left\{\left(\sqrt[3]{3.5}\right)^2 - \sqrt[3]{8.75} + \left(\sqrt[3]{2.5}\right)^2\right\}$

$x = \sqrt[3]{3.5}$

$y = \sqrt[3]{2.5}$

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

$\Rightarrow x^3 + y^3$

$\Rightarrow \left(\sqrt[3]{3.5}\right)^3 + \left(\sqrt[3]{2.5}\right)^3$

$\Rightarrow 3.5 + 2.5 = 6$

56. (d) $\left(3+2\sqrt{2}\right)^{-3} + \left(3-2\sqrt{2}\right)^{-3}$

$\Rightarrow \left(\frac{1}{3+2\sqrt{2}}\right)^3 + \left(\frac{1}{3-2\sqrt{2}}\right)^3$

$\Rightarrow \left(\frac{1}{(3+2\sqrt{2})} \times \frac{3-2\sqrt{2}}{3-2\sqrt{2}}\right)^3 + \left(\frac{1}{(3+2\sqrt{2})} \times \frac{3-2\sqrt{2}}{3-2\sqrt{2}}\right)^3$

$\Rightarrow \left(\frac{3-2\sqrt{2}}{9-8}\right)^3 + \left(\frac{3+2\sqrt{2}}{9-8}\right)^3$

$\Rightarrow \left(3-2\sqrt{2}\right)^3 + \left(3+2\sqrt{2}\right)^3$

$a = 3 - 2\sqrt{2}$

$b = 3 + 2\sqrt{2}$

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

$\Rightarrow (3 - 2\sqrt{2} + 3 + 2\sqrt{6})(17 + 17 - 1)$

$\Rightarrow (6)(33)$

$\Rightarrow 198$

57. (a) $\frac{\sqrt{5}}{\sqrt{3}+\sqrt{2}} - \frac{3\sqrt{3}}{\sqrt{5}+\sqrt{2}} + \frac{2\sqrt{2}}{\sqrt{5}+\sqrt{3}}$

$\Rightarrow \frac{\sqrt{5}}{\sqrt{3}+\sqrt{2}} \times \frac{(\sqrt{3}-\sqrt{2})}{\sqrt{3}-\sqrt{2}} - \left(\frac{3\sqrt{3}}{\sqrt{5}+\sqrt{2}} \times \frac{\sqrt{5}-\sqrt{2}}{\sqrt{5}-\sqrt{2}}\right) + \frac{2\sqrt{2}}{\sqrt{5}+\sqrt{3}} \frac{(\sqrt{5}-\sqrt{3})}{\sqrt{5}-\sqrt{3}}$

$\Rightarrow \frac{\sqrt{15}-\sqrt{10}}{3-2} - \frac{3\sqrt{3}(\sqrt{5}-\sqrt{2})}{5-2} + \frac{2\sqrt{2}(\sqrt{5}-\sqrt{3})}{5-3}$

$\Rightarrow \sqrt{15} - \sqrt{10} - (\sqrt{15} - \sqrt{6}) + \sqrt{10} - \sqrt{6}$

$\Rightarrow \sqrt{15} - \sqrt{10} - \sqrt{15} + \sqrt{6} + \sqrt{10} - \sqrt{6}$

$\Rightarrow 0$

58. (a) $\frac{1}{\sqrt{3.25}+\sqrt{2.25}} \times \frac{\sqrt{3.25}-\sqrt{2.25}}{\sqrt{3.25}-\sqrt{2.25}}$

$\Rightarrow \frac{\sqrt{3.25}-\sqrt{2.25}}{3.25-2.25}$

$\Rightarrow \sqrt{3.25} - \sqrt{2.25}$ .....(i)

Similarly: $\frac{1}{\sqrt{4.25}+\sqrt{3.25}}$

$= \sqrt{4.25} - \sqrt{3.25}$ ...(ii)

$\Rightarrow \frac{1}{\sqrt{5.25}+\sqrt{4.25}}$

$\Rightarrow \sqrt{5.25} - \sqrt{4.25}$ ....(iii)

$\Rightarrow \frac{1}{\sqrt{6.25}+\sqrt{5.25}}$

$\Rightarrow \sqrt{6.25} - \sqrt{5.25}$ ....(iv)

$\Rightarrow$ Now add all them

$\Rightarrow \sqrt{3.25} - \sqrt{2.25} + \sqrt{4.25} - \sqrt{3.25} + \sqrt{5.25} - \sqrt{4.25} + \sqrt{6.25} - \sqrt{5.25}$

$\Rightarrow \sqrt{6.25} - \sqrt{2.25} \Rightarrow 2.5 - 1.5 = 1$

59. (a) $\frac{3^0 + 3^{-1}}{3^{-1} - 3^0}$

$\Rightarrow \frac{1 + \frac{1}{3}}{\frac{1}{3} - 1} = \frac{\frac{4}{3}}{-\frac{2}{3}} = -2$

60. (c) $\frac{10.3 \times 10.3 \times 10.3 + 1}{10.3 \times 10.3 - 10.3 + 1}$

$\Rightarrow \frac{(10.3)^3 + 1^3}{(10.3)^2 - 10.3 + (1)^2}$

$\Rightarrow \frac{(10.3+1)\left((10.3)^2 + (1)^2 - 10.3 \times 1\right)}{(10.3)^2 - 10.3 + 1^2}$

$\Rightarrow 10.3 + 1 \Rightarrow 11.3$

61. (c) $\frac{1.49 \times 14.9 - 0.51 \times 5.1}{14.9 - 5.1}$

$\Rightarrow \frac{\frac{149}{100} \times \frac{149}{10} - \frac{051}{100} \times \frac{51}{10}}{\frac{149}{10} - \frac{51}{10}}$

$\Rightarrow \frac{\frac{149^2}{1000} - \frac{51^2}{1000}}{\left(\frac{149-51}{10}\right)}$

$\Rightarrow \frac{\frac{1}{1000}(149^2 - 51^2)}{\frac{1}{10}(149-51)}$

$\Rightarrow \frac{1(149-51)(149+51)}{100(149-51)}$

$\Rightarrow \frac{200}{100} = 2$

62. (b) $(0.04)^{-1.5}$

$\Rightarrow \left(\frac{1}{0.04}\right)^{\frac{15}{10}}$

$\Rightarrow \left(\frac{1}{(0.2)^2}\right)^{3/2}$

$\Rightarrow \frac{1}{(0.2)^{2\times 3/2}}$

$\Rightarrow \frac{1}{(0.2)^3} \Rightarrow \frac{1}{0.008}$

$\Rightarrow \frac{1000}{8} \Rightarrow 125$

63. (c) $\frac{0.96^3 - 0.1^3}{0.96^2 + 0.096 + 0.1^2}$

$\Rightarrow a = 0.96$

$\Rightarrow b = 0.1$

$\Rightarrow \frac{a^3 - b^3}{a^2 + ab + b^2}$

$\Rightarrow \frac{(a-b)(a^2 + b^2 + ab)}{(a^2 + ab + b^2)}$

$\Rightarrow a - b$

$\Rightarrow 0.96 - 0.1 = 0.86$

64. (b) $\frac{64 - 0.008}{16 + 0.8 + 0.04}$

$\Rightarrow \frac{(4)^3 - (0.2)^3}{(4)^2 + 4 \times 0.2 + (0.2)^2}$

$\Rightarrow \frac{(4 - 0.2)(4^2 + +0.2^2 + 4 \times 0.2)}{4^2 + 4 \times 0.2 + 0.2^2}$

$\Rightarrow 4 - 0.2 = 3.8$

65. (c) $4 + \sqrt{7}$

$\Rightarrow \frac{8 + 2\sqrt{7}}{2}$

$\Rightarrow \frac{(\sqrt{7})^2 + 1 + 2\sqrt{7}.1}{2}$

$\Rightarrow \frac{(\sqrt{7}+1)^2}{(\sqrt{2})^2} \Rightarrow \left\{\frac{1}{\sqrt{2}}(\sqrt{7}+1)\right\}^2$

66. (d) $\frac{2}{\sqrt{7}+\sqrt{5}} + \frac{7}{\sqrt{12}-\sqrt{5}} - \frac{5}{\sqrt{12}-\sqrt{7}}$

$\Rightarrow \frac{2}{\sqrt{7}+\sqrt{5}} \times \frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}-\sqrt{5}} + \frac{7}{\sqrt{12}-\sqrt{5}} \times \frac{(\sqrt{12}+\sqrt{5})}{(\sqrt{12}+\sqrt{5})} - \left(\frac{5}{\sqrt{12}-\sqrt{7}} \times \frac{\sqrt{12}+\sqrt{7}}{\sqrt{12}+\sqrt{7}}\right)$

$\Rightarrow \frac{2(\sqrt{7}-\sqrt{5})}{2} + \frac{7(\sqrt{12}+\sqrt{5})}{7} - \left(\frac{5(\sqrt{12}+\sqrt{7})}{5}\right)$

$\Rightarrow \sqrt{7} - \sqrt{5} + \sqrt{12} + \sqrt{5} - \sqrt{12} - \sqrt{7}$

$\Rightarrow 0$

67. (a) $\left(\frac{1}{2}\right)^{1/2}$

$\Rightarrow \sqrt{\frac{1}{2}} \Rightarrow \frac{1}{\sqrt{2}}$

68. (c) $\frac{1}{\sqrt{3}+\sqrt{4}}$

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

$\Rightarrow \frac{\sqrt{4}-\sqrt{3}}{1}$

$\Rightarrow \sqrt{4} - \sqrt{3}$

Similarly $\Rightarrow \frac{1}{\sqrt{4}+\sqrt{5}} = \sqrt{5} - \sqrt{4}$

$\Rightarrow \frac{1}{\sqrt{5}+\sqrt{6}} \Rightarrow \sqrt{6} - \sqrt{5}$

$\Rightarrow \frac{1}{\sqrt{6}+\sqrt{7}} \Rightarrow \sqrt{7} - \sqrt{6}$

$\Rightarrow \frac{1}{\sqrt{7}+\sqrt{8}} = \sqrt{8} - \sqrt{7}$

$\Rightarrow \frac{1}{\sqrt{8}-\sqrt{9}} \Rightarrow \sqrt{9} - \sqrt{8}$

Now put values

$\Rightarrow \sqrt{4} - \sqrt{3} + \sqrt{5} - \sqrt{4} + \sqrt{6} - \sqrt{5} + \sqrt{7} - \sqrt{6} + \sqrt{8} - \sqrt{7} + \sqrt{9} - \sqrt{8}$

$\Rightarrow \sqrt{9} - \sqrt{3}$

$\Rightarrow 3 - \sqrt{3}$

69. (b) $(16)^{0.16} \times (16)^{0.04} \times (2)^{0.2}$

$\Rightarrow 16^{0.16+0.04} \times 2^{0.2}$

$\Rightarrow (2^4)^{0.20} \times 2^{0.2}$

$\Rightarrow 2^{0.8} \times 2^{0.2}$

$\Rightarrow 2^{0.8+0.2}$

$\Rightarrow 2^1 = 2$

70. (d) $\frac{1}{\sqrt{100}-\sqrt{99}} \times \frac{\sqrt{100}+\sqrt{99}}{\sqrt{100}+\sqrt{99}}$

$\Rightarrow \frac{\sqrt{100}+\sqrt{99}}{1} \Rightarrow \sqrt{100} + \sqrt{99}$

Similarly

$\Rightarrow \frac{1}{\sqrt{99}-\sqrt{98}} \Rightarrow \sqrt{99} + \sqrt{98}$

$\Rightarrow \frac{1}{\sqrt{98}-\sqrt{97}} \Rightarrow \sqrt{98} + \sqrt{97}$

....and so on

Now : expression:

$\Rightarrow \sqrt{100} + \sqrt{99} - \sqrt{99} - \sqrt{98} + \sqrt{98} + \sqrt{97} \ldots + \sqrt{2} + 1$

$\Rightarrow \sqrt{100} + 1 \Rightarrow 10 + 1 = 11$

71. (c) $\left[\frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}} + \frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}\right]$

