ALL UNITS

| **No.** | **CONTENT** |
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| **0.1.** | I know the units for all of the physical quantities used in this course. |
| 0.1.1  | Give the units and symbols for the following quantities1. Voltage ii) Current iii) Time iv) Resistance v) Power

 vi) Energy vii) Force viii) Frequency ix) Gravitational Field Strength x) Mass xi) Temperature xii) Weight xiii) Wavelength |
|  | 1. **Voltage V, volts, V**
2. **Current I, Ampere, A**
3. **Time, t, second, s**
4. **Resistance, R, ohm, Ω**
5. **Power, P, Watt, W – Yes the unit of power is the Watt!**
6. **Energy, E, Joule, J**
7. **Force, F, Newton, N**
8. **Frequency, f, Hertz, Hz**
9. **Gravitational field Strength, g Newtons per kilogram, Nkg-1**
10. **Mass, m, kilogram kg**
11. **Temperature, T, Kelvin, K or degrees Celsius, °C**
12. **Weight, W, Newton, N**
13. **Wavelength, λ, metre, m**
 |
| **0.2.** | I can use the prefixes: nano (n), micro(μ), milli (m), kilo(k), Mega(M) & Giga (G) |
| 0.2.1. | Convert the following to volts: i) 5 kV ii) 23 mV iii) 7 μV iv) 2.8 MV v) 67 nV vi) 389 μV |
|  | 1. **5 000 or 5x103 V**
2. **0.023 or 23x10-3 V**
3. **0.000 007 or 7x10-6 V**
4. **2800 000 or 2.8x106 V**
5. **0.000 000 067 or 6.7x10-8 or 67x10-9 V**
6. **f) 0.000 389 or 3.89x10-4 or 389x10-6 V**
 |
| 0.2.2. | Use the correct prefix to write the following in the shortest possible form: i) 8000000 J ii) 0.000004 J iii) 6340 J iv) 0.005 J v) 0.000063 J vi) 9806000 J |
|  | 1. 8 MJ
2. 4 μJ
3. 6.34 kJ
4. 5 mJ
5. 63 μJ
6. f) 9.806 MJ
 |
| 0.2.3. | Change the following to basic units: i) 50 km ii) 30000 km iii) 57 mm iv) 9 cm v) 8.31 km vi) 25 km 356 m 28 cm vii) 5 mm viii) 3 h ix) 2 min 40 s x) 8 min 22s xi) 7.45 mm xii) 7 h 25 min 30s xiii) 500 g xiv) 7400000 g xv) 250 mg xvi) 97.5 g xvii) 45 μg xviii) 3700 Mg |
|  | 1. **50 000 m**
2. **30 000 000 m**
3. **0.057 m**
4. **0.09 m**
5. **8 310 m**
6. **25 356.28 m**
7. **0.005 m**
8. **10 800 s**
9. **160 s**
10. **502 s**
11. **0.00745 m**
12. **26 730 s**
13. **0.5 kg**
14. **7 400 kg or 7.4x103 kg**
15. **0.000 25 kg or 2.5x10-4 kg**
16. **0.0975 kg or 97.5x10-3 kg**
17. **0.000 000 045 kg or 4.5x10-8 kg**
18. **f) 3 700 000 kg or 3.7x106 kg**
 |
| 0.2.4**.** | Change the following to basic units: i) 800 mA ii) 0.25 MA iii) 375 kA iv) 35.6 μA v) 35.6 kA vii) 9 430 000 μA viii) 750 mV ix) 4.7 MV x) 450 kV xi) 53 μV xii) 281kV xiii) 10670000 μV |
|  | 1. **0.8 A or 800x10-3 A**
2. **250 000 A or 0.25x106 A**
3. **375 000 A or 375x103 A**
4. **0.000 035 6 A or 35.6x10-6 A or 3.56x10-5 A**
5. **35 600 A or 35.6x103 A**
6. **9.43 A or 9 430 000x10-6 A**
7. **0.75 V or 750x10-3 V**
8. **4 700 000 V or 4.7x106 V**
9. **450 000 V or 450x103 V**
10. **0.000 053 V or 53x10-6 V or 5.3x10-5 V**
11. **281 000 V or 281x103 V**
12. **f) 10.67 V or 10 670 000x10-6 V**
 |
| 0.2.5 | Change the following to basic units: i) 56 kJ ii) 78 mJ iii) 8000 MJ iv) 0.3 μJ v) 0.0075 MJ vi) 3600 μJ |
|  | 1. **56 000 J or 56x103 J**
2. **0.078 J or 78x10-3 J**
3. **8 000 000 000 J or 8000x106 J or 8x109 J**
4. **0.000 000 3 J or 0.3x10-6 J or 3x10-7 J**
5. **7 500 J or 7.5x103 J or 0.007 5x106 J**
6. **f) 0.003 6 J or 3.6x10-3 J or 3 600x10-6 J**
 |
| **0.3.** | I can give an appropriate number of significant figures when carrying out calculations |
| 0.3.1 | Convert the following to 3 significant figures. i) 23760000 V ii) 45.6783 A iii) 0.1023 m iv) 78945379.97 Hz v) 7600043.7 m/s vi) 1254879 V vii) 67593268.0076 m viii) 1214687 A |
|  | 1. **23 800 000 V**
2. **45.7 A**
3. **0.102 m**
4. **79 000 000. Hz**
5. **7 600 000 m/s**
6. **1 250 000 V**
7. **67 600 000 m**
8. **1 210** **000 A**
 |
| **0.4.** | I can use scientific notation when large and small numbers are used in calculations. |
| 0.4.1 | Write the following in scientific notation: i) 370 000 000 ii) 20 050 000 000 iii) 930 000 000 000 000 iv) 0.000 23 v) 0.00000006 vi) 0.000 000 000 04 |
|  | 1. **3⋅7 × 108**
2. **2⋅005 × 1010**
3. **9⋅3 × 1014**
4. **2⋅3 × 10-4**
5. **6 × 10-8**
6. **4** × **10-11**
 |
| 0.4.2  | Write out the following in full: i) 3 × 108 ii) 2.75×104 iii) 7.004 × 109 iv) 8.4 × 10-3 v) 4.2× 108 vi) 9.08 × 10-5 |
|  | 1. **300 000 000**
2. **27 500**
3. **7 004 000 000**
4. **0.0084**
5. **420 000 000**
6. **0.000 090 8**
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