Q4

Answer :

Mass of the Earth = 5.97×10^{24} kg

Now, $5.97 \times 10^{24} = 5.97 \times 10^{(2+22)} = 5.97 \times 10^{2} \times 10^{22} = 597 \times 10^{22}$

So, the mass of the Earth can also be written as 597×10^{22} kg.

Mass of the Moon = 7.35×10^{22} kg

Sum of the masses of the Earth and the Moon:

$= \left(597 \times 10^{22}\right) + \left(7.35 \times 10^{22}\right) = (597 + 7.35) \times 10^{22} = 604.35 \times 10^{22}$ kg

$= 6.0435 \times 100 \times 10^{22} = 6.0435 \times 10^{2} \times 10^{22} = 6.0435 \times 10^{(2+22)} = 6.0435 \times 10^{24}$ kg

Q5

Answer :

(i) $0.0006 = \frac{6}{10^4} = 6 \times 10^{-4}$

(ii) $0.00000083 = \frac{83}{10^8} = \frac{8.3 \times 10}{10^8} = 8.3 \times 10^{(1-8)} = 8.3 \times 10^{-7}$

(iii) $0.0000000534 = \frac{534}{10^{10}} = \frac{5.34 \times 10^2}{10^{10}} = 5.34 \times 10^{(2-10)} = 5.34 \times 10^{-8}$

(iv) $0.0027 = \frac{27}{10^4} = \frac{2.7 \times 10}{10^4} = 2.7 \times 10^{(1-4)} = 2.7 \times 10^{-3}$

(v) $0.00000165 = \frac{165}{10^8} = \frac{1.65 \times 10^2}{10^8} = 1.65 \times 10^{(2-8)} = 1.65 \times 10^{-6}$

(vi) $0.00000000689 = \frac{689}{10^{11}} = \frac{6.89 \times 10^2}{10^{11}} = 6.89 \times 10^{(2-11)} = 6.89 \times 10^{-9}$

Q6

Answer :

(i) $1 \text{ micron} = \frac{1}{1000000} \text{ m} = 1 \times 10^{-6} \text{ m}$

(ii) $0.0000004 \text{ m} = \frac{4}{10^7} \text{ m} = \left(4 \times 10^{-7}\right) \text{ m}$

(iii) $\text{Thickness of paper} = 0.03 \text{ mm} = \frac{3}{10^2} \text{ mm} = \left(3 \times 10^{-2}\right) \text{ mm}$

Q7

Answer :

(i) $2.06 \times 10^{-5} = \frac{206}{100} \times \frac{1}{10^5} = \frac{206}{10^2 \times 10^5} = \frac{206}{10^{(5+2)}} = \frac{206}{10^7} = \frac{206}{10000000} = 0.0000206$

(ii) $5 \times 10^{-7} = \frac{5}{10^7} = \frac{5}{10000000} = 0.0000005$

(iii) $6.82 \times 10^{-6} = \frac{682}{100} \times \frac{1}{10^6} = \frac{682}{10^2 \times 10^6} = \frac{682}{10^{(2+6)}} = \frac{682}{10^8} = \frac{682}{100000000} = 0.00000682$

(iv) $5.673 \times 10^{-4} = \frac{5673}{1000} \times \frac{1}{10^4} = \frac{5673}{10^3 \times 10^4} = \frac{5673}{10^{(3+4)}} = \frac{5673}{10^7} = \frac{5673}{10000000} = 0.0005673$

(v) $1.8 \times 10^{-2} = \frac{18}{10} \times \frac{1}{10^2} = \frac{18}{10 \times 10^2} = \frac{18}{10^{(1+2)}} = \frac{18}{10^3} = \frac{18}{1000} = 0.018$

(vi) $4.129 \times 10^{-3} = \frac{4129}{1000} \times \frac{1}{10^3} = \frac{4129}{10^3 \times 10^3} = \frac{4129}{10^{(3+3)}} = \frac{4129}{10^6} = \frac{4129}{1000000} = 0.004129$

********** END **********