$\Rightarrow \frac{1}{(\sqrt{2}+\sqrt{3})-(\sqrt{5})} \times \frac{(\sqrt{2}+\sqrt{3})+(\sqrt{5})}{(\sqrt{2}+\sqrt{3})+(\sqrt{5})}$

$\Rightarrow \frac{\sqrt{2}+\sqrt{3}+\sqrt{5}}{2+3+2\sqrt{6}-5} \Rightarrow \frac{\sqrt{2}+\sqrt{3}+\sqrt{5}}{2\sqrt{6}}$

Similarly

$\Rightarrow \frac{1}{(\sqrt{2}-\sqrt{3}-(\sqrt{5}))} + \frac{(\sqrt{2}-\sqrt{3})+(\sqrt{5})}{(\sqrt{2}-\sqrt{3})+\sqrt{5}}$

$\Rightarrow \frac{\sqrt{2}-\sqrt{3}+\sqrt{5}}{-2\sqrt{6}}$

Now put the value in question

$\Rightarrow \frac{(\sqrt{2}+\sqrt{3}+\sqrt{5})}{(2\sqrt{6})} - \frac{(\sqrt{2}-\sqrt{3}+\sqrt{5})}{(2\sqrt{6})}$

$\Rightarrow \frac{\sqrt{2}+\sqrt{3}+\sqrt{5}-\sqrt{2}+\sqrt{3}-\sqrt{5}}{2\sqrt{6}}$

$\Rightarrow \frac{2\sqrt{3}}{2\sqrt{6}} \Rightarrow \frac{1}{\sqrt{2}}$

72. (b) $\sqrt[3]{2} \times \sqrt{2} \times \sqrt[3]{3} \times \sqrt{3}$

$\Rightarrow 2^{1/3} \times 2^{1/2} \times 3^{1/3} \times 3^{1/2}$

$\Rightarrow 2^{5/6} \times 3^{5/6} \quad \Rightarrow 6^{5/6}$

73. (a) $\left\{(-2)^{(-2)}\right\}^{-2}$

$\Rightarrow \dfrac{1}{\left\{(-2)^{(-2)}\right\}^{2}}$

$\Rightarrow \dfrac{1}{(-2)^{-4}}$

$\Rightarrow (-2)^4 = 16$

74. (d) 0.796 = a, 0.204 = b

According to question

$\Rightarrow \dfrac{a^2-b^2}{a-b} \quad \Rightarrow \dfrac{(a-b)(a+b)}{(a-b)}$

$\Rightarrow$ a + b $\Rightarrow$ 0.796 + 0.204

$\Rightarrow$ 1.000

75. (a) $\dfrac{(2.3)^3+0.027}{(2.3)^2-0.69+0.09}$

$\Rightarrow \dfrac{(2.3)^3+(0.3)^3}{(2.3)^2-0.69+(0.3)^2}$

$\Rightarrow$ a = 2.3, b = 0.3

$\Rightarrow \dfrac{a^3+b^3}{a^2-ab+b^2}$

$\Rightarrow \dfrac{(a+b)(a^2+b^2-ab)}{(a^2-ab+b^2)}$

$\Rightarrow$ a + b

$\Rightarrow$ 2.3 + 0.3

$\Rightarrow$ 2.60

76. (d) a = 5.71, b = 2.79

$\Rightarrow \dfrac{a\times a\times a-b\times b\times b}{a\times a+a\times b+b\times b}$

$\Rightarrow \dfrac{a^3-b^3}{a^2+ab+b^2}$

$\Rightarrow \dfrac{(a-b)(a^2+b^2+ab)}{(a^2+ab+b^2)}$

$\Rightarrow$ (a –b)

$\Rightarrow$ 5.71 – 2.79

$\Rightarrow$ 2.92

77. (c) $\dfrac{(1.5)^3+(4.7)^3+(3.8)^3}{(1.5)^2+(4.7)^2+(3.8)^2-1.5\times4.7\cdots \dfrac{-3\times1.5\times4.7\times3.8}{-4.7\times3.8-3.8\times1.5}}$

$\Rightarrow$ a = 1.5 $\Rightarrow$ b = 4.7

$\Rightarrow$ c = 3.8

$\Rightarrow \dfrac{a^3+b^3+c^3-3abc}{a^2+b^2+c^2-ab-bc-ca}$

$\Rightarrow \dfrac{(a+b+c)(a^2+b^2+c^2-ab-bc-ca)}{(a^2+b^2+c^2-ab-bc-ca)}$

$\Rightarrow$ a + b + c

$\Rightarrow$ 1.5 + 4.7 + 3.8 = 10.0 $\Rightarrow$ 10

78. (a) a = 0.73, b = 0.27

$\Rightarrow \dfrac{a^3+b^3}{a^2+b^2-ab}$

$\Rightarrow \dfrac{(a+b)(a^2+b^2-ab)}{(a^2+b^2-ab)}$

$\Rightarrow$ a + b $\Rightarrow$ 0.73 + 0.27 = 1

79. (c) $\left[3-4(3-4)^{-1}\right]^{-1}$

$\Rightarrow \left[3-4(-1)^{-1}\right]^{-1}$

$\Rightarrow \left[\dfrac{3+4}{1}\right]^{-1}$

$\Rightarrow 3+4^{-1}$

$\Rightarrow 7^{-1} = \dfrac{1}{7}$

80. (b) $2^{12n} - 6^{4n}$

$\Rightarrow (2^3)^{4n} - 6^{4n} \quad \Rightarrow 8^{4n} - 6^{4n}$

$\Rightarrow (8^2)^{2n} - (6^2)^{2n}$

$\Rightarrow 64^{2n} - 36^{2n}$ (n = 1)

$\Rightarrow 64^2 - 36^{2n}$

$\Rightarrow (64+36)(64-36)$

$\Rightarrow 100\times28, \quad \Rightarrow$ 100 Ans

81. (d) $\sqrt{8}+\sqrt{5} = \left(\sqrt{8}+\sqrt{5}\right)^2$

$= 8 + 5 + 2\sqrt{40} \quad = 13 + 2\sqrt{40}$

$(\sqrt{7}+\sqrt{6}) \Rightarrow (\sqrt{7}+\sqrt{6})^2 \Rightarrow 7+6+2\sqrt{42}$

$\Rightarrow 13+2\sqrt{42}$

$\Rightarrow \left(\sqrt{10}+\sqrt{3}\right) \Rightarrow \left(\sqrt{10}+\sqrt{3}\right)^2$

$\Rightarrow 10+3+2\sqrt{30} \Rightarrow 13+2\sqrt{30}$

$\Rightarrow \sqrt{11}+\sqrt{2} \Rightarrow \left(\sqrt{11}+\sqrt{2}\right)^2$

$\Rightarrow 11+2+2\sqrt{22} \Rightarrow 13+2\sqrt{22}$,

$\sqrt{11}+\sqrt{2}$

82. (b)

$\sqrt{2} = 2^{\frac{1}{2}} \rightarrow 2^{\frac{6}{12}} \rightarrow \sqrt[12]{2^6} \rightarrow \sqrt[12]{64}$

$\Rightarrow \sqrt[3]{3} = 3^{\frac{1}{3}} \rightarrow 3^{\frac{4}{12}} \rightarrow \sqrt[12]{3^4} \rightarrow \sqrt[12]{81}$

$\Rightarrow \sqrt[4]{4} = 4^{\frac{1}{4}} \rightarrow 4^{\frac{3}{12}} \rightarrow \sqrt[12]{4^3} \rightarrow \sqrt[12]{64}$

$\sqrt{6} = 6^{\frac{1}{6}} \rightarrow 6^{\frac{2}{12}} \rightarrow \sqrt[12]{6^2} \rightarrow \sqrt[12]{36}$

83. (d) $\left(\sqrt{19}-\sqrt{17}\right) \Rightarrow \left(\sqrt{19}-\sqrt{17}\right)\times \dfrac{\left(\sqrt{19}+\sqrt{17}\right)}{\sqrt{19}+\sqrt{17}} \Rightarrow \dfrac{19-17}{\sqrt{19}+\sqrt{17}} = \dfrac{2}{\sqrt{19}+\sqrt{17}}$

**Similarly** $\left(\sqrt{13}-\sqrt{11}\right) \Rightarrow \dfrac{2}{\sqrt{13}+\sqrt{11}}$

$\boxed{\left(\sqrt{5}-\sqrt{3}\right)} \Rightarrow \boxed{\dfrac{2}{\sqrt{5}+\sqrt{3}}}$

**Largest + (Because, Same Numerator is dividided by Smallest denominator)**

84. (c)

| $\sqrt[3]{2}$ | $\sqrt{3}$ | $\sqrt[3]{5}$ | 1.5 |
|---|---|---|---|
| $\downarrow$ | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| $2^{1/3}$ | $3^{1/2}$ | $5^{1/3}$ | |
| $\downarrow$ | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| $2^{2/6}$ | $3^{3/6}$ | $5^{2/6}$ | $1.5^{6/6}$ |
| $\downarrow$ | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| $\sqrt[6]{2^2}$ | $\sqrt[6]{3^3}$ | $\sqrt[6]{5^2}$ | $\sqrt[6]{1.5^6}$ |
| $\downarrow$ | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| $\sqrt[6]{4}$ | $\sqrt[6]{27}$ | $\sqrt[6]{25}$ | $\sqrt[6]{11.35}$ |
| | ↑ Largest | | |

85. (c)

| $\sqrt{2}$ | $\sqrt[3]{3}$ | $\sqrt[3]{4}$ | $\sqrt[4]{5}$ |
|---|---|---|---|
| $\downarrow$ | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| $2^{1/2}$ | $3^{1/3}$ | $4^{1/3}$ | $5^{1/4}$ |
| $2^{6/12}$ | $3^{4/12}$ | $4^{4/12}$ | $5^{3/12}$ |
| $\downarrow$ | $\downarrow$ | $\downarrow$ | $\downarrow$ |
| $(2^6)^{1/12}$ | $(3^4)^{1/12}$ | $(4^4)^{1/12}$ | $(5^3)^{1/12}$ |
| $(64)^{1/12}$ | $(9)^{1/12}$ | $\boxed{(256)^{1/12}}$ | $(125)^{1/12}$ |
| | | ↑ Largest | |

86. (a) $x = \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}} \times \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}+\sqrt{3}} \Rightarrow \frac{(\sqrt{5}+\sqrt{3})^2}{2}$

$\Rightarrow$ Similarly $y = \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}} \Rightarrow \frac{(\sqrt{5}-\sqrt{3})^2}{2}$

$\Rightarrow$ $x + y$

$\Rightarrow$ $\frac{5+3+2\sqrt{15}+5+3-2\sqrt{15}}{2}$

$\Rightarrow$ $\frac{16}{2} = 8$ Ans

87.(c) $\sqrt{3} = 1.732 \Rightarrow \frac{173}{100}$ Ans.

88. (d) 0.75 = a, 0.25 = b

$\Rightarrow$ $a \times a - 2 \times a \times b + b \times b$

$\Rightarrow$ $a^2 - 2ab + b^2$ $\Rightarrow$ $(a-b)^2$

$\Rightarrow$ $(0.75 - 0.25)^2$

$\Rightarrow$ $(0.50)^2 = 0.2500$ Ans.

