doubtnut
India's Number 1 Education App

MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

EXPONENT

Others

1. Find the value of each of the following: (i)11^2 (ii) 9^3 (iii)5^4

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2. Find the value of each of the following: (i) $(-3)^2$ (ii) $(-4)^3$ (iii)$(-5)^4$

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3. Simplify:

(i)2×10^3

(ii) $7^2 \times 2^2$

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4. Simplify:

(i)$2^3 \times 5$

(ii) 0×10^2

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5. Simplify: (i)$5^2 \times 3^3$ (ii) $2^4 \times 3^2$

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6. Simplify: (i)$3^2 \times 10^4$ (ii) $5^3 \times 2^4$

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7. Simplify: $(-3) \times (-2)^3$ (ii) $(-3)^2 \times (-5)^2$

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8. Simplify: $(-2)^3 \times (-10)^3$ (ii) $(-2)^4 \times (-5)^2$

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9. Simplify:

(i)$(1)^5$

(ii) $(-1)^5$

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10. Simplify:

(i)$(-1)^6$

(ii) $(-1)^7$

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11. Express each of the following in the form $\frac{p}{q}$:

$(i)\left(\frac{2}{3}\right)^2$ (ii) $\left(\frac{-3}{4}\right)^3$ (iii)$\left(\frac{-2}{5}\right)^4$

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12. Identify the greater number in each of the following: 5^3 or 3^5 (ii) 2^8 or 8^2

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13. Identify the greater number in each of the following:

(i)2^{10} or 10^2

(ii) 2^{100} or 100^2

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14. Find the product of the cube of $\frac{-2}{3}$ and the square of $\frac{4}{-5}$.

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15. Express the following as a rational number:

$$\left(\frac{1}{2}\right)^3 \times \left(\frac{-3}{5}\right)^3 \times \left(\frac{-4}{9}\right)^2$$

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16. Simplify: (i) $(-3)^2 \times \left(\frac{-5}{12}\right)^2$ (ii) $\left(\frac{-2}{5}\right)^3 \div \left(\frac{-3}{10}\right)^4$

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17. Simplify:

(i) $\left\{\left(\frac{1}{2}\right)^2 - \left(\frac{1}{4}\right)^3\right\} \times 2^3$

(ii) $\left\{\left(3^2 - 2^2\right) \div \left(\frac{1}{5}\right)^2\right\}$

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18. If $a = 2$ and $b = 3$, then find the values of each of the following:

(i)$a^a + b^b$

(ii) $a^b + b^a$

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19. If $a = 2$ and $b = 3$, then find the values of each of the following:

(a)$\left(\frac{a}{b}\right)^a$

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

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20. Simplify and express each of the following as power of a rational number:

$$\left(\frac{2}{3}\right)^3 \times \left(-\frac{6}{7}\right)^2 \times \left(-\frac{7}{4}\right) \times \frac{3}{2}$$

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21. Express each of the following in exponential form:

(i)

$$(-4) \times (-4) \times (-4) \times (-4) \times (-4) \times (-4)$$

(ii) $\frac{3}{5} \times \frac{3}{5} \times \frac{3}{5} \times \frac{3}{5}$

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22. Express each of the following in exponential form: $2 \times 2 \times 2 \times a \times a$ (ii) $a \times a \times a \times a \times b \times b \times c \times c \times c \times c \times c$ (iii) $a \times a \times a \times \left(\frac{-2}{3}\right) \times \left(\frac{-2}{3}\right)$

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23. Express each of the following numbers is exponential form: (i)128 (ii) 243 (iii)3125

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24. Express each of the following numbers as a product of powers of their prime factors.

(i)432 (ii) 648 (iii)540

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25. Express the following numbers as product of powers of their prime factors:

(i)1000 (ii) 16000 (iii)3600

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26. Express each of the following rational numbers in exponential form:

(i) $\frac{27}{64}$ (ii) $\frac{-27}{125}$ (iii) $\frac{-1}{243}$

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27. Find the value of each of the following:

(i) 13^2

(ii) 7^3

(iii) 3^4

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28. Find the value of each of the following: (i) $(-7)^2$ (ii) $(-3)^4$ (iii)$(-5)^5$

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29. Simplify:

(i)3×10^2

(ii) $2^2 \times 5^3$

(iii)$3^3 \times 5^2$

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30. Simplify:

