MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

EXPONENT

All Questions

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

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2. Find the value of each of the following: $(-3)^2$

(ii) $(-4)^3 (-5)^4$

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3. Simplify: 2×10^3 (ii) $7^2 \times 2^2$

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4. Simplify: $2^3 \times 5$ (ii) 0×10^2

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

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6. Simplify: $3^2 \times 10^4$ (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: $(1)^5$ (ii) $(-1)^5$

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10. Simplify: $(-1)^6$ (ii) $(-1)^7$

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

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

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

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17. Simplify: $\left\{\left(\frac{1}{2}\right)^2 - \left(\frac{1}{4}\right)^3\right\} \times 2^3$ (ii) $\left\{(3^2 - 2^2) \div \left(\frac{1}{5}\right)^2\right\}$

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

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

$-\left(\frac{2}{5}\right)^2 \times \left(\frac{5}{7}\right)^2 \times \frac{49}{5} + \left(-\frac{4}{5}\right)^3 \times \frac{5}{4} \times \frac{3}{4}$

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21. Express each of the following in exponential form:

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

(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: 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. 432 (ii) 648 (iii)540

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25. Express the following numbers as product of powers of their prime factors: 1000 (ii) 16000 (iii)3600

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26. Express each of the following rational numbers in exponential form: $\frac{27}{64}$ (ii) $\frac{-27}{125}$ (iii) $\frac{-1}{243}$

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27. Find the value of each of the following: 13^2 (ii) 7^3 (iii) 3^4

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

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29. Simplify: 3×10^2 (ii) $2^2 \times 5^3$ (iii)$3^3 \times 5^2$

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30. Simplify: $3^2 \times 10^4$ (ii) $2^4 \times 3^2$ (iii)$5^2 \times 3^4$

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

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32. Simplify: $\left(\frac{3}{4}\right)^2$ (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: 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: $(-5) \times (-5) \times (-5)$ (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: 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: 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: 450 (ii) 2800 (iii)24000

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39. Express each of the following as a rational numbers of the form $\frac{p}{q}$: $\left(\frac{3}{7}\right)^2$ (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: $\frac{49}{64}$ (ii) $-\frac{64}{125}$ (iii) $-\frac{1}{216}$

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41. Find the value of each of the following:

$\left(\frac{-1}{2}\right)^2 \times 2^3 \times \left(\frac{3}{4}\right)^2$ (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: $(a + b)^a$ (ii) $(ab)^b$

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43. If $a = 2\, and\, b = 3,$ then find the value of each of the following: $\left(\frac{b}{a}\right)^b$ (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: $5^2 \times 5^3$ (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: $7^{\times} x 7^2$ (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: $9^{11} \div 9^7$ (ii) $(-7)^{13} \div (-7)^9$

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

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

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48. Simplify and write each of the following in exponential form: $\left\{\left(\frac{2}{3}\right)^2\right\}^5$ (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: $(3a)^5$ (ii) $(-4)^7$

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

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

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

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56. Using laws of exponents, simplify and write the answer in exponential from: $a^4 \times b^4$ (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: $\frac{3^7}{3^4 \times 3^3}$ (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: $\left(\frac{3^7}{3^2}\right) \times 3^5$ (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: $2^5 \times 5^5$ (ii) $2^3 \times 2^2 \times 5^5$

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60. Simplify and express each of the following in exponential from: $\left\{\left(2^2\right)^3 \times 3^6\right\} \times 5^6$ (ii)

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

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61. Write exponential form for

 8{\rm{ }} \times {\rm{ }}8{\rm{ }} \times {\rm{ }}8{\rm{ }} \times {\rm{ }}8

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62. Simplify and write each of the following in exponential from: $8^2 \div 2^3$ (ii) $25^4 \div 5^3$

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63. Simplify and write each of the following in exponential from: $\frac{2^8 \times a^5}{4^3 \times a^3}$ (ii) $\frac{2^3 \times 3^4 \times 4}{3 \times 32}$