89. (a)

| $\sqrt{4}$ | $\sqrt[3]{4}$ | $\sqrt[4]{6}$ | $\sqrt[6]{8}$ |
|---|---|---|---|
| $4^{1/2}$ | $4^{1/3}$ | $6^{1/4}$ | $8^{1/6}$ |
| $4^{6/12}$ | $4^{4/12}$ | $6^{3/12}$ | $8^{2/12}$ |
| $12\sqrt{4^6}$ | $12\sqrt{4^4}$ | $12\sqrt{6^3}$ | $12\sqrt{8^2}$ |
| $12\sqrt{4096}$ | $12\sqrt{256}$ | $12\sqrt{216}$ | $12\sqrt{64}$ |
| Largest | | | |

Ans $\sqrt{4}$

90. (b) $\frac{12}{3+\sqrt{5}+2\sqrt{2}}$

$= \frac{12(3+\sqrt{5}-2\sqrt{2})}{[(3+\sqrt{5})+2\sqrt{2}][(3+\sqrt{5})-2\sqrt{2}]}$

$\Rightarrow \frac{12(3+\sqrt{5}-2\sqrt{2})}{(3+\sqrt{5})^2-(2\sqrt{2})^2}$

$= \frac{12(3+\sqrt{5}-2\sqrt{2})}{9+5+6\sqrt{5}}$

$\Rightarrow \frac{12(3+\sqrt{5}-2\sqrt{2})}{6\sqrt{5}+6} = \frac{2(3+\sqrt{5}-2\sqrt{2})}{\sqrt{5}+1}$

$\Rightarrow \frac{2(3+\sqrt{5}-2\sqrt{2})(\sqrt{5}-1)}{(\sqrt{5}-1)(\sqrt{5}+1)}$

$\Rightarrow \frac{2(3\sqrt{5}+5-2\sqrt{10}-3-\sqrt{5}+2\sqrt{2})}{5-1}$

$\Rightarrow \frac{2(2\sqrt{5}+2\sqrt{2}-2\sqrt{10}+2)}{4}$

$\Rightarrow \frac{2\times 2(\sqrt{5}+\sqrt{2}-\sqrt{10}+1)}{4}$

$\Rightarrow \sqrt{5}+\sqrt{2}-\sqrt{10}+1$

91. (b) $3 + \frac{1}{\sqrt{3}} + \frac{1}{3+\sqrt{3}} + \frac{1}{\sqrt{3}-3}$

$\Rightarrow 3 + \frac{1}{\sqrt{3}} + \frac{1}{3+\sqrt{3}} - \frac{1}{3-\sqrt{3}}$

$\Rightarrow 3 + \frac{1}{\sqrt{3}} + \left[\frac{3-\sqrt{3}-3-\sqrt{3}}{9-3}\right]$

$\Rightarrow 3 + \frac{1}{\sqrt{3}} - \frac{\sqrt{3}}{3}$

$\Rightarrow 3 + \frac{1}{\sqrt{3}} - \frac{1}{\sqrt{3}} = 3$

92. (c) $\sqrt{8-2\sqrt{15}}$

$\Rightarrow \sqrt{(\sqrt{5})^2+(\sqrt{3})^2-2\sqrt{5}\sqrt{3}}$

$\Rightarrow \sqrt{(\sqrt{5}-\sqrt{3})^2} = \boxed{\sqrt{5}-\sqrt{3}}$ Ans.

93. (d) $\left[8-\left(\frac{\sqrt[9]{2\times 2^2}}{2\sqrt{2^{-2}}}\right)\right]$

$\Rightarrow \left[8-\left(\frac{2^{2\times\frac{9}{4}}\sqrt{2^{1+2}}}{2\sqrt{\frac{1}{4}}}\right)^{1/2}\right]$

$\Rightarrow \left[8-\left(\frac{2^{9/2}.2^{3/2}}{2\times\frac{1}{2}}\right)^{1/2}\right]$

$\Rightarrow \left[8-\left(2^{12/2}\right)^{1/2}\right]$

$\Rightarrow \left[8-\left(2^{6\times\frac{1}{2}}\right)\right]$

$\Rightarrow$ $[8-8] = 0$ Ans.

94. (c) $\frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{2\sqrt{6}}{\sqrt{3}+1} + \frac{2\sqrt{3}}{\sqrt{6}+2}$

$\Rightarrow \left(\frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} \times \frac{(\sqrt{6}-\sqrt{3})}{\sqrt{6}-\sqrt{3}}\right) - \left(\frac{2\sqrt{6}}{\sqrt{3}+1} \times \frac{\sqrt{3}-1}{\sqrt{3}-1}\right) + \left(\frac{2\sqrt{3}}{\sqrt{6}+2} \times \frac{\sqrt{6}-2}{\sqrt{6}-2}\right)$

$\Rightarrow \frac{3\sqrt{2}(\sqrt{6}-\sqrt{3})}{3} - \left(\frac{2\sqrt{6}(\sqrt{3}-1)}{2}\right) + \frac{2\sqrt{3}\times(\sqrt{6}-2)}{2}$

$\Rightarrow \sqrt{12}-\sqrt{6}-\sqrt{18}+\sqrt{6}+\sqrt{18}-2\sqrt{3}$

$\Rightarrow \sqrt{12}-2\sqrt{3}$ $\Rightarrow 2\sqrt{3}-2\sqrt{3}=0$

95. (b)

$\left[\frac{1}{1.4}+\frac{1}{4.7}+\frac{1}{7.10}+\frac{1}{10.13}+\frac{1}{13.16}\right]$

Formula:

$\frac{1}{\text{Difference of denominator value}}\left[\frac{1}{\text{first value}} - \frac{1}{\text{Last value}}\right]$

$\Rightarrow \frac{1}{3}\left[1-\frac{1}{4}+\frac{1}{4}-\frac{1}{7}+\frac{1}{7}-\frac{1}{10}+\frac{1}{10}-\frac{1}{13}+\frac{1}{13}-\frac{1}{16}\right]$

$\Rightarrow \frac{1}{3}\left[1-\frac{1}{16}\right]$ $\Rightarrow \frac{1}{3}\times\frac{15}{16}=\frac{5}{16}$

96. (c) a 137, b = 133

$\Rightarrow \frac{a\times a+b\times b+ab}{a\times a\times a-b\times b\times b}$

$\Rightarrow \frac{a^2+b^2+ab}{a^3-b^3}$

$\Rightarrow \frac{a^2+b^2+ab}{(a-b)(a^2+b^2+ab)}$ $\Rightarrow \frac{1}{a-b}$

$\Rightarrow \frac{1}{137-133} \Rightarrow \frac{1}{4}$ Ans.

97. (b) a = 2.75, b = 2.25

$\Rightarrow \frac{a^3-b^3}{a^2+ab+b^2}$

$\Rightarrow \frac{(a-b)(a^2+ab+b^2)}{a^2+ab+b^2}$

$\Rightarrow$ $(a-b)$ $\Rightarrow$ $2.75 - 2.25$

$\Rightarrow$ 0.50

98. (b)

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

$\Rightarrow \sqrt{5}-\sqrt{3} \Rightarrow \boxed{\frac{2}{\sqrt{5}+\sqrt{3}}}$ Largest

$\Rightarrow \sqrt{9}-\sqrt{7} \Rightarrow \frac{2}{\sqrt{9}+\sqrt{7}}$

$\Rightarrow \sqrt{11}-\sqrt{9} \Rightarrow \frac{2}{\sqrt{11}+\sqrt{9}}$

$\boxed{\sqrt{5}-\sqrt{3}}$

99.(a)

| | | | |
|---|---|---|---|
| $\sqrt[3]{9}$ | $\sqrt{3}$ | $\sqrt[4]{16}$ | $\sqrt[6]{80}$ |
| $9^{1/3}$ | $3^{1/2}$ | $16^{1/4}$ | $80^{1/6}$ |
| $9^{4/12}$ | $3^{6/12}$ | $16^{3/12}$ | $80^{2/12}$ |
| $\sqrt[12]{9^4}$ | $\sqrt[12]{27^2}$ | $\sqrt[12]{16^3}$ | $\sqrt[12]{80^2}$ |

Square of 81 is largest . So Ans $\sqrt[3]{9}$

100. (c)

| | | | |
|---|---|---|---|
| $2\sqrt{3}$ | $2\sqrt[4]{5}$ | $\sqrt{8}$ | $3\sqrt{2}$ |
| $\sqrt{(4\times3)}$ | $\sqrt[4]{(5\times16)}$ | $\sqrt{8}$ | $\sqrt{18}$ |
| $12^{1/2}$ | $80^{1/4}$ | $8^{1/2}$ | $18^{1/2}$ |
| $12^{2/4}$ | $80^{1/4}$ | $8^{2/4}$ | $18^{2/4}$ |
| $\sqrt[4]{144}$ | $\sqrt[4]{80}$ | $\boxed{\sqrt[4]{64}}$ | $\sqrt[4]{324}$ |
| | | smallest | |

$\sqrt{8}$ is answer

101. (d) $\frac{3+\sqrt{6}}{5\sqrt{3}-2\sqrt{12}-\sqrt{32}+\sqrt{50}}$

$\Rightarrow \frac{3+\sqrt{6}}{5\sqrt{3}-2\times2\sqrt{3}-4\sqrt{2}+5\sqrt{2}}$

$\Rightarrow \frac{3+\sqrt{6}}{5\sqrt{3}-4\sqrt{3}-4\sqrt{2}+5\sqrt{2}}$

$\Rightarrow \frac{3+\sqrt{6}}{\sqrt{3}+\sqrt{2}} \Rightarrow \frac{\sqrt{3}(\sqrt{3}+\sqrt{2})}{(\sqrt{3}+\sqrt{2})}$

$\Rightarrow \sqrt{3} = 1.732$

102. (c)

$\frac{1}{\sqrt{5}+\sqrt{3}}\times\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}-\sqrt{3}} = \frac{\sqrt{5}-\sqrt{3}}{5-3} \Rightarrow \frac{2.236-1.732}{2}$

$\Rightarrow \frac{0.504}{2} = 0.252$

103. (c) $2\sqrt[3]{32}-3\sqrt[3]{4}+\sqrt[3]{500}$

$= 2\sqrt[3]{2^3\times4}-3\sqrt[3]{4}+\sqrt[3]{5^3\times4}$

$= 2\times2\sqrt[3]{4}-3\sqrt[3]{4}+5\sqrt[3]{4}$

$= 9\sqrt[3]{4}-3\sqrt[3]{4}$

$= 6\sqrt[3]{4}$

104. (b) $\sqrt{12+\sqrt{12+\sqrt{12+\sqrt{12+}}}}.....$

④ × 3

105. (a) $a = \frac{\sqrt{3}}{2} \Rightarrow a+1 = \frac{\sqrt{3}}{2}+1$

$\Rightarrow \frac{\sqrt{3}+2}{2}$

$\Rightarrow \frac{4+2\sqrt{3}}{4} \Rightarrow \frac{(\sqrt{3}+1)^2}{4}$

$a+1 = \frac{(\sqrt{3}+1)^2}{4}$

$\Rightarrow \sqrt{a+1} = \sqrt{\frac{(\sqrt{3}+1)^2}{4}}$

$\sqrt{1+a} = \frac{\sqrt{3}+1}{2}$

Similarly $\sqrt{1-a} = \frac{\sqrt{3}-1}{2}$

put values :

$\frac{\sqrt{3}+1}{2}+\frac{\sqrt{3}-1}{2} \Rightarrow \frac{\sqrt{3}+1+\sqrt{3}-1}{2} = \frac{2\sqrt{3}}{2}$

$\Rightarrow \sqrt{3}$

106. (b) $a+b = \frac{\sqrt{5}+1}{\sqrt{5}-1}+\frac{\sqrt{5}-1}{\sqrt{5}+1}$

$\Rightarrow \frac{(\sqrt{5}+1)^2+(\sqrt{5}-1)^2}{(\sqrt{5}-1)(\sqrt{5}+1)}$

$\Rightarrow \frac{2\left[(\sqrt{5})^2+1\right]}{5-1} = \frac{2(5+1)}{4} = 3$

$a.b = \frac{\sqrt{5}+1}{\sqrt{5}-1}\times\frac{\sqrt{5}-1}{\sqrt{5}+1} = 1$

put value in expression

$\Rightarrow \frac{a^2+ab+b^2}{a^2-ab+b^2} = \frac{(a+b)^2-ab}{(a+b)^2-3ab}$

$= \frac{3^2-1}{3^2-3} = \frac{9-1}{9-3} = \frac{4}{3}$

107. (b) $(0.04)^{-1.5}$

$\Rightarrow \frac{1}{(0.04)^{15/10}} = \frac{1}{0.04^{3/2}}$

$\Rightarrow \frac{1}{\sqrt{0.000064}} \Rightarrow \frac{1}{.008} \Rightarrow \frac{1000}{8}$

$\Rightarrow 125$

108. (a) $\sqrt[3]{1372}\times\sqrt[3]{1458}\div\sqrt[3]{343}$

$\Rightarrow \sqrt[3]{\frac{1372\times1458}{343}} \Rightarrow \sqrt[3]{5832}$

$\Rightarrow \sqrt[3]{18\times18\times18} \Rightarrow 18$

109. (c) $\left[\frac{2}{\sqrt{5}+\sqrt{3}}-\frac{3}{\sqrt{6}-\sqrt{3}}+\frac{1}{\sqrt{6}+\sqrt{5}}\right]$