(i)$3^2 \times 10^4$

(ii) $2^4 \times 3^2$

(iii)$5^2 \times 3^4$

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31. Simplify: (i)$(-2) \times (-3)^3$ (ii) $(-3)^2 \times (-5)^3$ (iii)$(-2)^5 \times (-10)^2$

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32. Simplify: (i) $\left(\frac{3}{4}\right)^2$ (ii) $\left(\frac{-2}{3}\right)^4$ (iii) $\left(\frac{-4}{5}\right)^5$

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33. Indentify the greater numbers in each of the following: (i) 2^5 or 5^2 (ii) 3^4 or 4^3 (iii) 3^5 or 5^3

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34. Express each of the following in exponential form: (i) $(-5) \times (-5) \times (-5)$ (ii)

$\frac{-5}{7} \times \frac{-5}{7} \times \frac{-5}{7} \times \frac{-5}{7}$ (iii)

$\frac{4}{3} \times \frac{4}{3} \times \frac{4}{3} \times \frac{4}{3} \times \frac{4}{3}$

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35. Express each of the following in exponential form: $\times \times \times \times \times \times a \times a \times b \times b \times b$ (ii)

$(-2) \times (-2) \times (-2) \times (-2) \times a \times a \times a$

(iii) $\left(\frac{-2}{3}\right) \times \left(\frac{-2}{3}\right) \times \times \times \times x$

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36. Express each of the following numbers in exponential form: (i)512 (ii) 625 (iii)729

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37. Express each of the following numbers as a product of powers of their prime factors:

(i)36 (ii) 675 (iii)392

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38. Express each of the following numbers as a product to powers of their prime factors:

(i)450 (ii) 2800 (iii)24000

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39. Express each of the following as a rational numbers of the form $\frac{p}{q}$: (i)$\left(\frac{3}{7}\right)^2$ (ii) $\left(\frac{7}{9}\right)^3$ (iii)$\left(\frac{-2}{3}\right)^4$

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40. Express each of the following rational numbers in power notation: $(i)\frac{49}{64}$ (ii) $-\frac{64}{125}$ (iii)$-\frac{1}{216}$

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41. Find the value of each of the following:

$(i)\left(\frac{-1}{2}\right)^2 \times 2^3 \times \left(\frac{3}{4}\right)^2$

(ii) $\left(\frac{-3}{5}\right)^4 \times \left(\frac{4}{9}\right)^4 \times \left(\frac{-15}{18}\right)^2$

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42. If $a = 2\, and\, b = 3,$ then find the value of each of the following: $(i)(a+b)^a$ (ii) $(ab)^b$

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43. If $a = 2\, and\, b = 3,$ then find the value of each of the following: (i) $\left(\frac{b}{a}\right)^b$ (ii) $\left(\frac{a}{b} + \frac{b}{a}\right)^a$

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44. Simplify and write the answer of each of the following in exponential form: $(i)5^2 \times 5^3$ (ii)

$3^2 \times 3^4 \times 3^8$

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45. Simplify and write the answer of each of the following in exponential form: (i)$7^{\times} 7^2$ (ii) $\left(\frac{3}{2}\right)^2 \times \left(\frac{3}{2}\right)^5$

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46. Simplify and write each of the following in exponential form: (i)$9^{11} \div 9^7$ (ii)

$(-7)^{13} \div (-7)^{9}$ (iii) $\left(\frac{-3}{4}\right)^{7} \div \left(\frac{-3}{4}\right)^{5}$

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47. Simplify and write each of the following in exponential form: $(i)\left(2^{3}\right)^{4}$ (ii) $\left((-3)^{5}\right)^{3}$

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48. Simplify and write each of the following in exponential form: (i) $\left\{\left(\frac{2}{3}\right)^{2}\right\}^{5}$ (ii) $\left(3^{2}\right)^{5} \times \left(3^{4}\right)^{2}$

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49. Express each of the following products of powers as the exponent of a rational numbers:

(i) $2^5 \times 3^5$

(ii) $(-4)^3 \times (-2)^3$

(iii) $3^7 \times (-2)^7$

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50. Express each of the following as rational number :

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

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

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51. Express each of the following powers as the product of powers:

(i)$(3a)^5$

(ii) $(-4)^7$

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52. Write each of the following in the from $\frac{p}{q}$: (i) $\left(\frac{3}{5}\right)^3$ (ii) $\left(\frac{-2}{3}\right)^5$

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53. Using laws of exponents, simplify and write the answer in exponential from:

