**P1 Energy conservation and dissipation revision questions ANSWERS**

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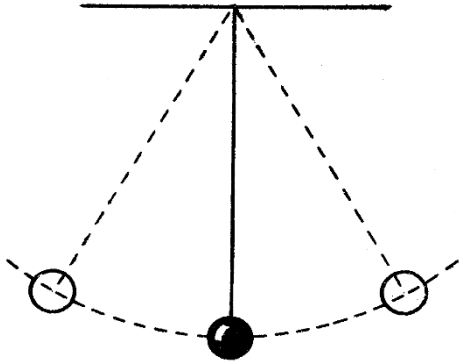
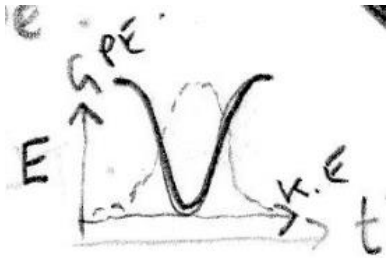
| 1 | What kind of energy store does a moving object have? | Kinetic |
| 2 | What kind of energy store does a battery have? | Chemical |
| 3 | Give 3 ways in which energy can be transferred | Mechanic work (when a force is moved) , electric current, heating |
| 4 | State the law of energy conservation | Energy cannot be created nor destroyed (only transferred) |
| 5 | What is the unit of work? | Joule (work is a transfer of energy) |
| 6 | When work is done against friction in where does the energy transfer to ? | Thermal store of the two objects experiencing friction |
| 7a | A motor lifts a 2 kg mass through a height of 10m.Calculate the work done by the motor | Force = mg = 2 x 10 =20 OR Work done = gain in gpe<br>W =Fd = 20 x 10 = 200 J gpe = mgh = 2 x10x10 = 200J |
| 7b | In the same time the motor has 250J of electrical energy input to it. Calculate the efficiency of the motor | Efficiency = Useful / input = 200/250 = 0.8 (x100 = 80%) |
| 7c | What measurement would be needed to calculate the output power of the motor? | Time (Power = Energy / time) or Watts are Joules per second |
| 8 | Give 3 ways you could improve the efficiency of an electric motor? | Lubricate, streamline, reduce resistance of wires, lubricate |
| 9 | Calculate the energy used by a 12W bulb in 2 minutes | E = pt = 12 x 2 x 60 = 1440 J |
| 10 | Calculate the kinetic energy of a 100g ball thrown at 3 m/s | KE = 0.5 m $v^2$ = 0.5 x 0.1 x $3^2$ = 0.45 J |
| 11 | What would happen to the kinetic energy if the speed were doubled? | (double )$^2$ or 4x bigger = 0.45x4 = 1.8J |
| 12 | Describe the energy transfers which occur when an object falls from a height (include air resistance) | GPE → KE + Heat (+sound)<br>Or energy arrow |
| 13 | Ignoring air resistance – what can we say about the kinetic energy gained by a falling object? | KE gained = GPE lost |
| 14 |  Mark on the energy types on the picture Sketch a graph of Energy against time, showing 2 different types.   | 15 Ignoring air resistance – calculate the speed of the 3kg pendulum bob at the bottom of it's swing if it released from its high point which is 0.25m above the bottom of the swing.<br><br>KE gained = GPE lost<br><br>KE = 0.5 m $v^2$ = mgh (m cancels ) so 0.5 $v^2$ = gh<br>= 0.5 x 3 x $v^2$ = 3 x 10 x0.25<br>$v^2$ = 7.5/1.5 = 5<br>v = √ 5 = 2.24 m/s |