$\Rightarrow \frac{2}{\sqrt{5}+\sqrt{3}}\times\frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}-\sqrt{3}} -$

$\frac{3}{\sqrt{6}-\sqrt{3}}\times\frac{\sqrt{6}+\sqrt{3}}{\sqrt{6}+\sqrt{3}}$

$+\frac{1}{\sqrt{6}+\sqrt{5}}\times\frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}-\sqrt{5}}$

$\Rightarrow \frac{2(\sqrt{5}-\sqrt{3})}{5-3}-\frac{3(\sqrt{6}+\sqrt{3})}{6-3}+\frac{\sqrt{6}-\sqrt{5}}{6-5}$

$\Rightarrow \sqrt{5}-\sqrt{3}-\sqrt{6}-\sqrt{3}+\sqrt{6}-\sqrt{5}$

$\Rightarrow -2\sqrt{3}$

110 (b) $\left[\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}-\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}\right]$

$\Rightarrow \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}\times\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} -$

$\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}\times\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

$\Rightarrow \frac{(\sqrt{3}+\sqrt{2})^2}{3-2}-\frac{(\sqrt{3}-\sqrt{2})^2}{3-2}$

$\Rightarrow (3+2+2\sqrt{6})-(3+2-2\sqrt{6})$

$\Rightarrow 4\sqrt{6}$

111. (a) $\frac{1}{\sqrt{9}-\sqrt{8}} \times \frac{\sqrt{9}+\sqrt{8}}{\sqrt{9}+\sqrt{8}} = \frac{\sqrt{9}+\sqrt{8}}{9-8}$

$\Rightarrow \sqrt{9}+\sqrt{8}$

**Similarly,** $\frac{1}{\sqrt{8}-\sqrt{7}} = \sqrt{8}+\sqrt{7}$

$\frac{1}{\sqrt{7}-\sqrt{6}} = \sqrt{7}+\sqrt{6}$

$\frac{1}{\sqrt{6}-\sqrt{5}} = \sqrt{6}+\sqrt{5}$

$\frac{1}{\sqrt{5}-\sqrt{4}} = \sqrt{5}+\sqrt{4}$

Now put in the question

$\Rightarrow (\sqrt{9}+\sqrt{8})-(\sqrt{8}+\sqrt{7})+(\sqrt{7}+\sqrt{6})-(\sqrt{6}+\sqrt{5})+(\sqrt{5}+\sqrt{4})$

$\Rightarrow \sqrt{9}+\sqrt{8}-\sqrt{8}-\sqrt{7}+\sqrt{7}+\sqrt{6}-\sqrt{6}-\sqrt{5}+\sqrt{5}+\sqrt{4}$

$\Rightarrow \sqrt{9}+\sqrt{4}$

$\Rightarrow 3+2=5$

112. (c) $\left(\sqrt{2}+\sqrt{7-2\sqrt{10}}\right)$

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

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

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

$\Rightarrow \sqrt{5}$

113. (c) $(\sqrt{12}+\sqrt{18})-(2\sqrt{3}+2\sqrt{2})$

$\Rightarrow 2\sqrt{3}+3\sqrt{2}-2\sqrt{3}-2\sqrt{2}$

$\Rightarrow \sqrt{2}$

114. (a) a = 5.624, b = 4.376

$\Rightarrow \frac{a^3+b^3}{a^2-ab+b^2} = \frac{(a+b)(a^2+b^2-ab)}{a^2-ab+b^2}$

$\Rightarrow (a+b)$

$\Rightarrow 5.624+4.376$

$\Rightarrow 10$

115. (d) $\frac{(998)^2-(997)^2-45}{(98)^2-(97)^2}$

$\Rightarrow \frac{(998)^2-(997)^2-45}{(98)^2-(97)^2}$

$\Rightarrow \frac{(1995)-45}{195} \quad \Rightarrow \frac{1950}{195} = 10$

116. (b) $\frac{3\sqrt{5}}{2\sqrt{5}-0.48}$

$\Rightarrow \frac{3\times 2.24}{2\times 2.24-0.48} \quad (\sqrt{5}=2.24)$

$\Rightarrow \frac{6.72}{4.48-0.48} \quad \Rightarrow \frac{6.72}{4}$

$\Rightarrow 1.68$

117. (a) $\frac{1}{\sqrt{2}+1}$

$\Rightarrow \frac{1}{\sqrt{2}+1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}$

$\Rightarrow \frac{1}{\sqrt{2}+1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}$

$\Rightarrow \frac{\sqrt{2}-1}{2-1} = (\sqrt{2}-1)$

$\Rightarrow 1.414-1$

$\Rightarrow 0.414$

118. (b) $\sqrt{3} = 1.732$

$\Rightarrow \frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2+\sqrt{3}}{2+\sqrt{3}} \Rightarrow \frac{(2+\sqrt{3})^2}{4-3}$

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

$\Rightarrow 7+4\times 1.732$

$\Rightarrow 7+6.928 = 13.928$

119. (a) $x = 1+\sqrt{2}+\sqrt{3}$

$\Rightarrow x+\frac{1}{x-1}$

$\Rightarrow 1+\sqrt{2}+\sqrt{3}+\frac{1}{1+\sqrt{2}+\sqrt{3}-1}$

$\Rightarrow 1+\sqrt{2}+\sqrt{3}+\frac{\sqrt{3}-\sqrt{2}}{3-2}$

$\Rightarrow 1+2\sqrt{3}$

120. (c) Shortcut method

$x+\frac{1}{x}=-2$

Let $x=-1$

$\Rightarrow -1+\frac{1}{-1}=-2$ (matched, so $x=-1$)

Put $n=1$

$x^{2n+1}+\frac{1}{x^{2n+1}}$

$\Rightarrow x^3+\frac{1}{x^3} \Rightarrow (-1)^3+\frac{1}{(-1)^3}=-2$

121. (d) $m^n = 121 = 11^2$

$\Rightarrow m = 11$

$\Rightarrow n = 2$

$\Rightarrow (m-1)^{n+1}$

$\Rightarrow (11-1)^{2+1} \Rightarrow 10^3 \Rightarrow 1000$

122. (a) $\frac{1}{3-\sqrt{8}}$

$\Rightarrow \frac{1}{3-\sqrt{8}}\times\frac{3+\sqrt{8}}{3+\sqrt{8}} \Rightarrow \frac{3+\sqrt{8}}{9-8}$

$\Rightarrow 3+\sqrt{8}$

**Similarly,**

$\Rightarrow \frac{1}{\sqrt{8}-\sqrt{7}} = \sqrt{8}+\sqrt{7}$

$\frac{1}{\sqrt{7}-\sqrt{6}} \Rightarrow \sqrt{7}+\sqrt{6}$

$\Rightarrow \frac{1}{\sqrt{6}-\sqrt{5}} = \sqrt{6}+\sqrt{5}$

$\Rightarrow \frac{1}{\sqrt{5}-2} = \sqrt{5}+2$

Put value in question

$\Rightarrow (3+\sqrt{8})-(\sqrt{8}+\sqrt{7})+(\sqrt{7}+\sqrt{6})-(\sqrt{6}+\sqrt{5})+(\sqrt{5}+2)$

$\Rightarrow 3+\sqrt{8}-\sqrt{8}-\sqrt{7}+\sqrt{7}+\sqrt{6}-\sqrt{6}-\sqrt{5}+\sqrt{5}+2$

$\Rightarrow 3+2=5$

123. (d) $256^{0.16}\times 4^{0.36}$

$\Rightarrow 4^{4\times 0.16}\times 4^{0.36}$

$\Rightarrow 4^{0.64+0.36} \Rightarrow 4^1 \Rightarrow 4$

124. (a) Let 0.337 = x and 0.126 = y

Now, expression is

$\frac{(a+b)^2-(a-b)^2}{ab} = \frac{4ab}{ab} = 4$

125. (a) $16\sqrt{\frac{3}{4}}-9\sqrt{\frac{4}{3}}$

$\Rightarrow 16\sqrt{\frac{3\times 4}{4\times 4}}-9\sqrt{\frac{4\times 3}{3\times 3}}$

$\Rightarrow 16\times\frac{\sqrt{12}}{4}-\frac{9\sqrt{12}}{3}$

$\Rightarrow 4\sqrt{12}-3\sqrt{12}$

$\Rightarrow \sqrt{12} \quad \Rightarrow 3.46$

126. (c) $3^{x+y} = 81$

$3^{x+y} = 3^4$

$\Rightarrow x + y = 4$ ...(i)

$81^{x-y} = 3$

$3^{4x-4y} = 3^1$

$\Rightarrow 4x - 4y = 1$ ...(ii)

From equation (i) and (ii)

$4x - 4y = 1$

$4x + 4y = 16$

$8x = 17$

$x = \frac{17}{8}$

127. (a) $\frac{3\sqrt{2}+2\sqrt{3}}{3\sqrt{2}-2\sqrt{3}}$

$\Rightarrow \frac{3\sqrt{2}+2\sqrt{3}}{3\sqrt{2}-2\sqrt{3}} \times \frac{3\sqrt{2}+2\sqrt{3}}{3\sqrt{2}+2\sqrt{3}}$

$\Rightarrow \frac{\left(3\sqrt{2}+2\sqrt{3}\right)^2}{18-12}$

$\Rightarrow \frac{18+12+2\times 3\times 2\sqrt{3}.\sqrt{2}}{6}$

$\Rightarrow \frac{30+12\sqrt{6}}{6} \Rightarrow 5+2\sqrt{6}$

128. (d) $\left[\left(\sqrt[5]{x^{-3/5}}\right)^{-5/3}\right]^{-5}$

$= \left[\left(x^{-\frac{3}{25}}\right)^{-5/3}\right]^{-5} = \left[\left(x^{\frac{1}{5}}\right)\right]^{-5}$

$= x^{-\frac{1}{5}\times 5} = x^{-1} = \frac{1}{x}$

129. (a) $\left(\frac{\sqrt{3}+1}{\sqrt{3}-1}+\frac{\sqrt{2}+1}{\sqrt{2}-1}+\frac{\sqrt{3}-1}{\sqrt{3}+1}+\frac{\sqrt{2}-1}{\sqrt{2}+1}\right)$

$\Rightarrow \frac{\left(\sqrt{3}+1\right)}{\left(\sqrt{3}-1\right)}\times\frac{\left(\sqrt{3}+1\right)}{\left(\sqrt{3}+1\right)}+\frac{\sqrt{2}+1}{\sqrt{2}-1}\times\frac{\sqrt{2}+1}{\sqrt{2}+1}$

$+\frac{\sqrt{3}-1}{\sqrt{3}+1}\times\frac{\sqrt{3}-1}{\sqrt{3}-1}+\frac{\sqrt{2}-1}{\sqrt{2}-1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}$

$\Rightarrow \frac{\left(\sqrt{3}+1\right)^2}{3-1}+\frac{\left(\sqrt{2}+1\right)^2}{2-1}+\frac{\left(\sqrt{3}-1\right)^2}{3-1}$

$+\frac{\left(\sqrt{2}-1\right)^2}{2-1}$

$\Rightarrow \frac{3+1+2\sqrt{3}}{2}+\frac{2+1+2\sqrt{2}}{1}+\frac{3+1-2\sqrt{3}}{2}$

$+\frac{2+1-2\sqrt{2}}{1}$

$\Rightarrow 2+\sqrt{3}+3+2\sqrt{2}+2-\sqrt{3}+3-2\sqrt{2}$

$\Rightarrow 10$

130. (d) $\sqrt[4]{(3x+1)} = 2$

$\left(\sqrt[4]{(3x+1)}\right)^4 = 2^4$

$(3x+1)^{4\times\frac{1}{4}} = 16$

$3x = 15, \quad x = 5$

131. (a) $\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}+\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}$

$\Rightarrow \frac{\left(\sqrt{7}-\sqrt{5}\right)}{\left(\sqrt{7}+\sqrt{5}\right)}\times\frac{\left(\sqrt{7}-\sqrt{5}\right)}{\left(\sqrt{7}-\sqrt{5}\right)}$