(i)$2^5 \times 2^3$

(ii) $3^2 \times 3^4 \times 3^8$

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54. Using laws of exponents, simplify and write the answer in exponential from: (i)$6^{15} \div 6^{10}$ (ii) $\left(5^3\right)^2$

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55. Using laws of exponents, simplify and write the answer in exponential from: (i)$\left(7^2\right)^3 \div 7^3$ (ii) $2^5 \times 3^5$

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56. Using laws of exponents, simplify and write the answer in exponential from: (i)$a^4 \times b^4$ (ii) $\left(2^{20} \div 2^{15}\right) \times 2^3$

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57. Simplify and express each of the following in exponential from: (i)$\frac{3^7}{3^4 \times 3^3}$ (ii) $\left\{\left(5^2\right)^3 \times 5^4\right\} \div 5^7$

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58. Simplify and express each of the following in exponential from:

(i) $\left(\frac{3^7}{3^2}\right) \times 3^5$

(ii) $\frac{4^5 \times a^8 b^3}{4^5 \times a^5 b^2}$

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59. Simplify and express each of the following in exponential from:

(i)$2^5 \times 5^5$

(ii) $2^3 \times 2^2 \times 5^5$

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60. Simplify and express each of the following in exponential from:

(i) $\left\{\left(2^2\right)^3 \times 3^6\right\} \times 5^6$

(ii) $\left(\frac{a}{b}\right)^5 \times b^{10}$

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61. Write exponential form for

(i) 1000 (ii) 81 (iii) 25 (iv) 32

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62. Simplify and write each of the following in exponential from:

(i)$8^2 \div 2^3$

(ii) $25^4 \div 5^3$

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63. Simplify and write each of the following in exponential from:

(i) $\frac{2^8 \times a^5}{4^3 \times a^3}$

(ii) $\frac{2^3 \times 3^4 \times 4}{3 \times 32}$

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64. Simplify: (i) $2^{55} \times 2^{60} - 2^{97} \times 2^{18}$ (ii) $2^3 \times a^3 \times 5a^4$, (iii) $\frac{3^n + 3^{n+1}}{3^{n+1} - 3^n}$, Where n is a natural numbers.

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65. Simplify: (i) $\frac{12^4 \times 9^3 \times 4}{6^3 \times 8^2 \times 27}$ (ii) $\frac{25 \times 5^2 \times t^8}{10^3 \times t^4}$ (iii) $\frac{3^5 \times 10^5 \times 25}{5^7 \times 6^5}$

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66. Express each of the following as a product of prime factors only in exponential from:

(i)108×192

(ii) 729×64

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67. Compare the following numbers:

(i) 2.7×10^{12} and 1.5×10^{8}

(ii) 4×10^{14} and 3×10^{17}

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68. Find the value of n in each of the following:

$(2^2)^n = (2^3)^4$ (ii) $2^{5n} \div 2^n = 2^4$ (iii)

$2^n \hat{} (-5) \times 5^n \hat{} (-4) = 5$

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69. Find the value of n in each of the following:

(i) $2^{n-7} \times 5^{n-4} = 1250$

(ii) $5^{n-2} \times 3^{2n-3} = 135$

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70. If $25^n \hat{} (-1) + 100 = 5^{2n} \hat{} (-1)$, find the value of n.

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71. Find n such that

$$\left(\frac{2}{3}\right)^3 \times \left(\frac{2}{3}\right)^5 = \left(\frac{2}{3}\right)^n \hat{} (-2)$$

$$\left(\frac{125}{8}\right)^5 \times \left(\frac{125}{8}\right)^n = \left(\frac{5}{2}\right)^{18}$$

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72. If $\frac{p}{q} = \left(\frac{2}{3}\right)^2 \div \left(\frac{6}{7}\right)^0$, find the value of $\left(\frac{q}{p}\right)^3$

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73. Find the value of m so that $(-3)^{m+1} \times (-3)^5 = (-3)^7$

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74. Using laws of exponents simplify and write the answer in exponential from:

(i)$2^3 \times 2^4 \times 2^5$

(ii) $5^{12} \div 5^3$

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75. Using laws of exponents simplify and write the answer in exponential from:

(i)$\left(7^2\right)^3$

(ii) $\left(3^2\right)^5 \div 3^4$

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76. Using laws of exponents simplify and write the answer in exponential from:

(i)$3^7 \times 2^7$ $(ii)\ \left(5^{12} \div 5^{13}\right) \times 5^7$

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77. Simplify and express each the following in exponential from:

