

SURDS & INDICES

1. $(1331)^{-\frac{2}{3}}$
 a) $-\frac{1}{11}$ b) $-\frac{11}{121}$
 c) $-\frac{1}{121}$ d) $-\frac{121}{11}$
2. $\frac{(32)^{\frac{n}{5}} \times (2)^{(2n+1)}}{4^n \times 2^{n-1}}$
 a) 4 b) 8
 c) 2n d) 2^{n+1}
3. Find the value of $\frac{1}{125^{-\frac{2}{3}}} + \frac{1}{625^{-\frac{3}{4}}} + \frac{1}{729^{-\frac{3}{6}}}$
 a) 132 b) 177
 c) 185 d) 225
4. If $2^x \times 8^{1/4} = 2^{1/4}$ then find the value of x
 a) -1/2 b) 1/2
 c) 1/4 d) -1/4
5. If $9^x - 9^x - 1 = 648$, then find the value of x^x
 a) 4 b) 9
 c) 27 d) 064
6. If $4^{(x-y)} = 64$ and $4^{(x+y)} = 1024$, then find the value of x.
 a) 3 b) 1
 c) 6 d) 4
7. If a and b are whole numbers such that $ab = 121$, then find the value of $(a-1)b + 1$
 a) 0 b) 10
 c) 102 d) 103
8. The value of $(256)^{5/4}$ is:
 a) 512 b) 984
 c) 1024 d) 1032
9. $\frac{1}{(216)^{2/3}} + \frac{1}{(256)^{-3/4}} + \frac{1}{(32)^{-1/5}}$
 a) 102 b) 105
 c) 107 d) None of these
10. $(2.4 \times 103) \div (8 \times 10 - 2) = ?$
 a) 3×10^{-5} b) 3×10^4
 c) 3×10^5 d) 30
11. $\left(\frac{1}{216}\right)^{-\frac{2}{3}} \div \left(\frac{1}{27}\right)^{-\frac{4}{3}} = ?$
 a) 3/4 b) 2/3
 c) 4/9 d) 1/8
12. If $2^{2n-1} \frac{1}{8^{n-3}}$, then the value of n is:
 a) 3 b) 2
 c) 0 d) -2
13. If $\frac{9^n \times 3^5 \times 27^3}{3 \times 81^4} = 27$, then the value of n is:
 a) 0 b) 2
 c) 3 d) 4
14. If $2^{n+4} - 2^{n+2} = 3$, then n is equal to
 a) 0 b) 2
 c) -1 d) -2
15. If $2^{n-1} + 2^{n+1} = 320$, then n is equal to
 a) 6 b) 8
 c) 5 d) 7
16. If $3^x - 3^{x-1} = 18$, then the value of xx is:
 a) 3 b) 8
 c) 27 d) 216
17. The number of prime factors in $6^{333} \times 7^{222} \times 8^{111}$
 a) 1221 b) 1222
 c) 1111 d) 1211
18. Simplify $\left(\frac{1}{64}\right)^0 + (64)^{-1/2} + (-32)^{4/5}$
 a) 17 1/8 b) 7 1/8
 c) 7 1/3 d) 17 1/2
19. Simplify $\left(\frac{256}{576}\right)^{\frac{1}{4}} \times \left(\frac{64}{27}\right)^{-\frac{1}{3}} \times \left(\frac{216}{8}\right)^{-1}$
 a) $\frac{1}{\sqrt[3]{16}}$ b) $\frac{1}{18\sqrt{6}}$
 c) $\frac{1}{\sqrt[2]{6}}$ d) $\frac{1}{\sqrt[3]{7}}$
20. Simplify the following $\left(\frac{a^4 b^6}{c^8}\right)^3 \times \left(\frac{b^8 c^4}{a^{-6}}\right)^{-2} \times \left(\frac{c^6 a^6}{b^4}\right)^2$
 a) $\frac{a^{12}}{b^6 \cdot c^{20}}$ b) $\frac{a^6}{b^6 \cdot c^{22}}$
 c) $\frac{a^7}{b^6 \cdot c^{20}}$ d) None of these
21. $\left(\frac{216}{1}\right)^{-\frac{2}{3}} \div \left(\frac{27}{1}\right)^{-\frac{4}{3}} = ?$
 a) 4/9 b) 9/4
 c) 9/2 d) 3/2
22. Simplify $\frac{(6.25)^{\frac{1}{2}} \times (0.0144)^{\frac{1}{2}} + 1}{(0.027)^{\frac{1}{3}} \times (81)^{\frac{1}{4}}}$
 a) 0.14 b) 1.4
 c) 1 d) 1.4
23. If $\sqrt{3} = 1.732$ is given then the value of $\frac{2+\sqrt{3}}{2-\sqrt{3}} = ?$
 a) 11.732 b) 13.928
 c) 12.928 d) 13.925
24. $[\sqrt[3]{2} \times \sqrt{2} \times \sqrt[3]{3} \times \sqrt{3}]$ is equals to
 a) 6^5 b) $5^{5/6}$
 c) 6 d) None of these
25. $\left[8 - \left(\frac{9}{\frac{44\sqrt{22^2}}{2\sqrt{2-2}}}\right)^{\frac{1}{2}}\right]$ is equals to:

- a) 32 b) 8
c) 1 d) 0
26. Simplify $\frac{1}{\sqrt{100}-\sqrt{99}} - \frac{1}{\sqrt{99}-\sqrt{98}} + \frac{1}{\sqrt{98}-\sqrt{97}} - \frac{1}{\sqrt{97}-\sqrt{96}} + \dots + \frac{1}{\sqrt{2}-\sqrt{1}}$
a) 0 b) 9
c) 10 d) 11
27. Given that $\sqrt{5} = 2.24$, then the value of is $\frac{\sqrt[3]{5}}{\sqrt{5}-0.48}$
a) 0.168 b) 1.68
c) 16.8 d) 168
28. $\sqrt{8 - \sqrt[3]{15}}$ is equals to:
a) $\sqrt{5} + \sqrt{3}$ b) $5 - \sqrt{3}$
c) $\sqrt{5} - \sqrt{3}$ d) $3 - \sqrt{5}$
29. Among the numbers $\sqrt{3}, \sqrt[3]{9}, \sqrt[4]{16}, \sqrt[5]{32}$ the greatest one is:
a) $\sqrt{2}$ b) $\sqrt[3]{9}$
c) $\sqrt[4]{16}$ d) $\sqrt[5]{32}$
30. $\frac{1}{3-\sqrt{3}} - \frac{1}{\sqrt{8}-\sqrt{3}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2}$
a) 5 b) 4
c) 3 d) 2
31. If $2x = \sqrt[3]{32}$, then x is equal to
a) 5/2 b) 2/5
c) 3/5 d) 5/3
32. If $3^{x-y} = 27$ and $3^{x+y} = 243$, then find the value of x
a) 1 b) 2
c) 3 d) 4
33. Find the value of $(10)^{150} \div (10)^{146}$
a) 10 b) 100
c) 1000 d) 10000
34. $6^m = 46656$, what is the value of 6^{m-2}
a) 7776 b) 7782

- c) 1296 d) 1290
35. Evaluate $256^{0.16} \times 256^{0.16}$
a) 2 b) 4
c) 8 d) 16
36. If m and n are whole number such that $m^n = 121$, the value $(m-1)^{n+1}$ is
a) 1 b) 10
c) 100 d) 1000
37. $\left(\frac{a}{b}\right)^{x-2} = \left(\frac{a}{b}\right)^{x-7}$ what value of x?
a) 1.5 b) 4.5
c) 7.5 d) 9.5
38. If $x = (8 + \sqrt[3]{7})$, what is the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$?
a) $\sqrt{13}$ b) $\sqrt{14}$
c) $\sqrt{15}$ d) $\sqrt{16}$
39. $\frac{1}{1+a^{(n-m)}} + \frac{1}{1+a^{(m-n)}} = ?$
a) 1 b) 2
c) 3 d) 4
40. $x = 3 + 2\sqrt{2}$ then the value of $\left(\sqrt{x} - \frac{1}{\sqrt{x}}\right)$
a) 1 b) 2
c) 3 d) 4
41. If $5^{(a+b)} = 5 \times 25 \times 125$, what is $(a+b)^2$
a) 25 b) 28
c) 36 d) 44
42. By how much does $\sqrt[5]{7} - \sqrt[2]{5}$ exceed $\sqrt[3]{7} - \sqrt[4]{5}$
a) $5(\sqrt{7} + \sqrt{5})$ b) $\sqrt{7} + \sqrt{5}$
c) $2(\sqrt{7} + \sqrt{5})$ d) $7(\sqrt{7} + \sqrt{5})$
43. The rationalizing factor of $\sqrt[3]{3}$
a) 1/3 b) 3
c) -3 d) $\sqrt{3}$

Answer Key

1. C	2. A	3. B	4. A	5. D	6. D	7. D	8. C	9. A	10. B
11. C	12. B	13. C	14. D	15. D	16. C	17. A	18. A	19. B	20. A
21. B	22. D	23. B	24. B	25. D	26. D	27. B	28. C	29. B	30. A
31. D	32. D	33. D	34. C	35. B	36. D	37. B	38. B	39. A	40. B
41. C	42. A	43. D							