$+\frac{\left(\sqrt{7}+\sqrt{5}\right)\left(\sqrt{7}+\sqrt{5}\right)}{\left(\sqrt{7}-\sqrt{5}\right)\left(\sqrt{7}+\sqrt{5}\right)}$

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

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

$\Rightarrow \frac{24}{2} = 12$

132. (d) $\frac{2}{\sqrt{6}+2}+\frac{1}{\sqrt{7}+\sqrt{6}}+\frac{1}{\sqrt{8}-\sqrt{7}}+2-2\sqrt{2}$

$\Rightarrow \frac{2}{\sqrt{6}+2}\times\frac{\sqrt{6}-2}{\sqrt{6}-2}+\frac{1}{\sqrt{7}+\sqrt{6}}\times\frac{\sqrt{7}-\sqrt{6}}{\sqrt{7}-\sqrt{6}}+$

$\frac{1}{\sqrt{8}-\sqrt{7}}\times\frac{\sqrt{8}+\sqrt{7}}{\sqrt{8}+\sqrt{7}}+2-2\sqrt{2}$

$\Rightarrow \frac{2\times\left(\sqrt{6}-2\right)}{6-4}+\frac{\left(\sqrt{7}-\sqrt{6}\right)}{7-6}+\frac{\sqrt{8}+\sqrt{7}}{8-7}$

$+2-2\sqrt{2}$

$\Rightarrow \sqrt{6}-2+\sqrt{7}-\sqrt{6}+\sqrt{8}+\sqrt{7}+2-2\sqrt{2}$

$\Rightarrow \sqrt{6}-2+\sqrt{7}-\sqrt{6}+2\sqrt{2}+\sqrt{7}+2-2\sqrt{2}$

$\Rightarrow 2\sqrt{7}$

133. (a) $\left[\left\{\left(-\frac{1}{2}^2\right)\right\}^{-2}\right]^{-1}$

$\Rightarrow \left\{\left(-\frac{1}{2}\right)^2\right\}^{-2\times-1}$

$\Rightarrow \left(-\frac{1}{2}\right)^{2\times2} \Rightarrow \left(-\frac{1}{2}\right)^4 \Rightarrow \frac{1}{16}$

134. (b) $\frac{256\times256-144\times144}{112}$

$\Rightarrow \frac{(256)^2-(144)^2}{112}$

$\Rightarrow \frac{(112)(400)}{112} \Rightarrow 400$

135. (d) a = 8.7, b = 1.3

$\Rightarrow (a\times a+2\times a\times b+b\times b)$

$\Rightarrow (a^2+2ab+b^2)$

$\Rightarrow (a+b)^2$

$\Rightarrow (8.7+1.3)^2$

$\Rightarrow (10)^2 \Rightarrow 100$

136. (a) a = 3.06, b = 1.98

$\Rightarrow \frac{a^3-b^3}{a^2+a\times b+b^2}$

$\Rightarrow \frac{(a-b)(a^2+b^2+ab)}{a^2+ab+b^2}$

$\Rightarrow (a-b)$

$\Rightarrow 3.06-1.98 = 1.08$

137. (c) a = 3.25, b = 1.75

$\Rightarrow \frac{a\times a+b\times b-2\times a\times b}{a\times a-b\times b}$

$\Rightarrow \frac{a^2+b^2-2ab}{a^2-b^2}$

$\Rightarrow \frac{(a-b)^2}{(a-b)(a+b)} = \frac{a-b}{a+b}$

$\Rightarrow \frac{3.25-1.75}{3.25+1.75}$

$\Rightarrow \frac{1.50}{5.00} \Rightarrow \frac{3}{10} \Rightarrow 0.3$

138. (b) a = 0.08, b =0.02

$$\Rightarrow \frac{a\times a\times a+b\times b\times b}{a\times a-ab+b\times b}$$

$$\Rightarrow \frac{a^3+b^3}{a^2-ab+b^2}$$

$$\Rightarrow \frac{(a+b)(a^2-ab+b^2)}{a^2-ab+b^2}$$

$\Rightarrow$ a + b

$\Rightarrow$ 0.08 + 0.02 $\Rightarrow$ 0.10

139. (b) $2^{60}\rightarrow(2^5)^{12}\rightarrow(32)^{12}$

$\Rightarrow 3^{48}\rightarrow(3^4)^{12}\rightarrow(81)^{12}$

$\Rightarrow 4^{36}\rightarrow(4^3)^{12}\rightarrow(64)^{12}$

$\Rightarrow 5^{24}\rightarrow(5^2)^{12}\rightarrow(25)^{12}$ $\Rightarrow 3^{48}$

140. (d)

| $\sqrt{2}$ | $\sqrt[3]{3}$ | $\sqrt[4]{5}$ | $\sqrt[6]{6}$ |
|---|---|---|---|
| $2^{1/2}$ | $3^{1/3}$ | $5^{1/4}$ | $6^{1/6}$ |
| $2^{6/12}$ | $3^{4/12}$ | $5^{3/12}$ | $6^{2/12}$ |
| $\sqrt[12]{2^6}$ | $\sqrt[12]{3^4}$ | $\sqrt[12]{5^3}$ | $\sqrt[12]{6^2}$ |
| $\sqrt[12]{64}$ | $\sqrt[12]{81}$ | $\sqrt[12]{125}$ | $\sqrt[12]{36}$ |
| | | ↑ Greatest | |

$\Rightarrow \sqrt[4]{5}$

141. (d)

| 0.9 | $(0.9)^2$ | $\sqrt{0.9}$ | $0.\overline{9}$ |
|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ |
| 0.9 | .81 | 0.95 | $\frac{9}{9}$ |
| | ↓ | ↓ | ↓ |
| | .81 | 0.95 | 1 |
| | | | ↑ (largest) |

$\Rightarrow 0.\overline{9}$

142. (b) Shortcut method

$\sqrt{12+\sqrt{12+12}.....}$

④ × 3

∴ take closest factor and largest is answer

143. (b) $\sqrt{3\sqrt{3\sqrt{3}}}$.....

Shortcut method

$\Rightarrow$ When the question in from

$\Rightarrow \sqrt{n\sqrt{n\sqrt{n}}}$.....$\infty$

$\Rightarrow$ So n is answer

$\Rightarrow$ 3

144. (c) shortcut method

Take out option and try

Let number is $\sqrt{6}$

$$\Rightarrow \sqrt{6}\left(\sqrt{3}+\sqrt{2}\right)=\sqrt{12}+\sqrt{18}$$

$$\Rightarrow \sqrt{18}+\sqrt{12}=\sqrt{12}+\sqrt{18}$$

Matched

So this is answer

145. (a) $\frac{2+\sqrt{3}}{2-\sqrt{3}}+\frac{2-\sqrt{3}}{2+\sqrt{3}}+\frac{\sqrt{3}+1}{\sqrt{3}-1}$

$$\Rightarrow \left(\frac{2+\sqrt{3}}{2-\sqrt{3}}\times\frac{2+\sqrt{3}}{2+\sqrt{3}}\right)+\left(\frac{2-\sqrt{3}}{2+\sqrt{3}}\times\frac{2-\sqrt{3}}{2-\sqrt{3}}\right)+\left(\frac{\sqrt{3}+1}{\sqrt{3}-1}\times\frac{\sqrt{3}+1}{\sqrt{3}+1}\right)$$

$$\Rightarrow \frac{(2+\sqrt{3})^2}{4-3}+\frac{(2-\sqrt{3})^2}{4-3}+\frac{(\sqrt{3}+1)^2}{3-1}$$

$$\Rightarrow 4+3+4\sqrt{3}+4+3-4\sqrt{3}+\left(\frac{3+1+2\sqrt{3}}{2}\right)$$

$\Rightarrow 7 + 7 + 2 + \sqrt{3}$ $\Rightarrow 16 + \sqrt{3}$

146. (b) $\sqrt{14+6\sqrt{5}}$

$$\Rightarrow \sqrt{(3)^2+(\sqrt{5})^2+2\times3\times\sqrt{5}}$$

$$\Rightarrow \sqrt{(3+\sqrt{5})^2} \Rightarrow 3+\sqrt{5}$$

147. (b) $\frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}-\frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}+\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}$ (rationalisation)

$$\Rightarrow \frac{3\sqrt{2}}{\sqrt{3}+\sqrt{6}}\times\frac{\sqrt{6}-\sqrt{3}}{\sqrt{6}-\sqrt{3}}-\frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}\times\frac{\sqrt{6}-\sqrt{2}}{\sqrt{6}-\sqrt{2}}+\frac{\sqrt{6}}{\sqrt{3}+\sqrt{2}}\times\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}}$$

$$\Rightarrow \frac{3\sqrt{2}(\sqrt{6}-\sqrt{3})}{6-3}-\left(\frac{4\sqrt{3}(\sqrt{6}-\sqrt{2})}{6-2}\right)+\frac{\sqrt{6}(\sqrt{3}-\sqrt{2})}{3-2}$$

$$\Rightarrow \sqrt{12}-\sqrt{6}-(\sqrt{18}-\sqrt{6})+\sqrt{18}-\sqrt{12}$$

$$\Rightarrow \sqrt{12}-\sqrt{6}-\sqrt{18}+\sqrt{6}+\sqrt{18}-\sqrt{12}=0$$

148. (b) $\frac{1}{\sqrt{2}+1}=\frac{1}{\sqrt{2}+1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}$

$$=\frac{(\sqrt{2}-1)}{2-1}=\sqrt{2}-1$$

Similarly

$\Rightarrow \frac{1}{\sqrt{3}+\sqrt{2}}=\sqrt{3}-\sqrt{2}$ and so on.

Now put value

$\Rightarrow \sqrt{2}-1+\sqrt{3}-\sqrt{2}+\sqrt{4}-\sqrt{3}$ ..... $+\sqrt{100}-\sqrt{99}$

$\Rightarrow \sqrt{100}-1$ $\Rightarrow 10-1=9$

149. (b) Let P = 0.05

then, $\frac{P}{10}=0.005$

Let 0.41 = q

$\therefore 0.041=\frac{q}{10}$

and 0.073 = r

$\therefore 0.0073=\frac{r}{10}$

According to question

$$\frac{P^2+q^2+r^2}{\left(\frac{P}{10}\right)^2+\left(\frac{q}{10}\right)^2+\left(\frac{r}{10}\right)^2}$$

$$\Rightarrow \frac{(P^2+q^2+r^2)}{\frac{1}{100}(P^2+q^2+r^2)} \Rightarrow 100$$

150. (c)

| $\sqrt[6]{12}$ | $\sqrt[3]{3}$ | $\sqrt[4]{4}$ |
|---|---|---|
| ↓ | ↓ | ↓ |
| $(12)^{1/6}$ | $3^{1/3}$ | $4^{1/4}$ |
| ↓ | ↓ | ↓ |
| $12^{2/12}$ | $3^{4/12}$ | $4^{3/12}$ |
| ↓ | ↓ | ↓ |
| $\sqrt[12]{144}$ | $\sqrt[12]{81}$ | $\sqrt[12]{64}$ |
| | | ↓ Smallest |

151. (b)

| $\sqrt{2}$ | $\sqrt[3]{9}$ | $\sqrt[4]{16}$ | $\sqrt[5]{32}$ |
|---|---|---|---|
| ↓ | ↓ | ↓ | ↓ |
| 1.41 | $\sqrt[3]{9}$ | 2 | 2 |

$\sqrt[3]{9} > 2$ ($2\times2\times2 = 8$, so $\sqrt[3]{9} > 2$)

$3\sqrt{9}$ (greatest one)