(i)$\left\{\left(2^3\right)^4 \times 2^8\right\} \div 2^{12}$

(ii) $\left(8^2 \times 8^4\right) \div 8^3$

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78. Simplify and express each the following in exponential from: (i) $\left(\frac{5^7}{5^2}\right) \times 5^3$ (ii) $\frac{5^4 \times x^{10} \times y^5}{5^4 \times x^7 y^4}$

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79. Simplify and express each of the following in exponential form: (i) $\left\{\left(3^2\right)^3 \times 2^6\right\} \times 5^6$ (ii) $\left(\frac{x}{y}\right)^{12} \times y^{24} \times \left(2^3\right)^4$

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80. Simplify and express each of the following in exponential from:

(i) $\left(\frac{5}{2}\right)^6 \times \left(\frac{5}{2}\right)^2$

(ii) $\left(\frac{2}{3}\right)^5 \times \left(\frac{3}{5}\right)^5$

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81. Write $9 \times 9 \times 9 \times 9 \times 9$ in exponential from with base 3

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82. Simplify and write each of the following in exponential from: (a)$(25)^3 \div 5^3$ (ii) $(81)^5 \div (3^2)^5$

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83. Simplify and write each of the following in exponential from:

(i)$\frac{9^8 \times (x^2)^5}{(27)^4 \times (x^3)^2}$

(ii) $\frac{3^2 \times 7^8 \times 13^6}{21^2 \times 91^3}$

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84. Simplify: (i) $\left(3^5\right)^{11} \times \left(3^{15}\right)^4 - \left(3^5\right)^{18} \times \left(3^5\right)^5$,

(ii) $\dfrac{16 \times 2^{n+1} - 4 \times 2^n}{16 \times 2^{n+2} - 2 \times 2^{n+2}}$

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85. Simplify: (i) $\dfrac{10 \times 5^{n+1} + 25 \times 5^n}{3 \times 5^{n+2} + 10 \times 5^{n+1}}$ (ii) $\dfrac{(16)^7 \times (25)^5 \times (81)^3}{(15)^7 \times (24)^5 \times (80)^3}$

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86. Find the value of n in each of the following:

(i)$5^{2n} \times 5^3 = 5^{11}$

(ii) $9 \times 3^n = 3^7$

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87. Find the value of n in each of the following: (i)

$8 \times 2^{n+2} = 32$ (ii) $7^{2n+1} \div 49 = 7^3$

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88. Find the value of n in each of the following:

$$\left(\frac{3}{2}\right)^4 \times \left(\frac{3}{2}\right)^5 = \left(\frac{3}{2}\right)^{2n} \hat{}\ (+1)$$

$$\left(\frac{2}{3}\right)^{10} \times \left\{\left(\frac{3}{2}\right)^2\right\}^5 = \left(\frac{2}{3}\right)^{2n} \hat{}\ (-2)$$

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89. if $\dfrac{9^n \times 3^2 \times 3^n - (27)^n}{(3^3)^5 \times 2^3} = \dfrac{1}{27}$, find the value of n

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90. Express the following numbers in the standard from: (i)3,90,878 (ii) 3,186,500,000 (iii)65,950,000

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91. Write the following numbers in the usual form:

(i)7.54×10^6

(ii) 9.325×10^{12}

(iii)8.4×10^2

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92. Express the following numbers in the standard form:

(i)$3908.\ 78$

(ii) 5,00,00,000

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93. Express the following numbers in the standard form: 3,18,65,00,000 (ii) 846×10^7 (iii) 723×10^9

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94. Write the following numbers in the usual from:

(i)4.83×10^7

(ii) 3.21×10^5

(iii)3.5×10^3

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95. Express the numbers appearing in the following statements in the standard form: The distance between the earth and the moon is 384,000,000 metres. Diameter of the earth is $1,27,56,000$ metres. Diameter of the sun is

1,400,000,000 metres. The universe is estimated to be about 12,000,000,000 years old.