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

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65. Simplify: $\frac{12^4 \times 9^3 \times 4}{6^3 \times 8^2 \times 27}$ (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: 108×192 (ii) 729×64

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67. Compare the following numbers:

2.7×10^{12} *and* 1.5×10^{8} 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) $2^{5n} \div 2^n = 2^4$

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

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

$2^{n-7} \times 5^{n-4} = 1250$ (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 $(-3)^m \hat{} (+1) \times (-3)^5 = (-3)^7$

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74. Using laws of exponents simplify and write the answer in exponential from: $2^3 \times 2^4 \times 2^5$ (ii) $5^{12} \div 5^3$

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75. Using laws of exponents simplify and write the answer in exponential from: $\left(7^2\right)^3$ (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:

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

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77. Simplify and express each the following in exponential from: $\left\{\left(2^3\right)^4 \times 2^8\right\} \div 2^{12}$ (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: $\left(\frac{5^7}{5^2}\right) \times 5^3$ (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 from: $\left\{\left(3^2\right)^3 \times 2^6\right\} \times 5^6$ (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: $\left(\frac{5}{2}\right)^6 \times \left(\frac{5}{2}\right)^2$ (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: $(25)^3 \div 5^3$ (ii) $(81)^5 \div \left(3^2\right)^5$

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83. Simplify and write each of the following in exponential from: $\frac{9^8 \times \left(x^2\right)^5}{(27)^4 \times \left(x^3\right)^2}$ (ii) $\frac{3^2 \times 7^8 \times 13^6}{21^2 \times 91^3}$

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

$$\frac{16 \times 2^{n+1} - 4 \times 2^n}{16 \times 2^{n+2} - 2 \times 2^{n+2}}$$

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85. Simplify: $\frac{10 \times 5^{n+1} + 25 \times 5^n}{3 \times 5^{n+2} + 10 \times 5^{n+1}}$ (ii)

$$\frac{(16)^7 \times (25)^5 \times (81)^3}{(15)^7 \times (24)^5 \times (80)^3}$$

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

$5^{2n} \times 5^3 = 5^{11}$ (ii) $9 \times 3^n = 3^7$

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

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

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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 $\frac{9^n \times 3^2 \times 3^n - (27)^n}{(3^3)^5 \times 2^3} = \frac{1}{27}$, 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:

7.54×10^6 (ii) 9.325×10^{12} 8.4×10^2

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92. Express the following numbers in the standard

form: 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) 846×10^7 723×10^9

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94. Write the following numbers in the usual from: 4.83×10^7 (ii) 3.21×10^5 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: 20068 (ii) 420719

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

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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: $9 \times 10^5 + 5 \times 10^2 + 3 \times 10^1$

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

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100. $\left(6^{-1} - 8^{-1}\right)^{-1} = \frac{1}{24}$ (b) $24 - 24$ (d) $-\frac{1}{24}$

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101. 2^{3^2} = (a)64 (b) 32

(c)256 (d) 512

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

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103. $\left(-\frac{3}{5}\right)^{-1}$ = $\frac{3}{5}$ (b) $\frac{5}{3}$ $-\frac{5}{3}$ (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. $\left\{\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3} = \frac{19}{64}$ (b) $\frac{64}{19}$ $\frac{27}{16}$ (d) $\frac{-19}{64}$

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107. $\left(25^2 - 15^2\right)^{\frac{3}{2}} = 4000$ (b)

8000 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. $\left(2^3\right)^4 = 2^4$ ^ 3 (b) 2^3 ^ 4 $\left(2^4\right)^3$ (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 $\left\{(x^a)^b\right\}^c$ (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 $4, 70, 394$ is standard from is written as (a)4.70394×10^5 (b) 4.70394×10^4

(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. $\left(8^4 + 8^2\right)^{\frac{1}{2}}$ = (a) 84 (b) $8\sqrt{77}$ (c) 72 (d) $8\sqrt{65}$

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