152. (b) $\sqrt[4]{3}$ $\sqrt[5]{4}$ $\sqrt[10]{12}$ 1

$3^{1/4}$ $4^{1/5}$ $12^{1/10}$ 1

$3^{5/20}$ $4^{4/20}$ $12^{2/20}$ 1

$\sqrt[20]{243}$ $\mathbf{\sqrt[20]{256}}$ $\sqrt[20]{144}$ 1

153. (c) $3\sqrt{2}$ $3\sqrt{7}$ $6\sqrt{5}$ $2\sqrt{20}$

$\sqrt{9\times2}$ $\sqrt{9\times7}$ $\sqrt{36\times5}$ $\sqrt{4\times20}$

$\sqrt{18}$ $\sqrt{63}$ $\sqrt{180}$ $\sqrt{80}$

154. (d) $\sqrt{0.09}$ $\sqrt[3]{0.064}$ 0.5 3/5

0.3 0.4 0.5 **0.6**

155. (b) 0.16 $\sqrt{0.16}$ $(0.16)^2$ 0.04

0.16 **0.40** 0.0256 0.04

156. (d) $\sqrt[2]{8}$ $\sqrt[4]{13}$ $\sqrt[5]{16}$ $\sqrt[10]{41}$

$8^{1/2}$ $13^{1/4}$ $16^{1/5}$ $41^{1/10}$

$8^{10/20}$ $13^{5/20}$ $16^{4/20}$ $41^{2/20}$

$\sqrt[20]{8^{10}}$ $\sqrt[20]{13^5}$ $\sqrt[20]{16^4}$ $\sqrt[20]{41^2}$

$\sqrt[20]{64^5}$ $\sqrt[20]{13^5}$ $\sqrt[20]{16^4}$ $\sqrt[20]{41^2}$

157. (b) $2\sqrt{2}+\sqrt{2}+\dfrac{1}{2+\sqrt{2}}-\dfrac{1}{2-\sqrt{2}}$

$\Rightarrow 2\sqrt{2}+\sqrt{2}+\left(\dfrac{2-\sqrt{2}-2-\sqrt{2}}{(2+\sqrt{2})(2-\sqrt{2})}\right)$

$\Rightarrow 2\sqrt{2}+\sqrt{2}+\dfrac{-2\sqrt{2}}{4-2}$

$\Rightarrow 2\sqrt{2}+\sqrt{2}-\dfrac{2\sqrt{2}}{2}$

$\Rightarrow 2\sqrt{2}+\sqrt{2}-\sqrt{2}$

$\Rightarrow 2\sqrt{2}$

$\Rightarrow 2\times1.4142$

$= 2.8284$

158. (a) $\sqrt{\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}}$

$\Rightarrow \sqrt{\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}}=\sqrt{\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}\times\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}}}$

$\Rightarrow \sqrt{\dfrac{\left(\sqrt{3}+\sqrt{2}\right)^2}{3-2}} \Rightarrow \sqrt{3}+\sqrt{2}$

159. (c) $0.42\times100^k = 42$

$\Rightarrow$ put k = 1

$\Rightarrow 0.42\times100^1 = 42$

$\Rightarrow 42 = 42$ Matched

So k = 1

160. (a) $2^x = 3^y = 6^{-z} = k$

$\Rightarrow 2 = k^{1/x}; 3 = k^{1/y} = 6 = k^{-1/z}$

$\therefore 2\times3 = 6$

$k^{1/x}\times k^{1/y} = k^{-1/z}$

$\dfrac{1}{x}+\dfrac{1}{y}=-\dfrac{1}{z} \Rightarrow \dfrac{1}{x}+\dfrac{1}{y}+\dfrac{1}{z}=0$

161. (c) $\dfrac{1+\sqrt{2}}{\sqrt{5}+\sqrt{3}}+\dfrac{1-\sqrt{2}}{\sqrt{5}-\sqrt{3}}$

$\dfrac{\left(1+\sqrt{2}\right)\left(\sqrt{5}-\sqrt{3}\right)+\left(1-\sqrt{2}\right)\left(\sqrt{5}+\sqrt{3}\right)}{\left(\sqrt{5}+\sqrt{3}\right)\left(\sqrt{5}-\sqrt{3}\right)}$

$\Rightarrow \dfrac{\sqrt{5}-\sqrt{3}+\sqrt{10}-\sqrt{6}+\sqrt{5}+\sqrt{3}-\sqrt{10}-\sqrt{6}}{5-3}$

$\Rightarrow \dfrac{2\sqrt{5}-2\sqrt{6}}{2} \Rightarrow \dfrac{2\left(\sqrt{5}-\sqrt{6}\right)}{2}$

$\Rightarrow \sqrt{5}-\sqrt{6}$

162. (d) $256^{-\left[4^{-3/2}\right]} \Rightarrow 256^{-\left[\frac{1}{4}^{3/2}\right]}$

$\Rightarrow 256^{-\left[\frac{1}{8}\right]}$

$\Rightarrow \dfrac{1}{256^{1/8}}$

$\Rightarrow \dfrac{1}{2^{8\times\frac{1}{8}}} \Rightarrow \dfrac{1}{2}$

163. (b)

$2\sqrt[3]{40} \Rightarrow 2\times\sqrt[3]{2\times2\times2\times5}$

$\Rightarrow 2\times2\sqrt[3]{5}$

$\Rightarrow 4\sqrt[3]{5}$

$\Rightarrow 4\sqrt[3]{320}$

$\Rightarrow 4\times\sqrt[3]{4\times4\times4\times5}$

$\Rightarrow 4\times4\sqrt[3]{5}$

$\Rightarrow 16\sqrt[3]{5}$

$\Rightarrow 3\sqrt[3]{625}$

$\Rightarrow 3\times\sqrt[3]{5\times5\times5\times5}$

$\Rightarrow 3\times5\sqrt[3]{5}$

$\Rightarrow 15\sqrt[3]{5}$

Now put the value in question

$\Rightarrow 4\sqrt[3]{5}-16\sqrt[3]{5}+15\sqrt[3]{5}-3\sqrt[3]{5}$

$\Rightarrow 19\sqrt[3]{5}-19\sqrt[3]{5}$

$\Rightarrow 0$

164. (b) $\sqrt[3]{0.000125}$

$\Rightarrow \sqrt[3]{0.05\times0.05\times0.05} \Rightarrow 0.05$

165. (c) $\dfrac{0.355\times0.5555\times2.025}{0.225\times1.775\times0.2222}$

$\Rightarrow \dfrac{355\times5555\times2025}{225\times1775\times2222}$

$\Rightarrow \dfrac{1\times5\times81}{9\times5\times2} \Rightarrow 4.5$

166. (c) $\sqrt{40+\sqrt{9\sqrt{81}}}$

$\Rightarrow \sqrt{40+\sqrt{9\times9}}$

$\Rightarrow \sqrt{40+9} \Rightarrow \sqrt{49} \Rightarrow 7$

167. (b) $\dfrac{\left(x-\sqrt{24}\right)\left(\sqrt{75}+\sqrt{50}\right)}{\sqrt{75}-\sqrt{50}}=1$

$\Rightarrow \left(x-\sqrt{24}\right) = \dfrac{\sqrt{75}-\sqrt{50}}{\sqrt{75}+\sqrt{50}}$

$\Rightarrow \left(x-\sqrt{24}\right) = \dfrac{\left(\sqrt{75}-\sqrt{50}\right)^2}{75-50}$

$\Rightarrow \left(x-\sqrt{24}\right) = \dfrac{75+50-2\sqrt{75}\sqrt{50}}{25}$

$\Rightarrow \left(x-\sqrt{24}\right) = \dfrac{125-2\times5\sqrt{3}\times5\sqrt{2}}{25}$

$\Rightarrow \left(x-\sqrt{24}\right) = \dfrac{125-50\sqrt{6}}{25}$

$\Rightarrow \left(x-\sqrt{24}\right) = \dfrac{25\left(5-2\sqrt{6}\right)}{25}$

$\Rightarrow x-2\sqrt{6} = 5-2\sqrt{6}$

$\Rightarrow x = 5$

168. (c)

$\sqrt{20} + \sqrt{12} + \sqrt[3]{729} - \frac{4}{\sqrt{5}-\sqrt{3}} - \sqrt{81}$

$\Rightarrow 2\sqrt{5} + 2\sqrt{3} + 9 - \left(\frac{4}{\sqrt{5}-\sqrt{3}} \times \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}+\sqrt{3}}\right) - 9$

$\Rightarrow 2\sqrt{5} + 2\sqrt{3} + 9 - \left(\frac{4(\sqrt{5}+\sqrt{3})}{2}\right) - 9$

$\Rightarrow 2\sqrt{5} + 2\sqrt{3} + 9 - 2\sqrt{5} - 2\sqrt{3} - 9$

$\Rightarrow 0$

169. (a) $\frac{1}{2-\sqrt{3}} + \frac{1}{3-\sqrt{8}} + \frac{1}{4-\sqrt{15}}$

$\Rightarrow \frac{1}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}} + \frac{1}{3-\sqrt{8}} \times \frac{3+\sqrt{8}}{3+\sqrt{8}}$

$+ \frac{1}{4-\sqrt{15}} \times \frac{4+\sqrt{15}}{4+\sqrt{15}}$

$\Rightarrow \frac{2+\sqrt{3}}{4-3} + \frac{3+\sqrt{8}}{9-8} + \frac{4+\sqrt{15}}{16-15}$

$\Rightarrow 2 + \sqrt{3} + 3 + \sqrt{8} + 4 + \sqrt{15}$

$\Rightarrow 9 + \sqrt{3} + 2\sqrt{2} + \sqrt{15}$

$a = 9 < 9 + \sqrt{3} + 2\sqrt{2} + \sqrt{15} < 18$

$\sqrt{3} = 1.73., 2\sqrt{2} = 1.41, \sqrt{15} = 3.9$

$\Rightarrow 9 < 9 + 1.73 + (2 \times 1.41) + 3.9$

$= 17.4 < 18$

170. (a)

$a\sqrt{2} + b\sqrt{3} = \sqrt{98} + \sqrt{108} - \sqrt{48} - \sqrt{72}$

$\Rightarrow \sqrt{7\times7\times2} + \sqrt{3\times3\times3\times2\times2} - \sqrt{2\times2\times2\times2\times3} - \sqrt{3\times3\times2\times2\times2}$

$\Rightarrow 7\sqrt{2} + 6\sqrt{3} - 4\sqrt{3} - 6\sqrt{2}$

$a\sqrt{2} + b\sqrt{3} = 1\sqrt{2} + 2\sqrt{3}$

$a = 1$

$b = 2$

171. (a)

$\sqrt[3]{a} = \sqrt[3]{26} + \sqrt[3]{7} + \sqrt[3]{63}$

Take round figure

$\Rightarrow \sqrt[3]{a} < \sqrt[3]{27} + \sqrt[3]{8} + \sqrt[3]{64}$

$\Rightarrow \sqrt[3]{a} < 3 + 2 + 4$

$\Rightarrow \sqrt[3]{a} < 9$

$\Rightarrow a < 9^3$

$\Rightarrow a < 729$

Option A is answer

172. (d) $\frac{\sqrt{72} \times \sqrt{363} \times \sqrt{175}}{\sqrt{32} \times \sqrt{147} \times \sqrt{252}}$

$\Rightarrow \frac{\sqrt{2\times2\times2\times3\times3} \times \sqrt{11\times11\times3} \times \sqrt{5\times5\times7}}{\sqrt{2\times2\times2\times2\times2} \times \sqrt{3\times7\times7} \times \sqrt{2\times2\times3\times3\times7}}$ .....