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96. Write the following numbers in the expanded exponential forms:

(i)20068

(ii) 420719

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97. Write the following numbers in the expanded exponential forms: (i) 7805192 (ii) 5004132 (iii) 927303

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98. Find the numbers from each of the following expanded forms:

$7 \times 10^4 + 6 \times 10^3 + 0 \times 10^2 + 4 \times 10^1 + 5 \times 10^0$

$5 \times 10^5 + 4 \times 10^4 + 2 \times 10^3 + 3 \times 10^0$

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99. Find the numbers from each of the following expanded forms: 1)$9 \times 10^5 + 5 \times 10^2 + 3 \times 10^1$

2) $3 \times 10^4 + 4 \times 10^2 + 5 \times 10^0$

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100. $\left(6^{-1} - 8^{-1}\right)^{-1}$ =

(a) $\frac{1}{24}$

(b) 24

(c) -24

(d) $-\frac{1}{24}$

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101. Find: 2^{3^2} =

(a)64

(b) 32

(c)256

(d) 512

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102. $\left(3^{-1} \times 5^{-1}\right)^{-1} =$ (a)$\frac{1}{15}$ (b) $-\frac{1}{15}$ (c) 15

(d) -15

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103. $\left(-\frac{3}{5}\right)^{-1} =$

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

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104. $(-1)^{301}+(-1)^{302}+(-1)^{303}+$ ....

$+(-1)^{400}$ (b) 101 100 (d) 0

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105. If $a=25,$ then $a^{(25)^0}+a^{0^{25}}=$

(a)25

(b) 26

(c)24

(d) 0

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106. $\left\{\left(\frac{1}{3}\right)^{-3}-\left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3} =$

(a) $\frac{19}{64}$ (b) $\frac{64}{19}$ (c) $\frac{27}{16}$ (d) $\frac{-19}{64}$

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107. $\left(25^2 - 15^2\right)^{\frac{3}{2}} =$

(a) 4000

(b) 8000

(c)3125

(d) 1024

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108. If $\left(\frac{5}{3}\right)^{-5} \times \left(\frac{5}{3}\right)^{11} = \left(\frac{5}{3}\right)^{8x}$, than $x = ?$

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

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109. $\left[\left\{\left(-\frac{1}{3}\right)^2\right\}^{-2}\right]^{-1} =$

(a) $\frac{1}{81}$ (b) $\frac{1}{9}$ (c) $-\frac{1}{81}$ (d) $-\frac{1}{9}$

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110. $\frac{(144)^{\frac{1}{2}} + (256)^{\frac{1}{2}}}{3^2 - 2}$ = (A) 8 (B) 4 (C) -4 (D) -8

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111. $(1+3+5+7+9+11)^{\frac{3}{2}}$ =

(a)36 (b) 216

(c)256 (d) none of these

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112. If abc = 0, then $\frac{\left\{\left(x^{a}\right)^{b}\right\}^{c}}{\left\{\left(x^{b}\right)^{c}\right\}^{a}}$ =

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

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113. $\left(2^{3}\right)^{4}$ =

(a)$2^{4} \cdot 3$

(b) $2^{3} \cdot 4$

(c) $\left(2^4\right)^3$

(d) none of these

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114. { (33)^ 2 - (31)^ 2 } ^(5/7) =

(a) 64

(b) 16

(c) 32

(d) 4

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115. If $abc = 0$, then find the value of $\left\{\left(x^a\right)^b\right\}^c$

(a) 1

(b) a

(c)b

(d) c

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116. If

$$a = 3^{-3} - 3^3 \; and \; b = 3^3 - 3^{-3}, \; then \frac{a}{b} - \frac{b}{a}$$

(a) 0

(b) 1

(c)-1

(d) 2

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117. What should be multiplied to 6^{-2} so that the product may be equal to 216?

(a)6^4

(b) 6^5

(c)6^3

(d) 6

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118. If $xyz = 0$, then find the value of $(a^x)^{yz} + (a^y)^{zx} + (a^z)^{xy} =$

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

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119. If $2^n = 4096, then\ 2^{n-5}$ = (a)128 (b) 64 (c)256 (d) 32

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120. The number $4, 70, 394$ in standard from is written as

(a)4.70394 $\times 10^5$

(b) 4.70394 $\times 10^4$

(c)47.0394×10^4

(d) 4703.94×10^2

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121. The number 2.35×10^4 in the usual from is written as

(a)2.35×10^3

(b) 23500

(c)2350000

(d) 235×10^4

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122. If $3^x = 6561, \ then \ 3^{x-3}$ = (a)81 (b) 243 (c)729

(d) 27

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123. If $2^n = 1024$, $then \ 2^{\frac{n}{2}+2}$ = (a)64 (b) 128 (c)256

(d) 512

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124. Find: $\left(8^4 + 8^2\right)^{\frac{1}{2}}$ =

(a) 84

(b) $8\sqrt{77}$

(c) 72

(d) $8\sqrt{65}$

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