MATHS

BOOKS - ASHOK PUBLICATION ASSAM

Exponents and Powers

Example

1. Evaluate:

3^{-2}

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2. Evaluate:

$(-4)^2$

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3. Evaluate:

$\left(\frac{1}{2}\right)^{-5}$

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4. Simplify and express the result in power rotation with positive exponent.

$(-4)^5 \div (-4)^8$

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5. Simplify and express the result in power rotation with positive exponent.

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

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6. Simplify and express the result in power rotation with positive exponent.

$$(-3)^4 \times \left(\frac{5}{3}\right)^4$$

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7. Simplify and express the result in power rotation with positive exponent.

$$\left(3^7 \div 3^{-10}\right) \times 3^{-5}$$

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8. Simplify and express the result in power notation with positive exponent.

$2^{-3} \times (-7)^{-3}$

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9. Find the value of.

$(3^{\circ} + 4^{-1}) \times 2^{2}$

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10. Find the value of.

$$\left(2^{-1} \times 4^{-1}\right) \div 2^{2}$$

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11. Find the value of.

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

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12. Find the value of.

$$\left(3^{-4}+4^{4}+5^{1}\right)^{0}$$

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13. Find the value of.

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

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14. Evaluate:

$$\frac{8^{-1} \times 5^{3}}{2^{-4}}$$

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15. Evaluate:

$$\left(5^{-1} \times 2^{-1}\right) \times 6^{-1}$$

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16. Find the value of m for which

$5^m \div 5^{-3} = 5^5$

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17. Evaluate

$$\left\{\left(\frac{1}{3}\right)^{-1} - \left(\frac{1}{4}\right)^{-1}\right\}^{-1}$$

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18. Evaluate

$$\left(\frac{5}{8}\right)^{-7} \times \left(\frac{8}{5}\right)^{-4}$$

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19. Simplify :

$$\frac{25 \times t^{-4}}{5^{-3} \times 10 \times t^{-8}} (t \neq 0)$$

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20. Simplify :

$$\frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$$

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21. Express the following numbers in standard form.

0.0000000000085

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22. Express the following numbers in standard form.

0.000000000000942

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23. Express the following numbers in standard form.

6020000000000

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24. Express the following numbers in standard form.

0.00000000837

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25. Express the following numbers in standard form.

31860000000

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26. Express the following numbers is usual form.

3.02×10^{-6}

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27. Express the following numbers is usual form.

4.5×10^{4}

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28. Express the following numbers is usual form.

3×10^{-8}

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29. Express the following numbers is usual form.

1.0001×10^{9}

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30. Express the following numbers in usual form.

5.8×10^{12}

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31. Express the following numbers in usual form.

3.61492×10^{6}

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32. Express the number appearing in the following statements in standard form.

1 micron is equal to $\frac{1}{1000000} m$.

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33. Express the number appearing in the following statements in standard form.

Charge of an election is $0.000,000,000,000,000,16$ coulomb

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34. Express the number appearing in the following statements in standard form.

Size of a plant cell is 0.00001275 m

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35. Express the number appearing in the following statements in standard form.

Thickness of a thick paper is 0.07 mm

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36. In a stack there are 5 books each of thickness 20 mm and 5 paper sheets each of thickness 0.016 mm. What is the total thickness of the stack?

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37. Expand the following numbers using exponents.

1025.63.

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38. Expand the following numbers using exponents.

1256.249

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39. Find the multiplicative inverse of the following.

2^{-4}

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40. Find the multiplicative inverse of the following.

10^{-5}

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41. Find the multiplicative inverse of the following.

7^{-2}

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42. Find the multiplicative inverse of the following.

5^{-3}

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43. Find the multiplicative inverse of the following.

10^{-100}

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44. Simplify and write in exponential :

$(-2)^{-3} \times (-2)^{-4}$

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45. Simplfiy and write in exponential :

$p^3 \times p^{-10}$

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46. Simplify and write in exponential :

$3^3 \times 3^{-5} \times 3^6$

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47. Write the following numbers in standard form:

0.000000564

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48. Write the following numbers in standard form:

0.0000021

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49. Write the following numbers in standard form:

21600000

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50. Write the following numbers in standard form:

15240000

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51. Find the value of $x^{\frac{1}{2}} . x^{\frac{3}{2}} . x^{\frac{1}{2}} \div x^{\frac{1}{4}}$

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52. Simplify :

$5^{x-y} \times 5^{y-z} \times 5^{z-x}$

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53. Find the value of

$\sqrt[3]{27^2}$

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54. Find the value of

$9^{-\frac{2}{3}}$

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55. Find the value of

$16^{\frac{1}{4}}$

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56. Prove that :

$$a - b = \left(\frac{a^{\frac{1}{2}} + b^{\frac{1}{2}}}{a^{\frac{1}{2}} - b^{\frac{1}{2}}} \right)$$

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57. Simplify :

$$\frac{5^n \times 25^{2n-2}}{5^{3n-2} \times 10^{-1}}$$

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58. Simplify :

$$\frac{x^{3m+2n} \cdot x^{3m-8n}}{x^{5m-6n}}$$

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59. Simplify:

$x^{b-c}a \cdot x^{c-a}b \cdot x^{a-b}c$

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60. Find the product of $a^{\frac{1}{2}} \cdot a^{\frac{1}{4}} \cdot a$

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61. Find the value of $32^{-\frac{4}{5}}$

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62. If $a^x = b^y$ and $b^x = a^y$, prove that a = b

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