$\Rightarrow \frac{6\sqrt{2} \times 11\sqrt{3} \times 5\sqrt{7}}{4\sqrt{2} \times 7\sqrt{3} \times 6\sqrt{7}}$

$\Rightarrow \frac{6\times11\times5}{4\times7\times6} = \frac{55}{28}$

173. (d) $2 + \frac{6}{\sqrt{3}} + \frac{1}{2+\sqrt{3}} + \frac{1}{\sqrt{3}-2}$

$\Rightarrow 2 + \frac{2\times3\sqrt{3}}{\sqrt{3}\times\sqrt{3}} + \frac{1}{2+\sqrt{3}} - \frac{1}{2-\sqrt{3}}$

$\Rightarrow 2 + 2\sqrt{3} + \left(\frac{(2-\sqrt{3}) - (2+\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})}\right)$

$\Rightarrow 2 + 2\sqrt{3} + \left(\frac{2-\sqrt{3}-2-\sqrt{3}}{4-3}\right)$

$\Rightarrow 2 + 2\sqrt{3} - 2\sqrt{3}$

$\Rightarrow 2$

174. (c) $\frac{4+3\sqrt{3}}{\sqrt{7+4\sqrt{3}}} = A + \sqrt{B}$

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

$\Rightarrow \sqrt{(2)^2 + (\sqrt{3})^2 + 2\times2\sqrt{3}}$

$\Rightarrow \sqrt{(2+\sqrt{3})^2}$

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

$\Rightarrow \frac{4+3\sqrt{3}}{2+\sqrt{3}} = A + \sqrt{B}$

$\Rightarrow \frac{4+3\sqrt{3}}{2+\sqrt{3}} \times \frac{2-\sqrt{3}}{2-\sqrt{3}} = A + \sqrt{B}$

$\Rightarrow \frac{(4+3\sqrt{3})(2-\sqrt{3})}{4-3} = A + \sqrt{B}$

$\Rightarrow 8 - 4\sqrt{3} + 6\sqrt{3} - 9 = A + \sqrt{B}$

$\Rightarrow 2\sqrt{3} - 1 = A + \sqrt{B}$

$A = -1$ and $\sqrt{B} = 2\sqrt{3}$

$B = 2\sqrt{3} \times 2\sqrt{3} = 12$

$B - A = 12 - (-1) = 13$

175. (b) $2\sqrt{50} + \sqrt{18} - \sqrt{72}$

$\Rightarrow 2\times5\sqrt{2} + 3\sqrt{2} - 6\sqrt{2}$

$\Rightarrow 13\sqrt{2} - 6\sqrt{2}$

$\Rightarrow 7\sqrt{2} \quad \Rightarrow 7 \times 1.414$

$\Rightarrow 9.898$

176. (b)

$0.16, \quad \sqrt{0.16}, \quad (0.16)^2, \quad 0.04$

$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$

$0.16 \quad 0.4 \quad 0.0256 \quad 0.04$

177. (b) $2^{250} \rightarrow (2^5)^{50} \rightarrow (32)^{50}$

$\Rightarrow 3^{150} \rightarrow (3^3)^{50} \rightarrow (27)^{50}$

$\Rightarrow 5^{100} \rightarrow (5^2)^{50} \rightarrow (25)^{50}$

$\Rightarrow 4^{200} \rightarrow (4^4)^{50} \rightarrow (256)^{50}$

178. (c)

$\sqrt[3]{2} \qquad \sqrt{3}$

$\downarrow \qquad \downarrow$

$2^{1/3} \qquad 3^{1/2}$

$\downarrow \qquad \downarrow$

$2^{2/6} \qquad 3^{3/6}$

$\sqrt[6]{4} < \sqrt[6]{27}$

179. (c) $4^{10} \times 7^3 \times 16^2 \times 11 \times 10^2$

$\Rightarrow (2^2)^{10} \times (7)^3 \times (2^4)^2 \times 11^1 \times 2^2 \times 5^2$

$\Rightarrow 2^{20+8+2} \times 7^3 \times 11^1 \times 5^2$

$\Rightarrow 20^{30} \times 7^3 \times 11^1 \times 5^2$

Total factors $\Rightarrow 30 + 3 + 1 + 2 \Rightarrow 36$

180. (a) $6^{333} \times 7^{222} \times 8^{111}$

$\Rightarrow 2^{333} \times 3^{333} \times 7^{222} \times (2^3)^{111}$

$\Rightarrow 2^{666} \times 3^{333} \times 7^{222}$

$\Rightarrow$ Total factors = 666 + 333 + 222 = 1221

181. (c) $\sqrt{30 + \sqrt{30 + \sqrt{30}}}$.....

⑥ × 5

182. (a) $x = \sqrt{2\sqrt[3]{4\sqrt{2\sqrt[3]{4}}}}$.....

$\Rightarrow$ Squaring both sides

$\Rightarrow x^2 = 2\sqrt[3]{4\sqrt{2\sqrt[3]{4}}}$ .....

Now cubing both sides

$x^6 = 8 \times 4x$

$\Rightarrow x^5 = 32$

$\Rightarrow x^5 = 2^5$

$\Rightarrow x = 2$

183. (b) $a = 55, \quad b = 17$

$c = -72$

$a + b + c = 55 + 17 - 72 = 0$

$\therefore \quad a^3 + b^3 + c^3 - 3abc = 0$

$(a + b + c) = 0$

answer = 0

184. (d) Let $a = 2.75$, $b = 2.25$

Now

$\Rightarrow \dfrac{a^3 - b^3}{a^2 + ab + b^2}$

$\Rightarrow \dfrac{(a-b)(a^2+ab+b^2)}{(a^2+ab+b^2)}$

$\Rightarrow 2.75 - 2.25$

$\Rightarrow 0.50 \quad \Rightarrow \dfrac{1}{2}$

185. (b) $\dfrac{243^{n/5} \times 3^{2n+1}}{9^n \times 3^{n-1}}$

$\Rightarrow \dfrac{3^{5\times n/5} \times 3^{2n+1}}{3^{2n} \times 3^{n-1}}$

$\Rightarrow \dfrac{3^n \times 3^{2n+1}}{3^{2n} \times 3^{n-1}}$

$\Rightarrow \dfrac{3^{n+2n+1}}{3^{2n+n-1}} \quad \Rightarrow \dfrac{3^{3n+1}}{3^{3n-1}}$

$\Rightarrow 3^{(3n+1)-(3n-1)} \quad \Rightarrow 3^{3n+1-3n+1}$

$\Rightarrow 3^2 = 9$

186. (c) $(\sqrt{3}+1)(10+\sqrt{12})(\sqrt{12}-2)(5-\sqrt{3})$

$\Rightarrow (\sqrt{3}+1)(10+2\sqrt{3})(2\sqrt{3}-2)(5-\sqrt{3})$

$\Rightarrow (\sqrt{3}+1)\times 2(5+\sqrt{3})\times 2(\sqrt{3}-1)(5-\sqrt{3})$

$\Rightarrow 4(\sqrt{3}+1)(\sqrt{3}-1)(5+\sqrt{3})(5-\sqrt{3})$

$\Rightarrow 4\left[(\sqrt{3})^2 - 1^2\right]\left[(5)^2 - (\sqrt{3})^2\right]$

$\Rightarrow 4 \times 2 \times 22 \quad \Rightarrow 176$

187. (b) $(0.2)^3 \times 200 \div 2000$ of $(0.2)^2$

$\Rightarrow \dfrac{0.2\times0.2\times0.2\times200}{2000\times0.2\times0.2} \Rightarrow \dfrac{0.2\times200}{2000}$

$\Rightarrow \dfrac{40.0}{2000} \Rightarrow \dfrac{1}{50}$

188. (a)

$\sqrt[3]{4}$, $\sqrt{2}$, $\sqrt[6]{3}$, $\sqrt[4]{5}$

$\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$

$4^{1/3}$ $2^{1/2}$ $3^{1/6}$ $5^{1/4}$

$\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$

$4^{4/12}$ $2^{6/12}$ $3^{2/12}$ $5^{3/12}$

$\downarrow$ $\downarrow$ $\downarrow$ $\downarrow$

$\sqrt[12]{256}$ $\sqrt[12]{64}$ $\sqrt[12]{9}$ $\sqrt[12]{125}$

$\sqrt[12]{256} > \sqrt[12]{125} > \sqrt[12]{64} > \sqrt[12]{9}$

$\sqrt[3]{4} > \sqrt[4]{5} > \sqrt{2} > \sqrt[6]{3}$

189. (d) $x^2 - \sqrt{3} = 0$

$x^2 - 3^{1/2} = 0$

$x^2 - (3^{1/4})^2 = 0$

$(x + 3^{1/4})(x - 3^{1/4}) = 0$

$x = 3^{1/4}$ or $-3^{1/4}$

Product of roots

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

190. (d) $2^{n-1} + 2^{n+1} = 320$

$\Rightarrow 2^{n-1}(1 + 2^2) = 320$

$\Rightarrow 2^{n-1}(1 + 2^2) = 320$

$\Rightarrow 2^{n-1} \times 5 = 320$

$\Rightarrow 2^{n-1} = \dfrac{320}{5} = 64$

$\Rightarrow (2)^{n-1} = (2)^6$

$\Rightarrow n = 7$

191. (a) $4^{61} + 4^{62} + 4^{63} + 4^{64}$

$4^{61}(4^0 + 4^1 + 4^2 + 4^3)$

$4^{61} \times 85$

Now check with option

17 is divisible by 85

192. (a) $5\sqrt{5} \times 5^3 \div 5^{-3/2} = 5^{a+2}$

$\Rightarrow 5^1 \times 5^{1/2} \times 5^3 \div 5^{-3/2} = 5^{a+2}$

$\Rightarrow 5^{1+1/2+3-(-3/2)} = 5^{a+2}$

$\Rightarrow 5^{1+1/2+3+3/2} = 5^{a+2}$

$\Rightarrow 5^6 = 5^{a+2}$

$\Rightarrow a + 2 = 6$

$\Rightarrow a = 4$

193(a) $\left(3+2\sqrt{2}\right)^{-3} + \left(3-2\sqrt{2}\right)^{-3}$

$\Rightarrow \left(\dfrac{1}{3+2\sqrt{2}}\right)^3 + \left(\dfrac{1}{3-2\sqrt{2}}\right)^3$

$\Rightarrow \left(3-2\sqrt{2}\right)^3 + \left(3+2\sqrt{2}\right)^3$

$\Rightarrow 2 \times 9 + 6 \times 3(2\sqrt{2})^2$

$\Rightarrow 2 \times 27 + 18 \times 8$

$\Rightarrow 54 + 144 \Rightarrow 198$

194. (d) $3^x - 3^{x-1} = 486$

$\Rightarrow 3^{x-1}(3-1) = 486 = 3^{x-1} = 243$

$\Rightarrow 3^{x-1} = 3^5 \quad \Rightarrow x = 6$

195. (b) At the start $t = 0°$

$l = 2 - 2°$

$\Rightarrow 2 - 1 = 1$ cm

196. (c) $\dfrac{1}{\sqrt{7}-\sqrt{6}} - \dfrac{1}{\sqrt{6}-\sqrt{5}} + \dfrac{1}{\sqrt{5}-2} - \dfrac{1}{\sqrt{8}-\sqrt{7}} + \dfrac{1}{3-\sqrt{8}}$

$\Rightarrow$ Rationalising

$\Rightarrow \dfrac{\sqrt{7}+\sqrt{6}}{(\sqrt{7}+\sqrt{6})(\sqrt{7}-\sqrt{6})} - \dfrac{1}{(\sqrt{6}-\sqrt{5})} \times \dfrac{(\sqrt{6}+\sqrt{5})}{(\sqrt{6}+\sqrt{5})} + \dfrac{\sqrt{5}+\sqrt{4}}{(\sqrt{5}-\sqrt{4})(\sqrt{5}+\sqrt{4})} + \dfrac{(\sqrt{9}+\sqrt{8})}{(\sqrt{9}+\sqrt{8})(\sqrt{9}-\sqrt{8})}$

$\Rightarrow \dfrac{\sqrt{7}+\sqrt{6}}{1} - \dfrac{(\sqrt{6}+\sqrt{5})}{1} + \dfrac{(\sqrt{6}+\sqrt{5})}{1} - \dfrac{(\sqrt{8}+\sqrt{7})}{1} + \dfrac{(\sqrt{9}+\sqrt{8})}{1}$

$\Rightarrow \sqrt{7} + \sqrt{6} - \sqrt{6} - \sqrt{5} + \sqrt{5} + \sqrt{4} - \sqrt{8} - \cdots$

$\sqrt{7} + \sqrt{9} + \sqrt{8}$

$\Rightarrow \sqrt{4} + \sqrt{9} = 2 + 3 = 5$

197. (c) from option (i)

$\Rightarrow \sqrt{6} + \sqrt{2} = \sqrt{5} + \sqrt{3}$

$\Rightarrow 8 + 2\sqrt{12} = 8 + 2\sqrt{15}$

(Squaring both side)

$\sqrt{12} \neq \sqrt{15}$

So option (i) is incorrect

From option (ii)

$\Rightarrow \sqrt{6} + \sqrt{2} < \sqrt{5} + \sqrt{3}$

$\Rightarrow 8 + 2\sqrt{12} < 8 + 2\sqrt{15}$

$2\sqrt{12} < 2\sqrt{15}$

$\Rightarrow$ So option (ii) is correct

$\Rightarrow$ by option (iii)

$\sqrt{6} + \sqrt{2} > \sqrt{5} + \sqrt{3}$

$8 + 2\sqrt{12} > 8 + 2\sqrt{15}$

$2\sqrt{12} < 2\sqrt{15}$

So option (iii) is also incorrect

There for Ans (c) option (i) (iii) are incorrect

198. (d)

$\dfrac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}}{\sqrt[3]{8}}$

$\Rightarrow \dfrac{\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{169}}}}}{2}$

$\Rightarrow \dfrac{\sqrt{10+\sqrt{25+\sqrt{121}}}}{2} \Rightarrow \dfrac{\sqrt{10+\sqrt{36}}}{2}$

$\Rightarrow \dfrac{\sqrt{16}}{2} \Rightarrow \dfrac{4}{2} \Rightarrow 2$

199. (d) According to the question,

$$\Rightarrow \frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}}+\frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}}$$

$$\Rightarrow \frac{1}{\left(\sqrt{2}-\sqrt{5}\right)+\sqrt{3}}+\frac{1}{\left(\sqrt{2}-\sqrt{5}\right)-\sqrt{3}}$$

$$\Rightarrow \frac{\sqrt{2}-\sqrt{5}-\sqrt{3}+\sqrt{2}-\sqrt{5}+\sqrt{3}}{\left(\sqrt{2}-\sqrt{5}\right)^2-\left(\sqrt{3}\right)^2}$$

$$\Rightarrow \frac{2\left(\sqrt{2}-\sqrt{5}\right)}{7-2\sqrt{10}-3}$$

$$\Rightarrow \frac{2\left(\sqrt{2}-\sqrt{5}\right)}{4-2\sqrt{10}}$$

$$\Rightarrow \frac{\sqrt{2}-\sqrt{5}}{2-\sqrt{10}}$$

$$\Rightarrow \frac{1}{\sqrt{2}}\frac{\left(\sqrt{2}-\sqrt{5}\right)}{\left(\sqrt{2}-\sqrt{5}\right)} \Rightarrow \frac{1}{\sqrt{2}}$$

200. (d)

$$\frac{\sqrt{6}+2}{\sqrt{2}+\sqrt{2}+\sqrt{3}}-\frac{\sqrt{6}-2}{\sqrt{2}-\sqrt{2}-\sqrt{3}}-\frac{2\sqrt{2}}{2+\sqrt{2}}$$

$$\Rightarrow \frac{\sqrt{6}+2}{\sqrt{2}+\frac{\sqrt{3}+1}{\sqrt{2}}}-\frac{\sqrt{6}-2}{\sqrt{2}-\frac{\sqrt{3}-1}{\sqrt{2}}}-\frac{2}{\sqrt{2}+1}$$

$$\Rightarrow \frac{\left(\sqrt{6}+2\right)\sqrt{2}}{2+\sqrt{3}+1}-\frac{\left(\sqrt{6}-2\right)\sqrt{2}}{2-\sqrt{3}+1}-\frac{2}{\sqrt{2}+1}$$

$$\frac{\sqrt{2}}{\sqrt{3}}\left[\frac{\sqrt{6}+2}{\left(\sqrt{3}+1\right)}-\frac{\sqrt{6}-2}{\left(\sqrt{3}-1\right)}\right]-\frac{2}{\sqrt{2}+1}\times\frac{\sqrt{2}-1}{\sqrt{2}-1}$$

$$\frac{\sqrt{2}}{\sqrt{3}}\left[\frac{\sqrt{18}+2\sqrt{3}-\sqrt{6}-2-\sqrt{18}+2\sqrt{3}-\sqrt{6}+2}{-1}\right]-\frac{2\left(\sqrt{2}-1\right)}{2-1}$$

$$\Rightarrow \frac{\sqrt{2}}{\sqrt{3}}\left[2\frac{\left(-\sqrt{6}+2\sqrt{3}\right)}{2}\right]-2\left(\sqrt{2}-1\right)$$

$$\Rightarrow -\sqrt{3}\times\sqrt{2}\times\frac{\sqrt{2}}{\sqrt{3}}+2\sqrt{3}\times\frac{\sqrt{2}}{\sqrt{3}}-2\left(\sqrt{2}-1\right)$$

$$\Rightarrow -2+2\sqrt{2}-2\sqrt{2}+2=0$$

201. (a) $\dfrac{6^2+7^2+8^2+9^2+10^2}{\sqrt{7+4\sqrt{3}}-\sqrt{4+2\sqrt{3}}}$

$$\Rightarrow \frac{6^2+7^2+8^2+9^2+10^2}{\sqrt{(2+\sqrt{3})^2}-\sqrt{(\sqrt{3}+1)^2}}$$

$$\Rightarrow \frac{6^2+7^2+8^2+9^2+10^2}{2+\sqrt{3}-\sqrt{3}-1}$$

$$\Rightarrow 6^2+7^2+8^2+9^2+10^2$$

$$\Rightarrow 36+49+64+81+100 \Rightarrow 330 \text{ Ans.}$$

202. (d) $\dfrac{3x-2y}{2x+3y}=\dfrac{5}{6}$

$$18x-12y=10x+15y$$

$$8x=27y$$

$$\frac{x}{y}=\frac{27}{8} \qquad \left[\frac{\sqrt[3]{x}+\sqrt[3]{y}}{\sqrt[3]{x}-\sqrt[3]{y}}\right]^2$$

$$\left(\frac{\sqrt[3]{27}+\sqrt[3]{8}}{\sqrt[3]{27}-\sqrt[3]{8}}\right)^2$$

$$\Rightarrow \left(\frac{3+2}{3-2}\right)^2=(5)^2=25 \text{ Ans.}$$

203. (a)

$$\frac{1}{\sqrt{2}+1}+\frac{1}{\sqrt{3}+\sqrt{2}}+\frac{1}{\sqrt{4}+\sqrt{3}}+\frac{1}{\sqrt{5}+\sqrt{4}}+$$

$$\frac{1}{\sqrt{6}+\sqrt{5}}+\frac{1}{\sqrt{7}+\sqrt{6}}+\frac{1}{\sqrt{8}+\sqrt{7}}+\frac{1}{\sqrt{9}+\sqrt{8}}$$

After Rationalizing

$$\left(\sqrt{2}-1\right)+\left(\sqrt{3}-\sqrt{2}\right)+\left(\sqrt{4}-\sqrt{3}\right)+\left(\sqrt{5}-\sqrt{4}\right)+$$

$$\left(\sqrt{6}-\sqrt{5}\right)$$

$$\left(\sqrt{7}-\sqrt{6}\right)+\left(\sqrt{8}-\sqrt{7}\right)+\left(\sqrt{9}-\sqrt{8}\right)$$

$$=\sqrt{9}-1 \qquad =3-1$$

$$=2$$

204. (a) $\sqrt{72+\sqrt{72+\sqrt{72+\ldots.}}}$

⑨ × 8

205. (a) According to question,

$\because \sqrt{33} = 5.745$

$$\sqrt{\frac{3}{11}}$$

$$\Rightarrow \sqrt{\frac{3\times11}{11\times11}} \Rightarrow \sqrt{\frac{33}{11\times11}}$$

$$\Rightarrow \frac{5.745}{11} \Rightarrow 0.5223$$

206. (c) The exponential form of

$$\Rightarrow \sqrt{\sqrt{2}\times\sqrt{3}} \Rightarrow \sqrt{6^{1/2}}$$

$$\Rightarrow \left(6^{1/2}\right)^{1/2} \Rightarrow 6^{1/4}$$

207. (c) $\dfrac{1}{1+\sqrt{2}+\sqrt{3}}+\dfrac{1}{1-\sqrt{2}+\sqrt{3}}$

$$\Rightarrow \frac{1}{1+\sqrt{3}+\sqrt{2}}+\frac{1}{1+\sqrt{3}-\sqrt{2}}$$

$$\Rightarrow \frac{1+\sqrt{3}-\sqrt{2}+1+\sqrt{3}+\sqrt{2}}{\left(1+\sqrt{3}\right)^2-\left(\sqrt{2}\right)^2}$$

$$\Rightarrow \frac{2+2\sqrt{3}}{4+2\sqrt{3}-2} \Rightarrow \frac{2+2\sqrt{3}}{2+2\sqrt{3}}$$

$$\Rightarrow 1$$

208. (c) $\sqrt{6+\sqrt{6+\sqrt{6+\ldots\ldots+\infty}}}$

(2, 3) are the factor of 6.

If there is '+' in '$\sqrt{\ }$' Answer is Highest value.

If there is '–' in '$\sqrt{\ }$', Answer is lowest value.

Alternate →

$$x=\sqrt{6+\sqrt{6+\sqrt{6+\ldots+\infty}}}$$

(squaring both side)

$$x^2=6+\sqrt{6+\sqrt{6+\ldots.\infty}}$$

$$x^2=6+x$$

$$\left[\because \sqrt{6+\sqrt{6+\ldots.\infty}}=x\right]$$

$$x^2-x-6=0$$

$$x^2-3x+2x-6=0$$

$$x(x-3)+2(x-3)=0$$

$$(x+2)(x-3)$$

$x \neq 2$, & $x = 3$

So, Answer is $= 3$

209.(b)

$$\frac{3\sqrt{7}}{\sqrt{5}+\sqrt{2}} - \frac{5\sqrt{5}}{\sqrt{2}+\sqrt{7}} + \frac{2\sqrt{2}}{\sqrt{7}+\sqrt{5}}$$

$$= \frac{3\sqrt{7}}{\sqrt{5}+\sqrt{2}} \times \frac{\sqrt{5}-\sqrt{2}}{\sqrt{5}-\sqrt{2}} - \frac{5\sqrt{5}}{\sqrt{7}+\sqrt{2}} \times$$

$$\frac{\sqrt{7}-\sqrt{2}}{\sqrt{7}-\sqrt{2}} + \frac{2\sqrt{2}}{\sqrt{7}+\sqrt{5}} \times \frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}$$

$$= \frac{3\sqrt{7}(\sqrt{5}-\sqrt{2})}{(\sqrt{5})^2-(\sqrt{2})^2} - \frac{5\sqrt{5}(\sqrt{7}-\sqrt{2})}{(\sqrt{7})^2-(\sqrt{2})^2}$$

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

$$= \sqrt{35} - \sqrt{14} - \sqrt{35} + \sqrt{10} + \sqrt{14} - \sqrt{10}$$

$$= 0$$

210. (c) $\sqrt{4032} \times \sqrt{7}$

$$\sqrt{4 \times 9 \times 4 \times 4 \times 7} \times \sqrt{7}$$

$$= 4 \times 2 \times 3 \times 7$$

$$= 168$$

| | |
|---|---|
| 4 | 4032 |
| 9 | 1008 |
| 4 | 112 |
| 4 | 28 |
| | 7 |

211. (d) $11\sqrt{n} = \sqrt{112} + \sqrt{343}$

$$11\sqrt{n} = \sqrt{2 \times 2 \times 2 \times 2 \times 7} + \sqrt{7 \times 7 \times 7}$$

$$11\sqrt{n} = 4\sqrt{7} + 7\sqrt{7}$$

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

$$\sqrt{n} = \sqrt{7}$$

$$n = 7$$

212. (d) According to the question

$\Rightarrow 3^{x+y} = 81$ and $81^{x-y} = 3$

$\Rightarrow 3^{x+y} = (3)^4$ and $(3)^{4(x-y)} = 3$

$\Rightarrow x+y = 4$ and $x-y = \frac{1}{4}$

$x + y = 4$ .....(i)

$x-y = \frac{1}{4}$.....(ii)

Solve equation (i) and (ii)

$x = \frac{17}{8}$, $y = \frac{15}{8}$, $\frac{x}{y} = \frac{17}{15}$

213. (c) $3^{x+3} \times 9^{2x-5} = 3^{3x+7}$

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

$x + 3 + 4x - 10 = 3x + 7$ (∵ Base is equal)

$5x - 3x = 14$

$2x = 14$

$x = 7$