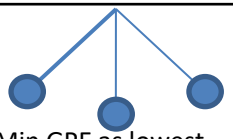
PT1.1 P1: Conservation and Dissipation of Energy Part A Knowledge Organiser

Energy stores	•Unit of energy is Joules, J •Energy can be stored in a variety of different energy stores and can be transferred from one store to another: •Chemical, kinetic, gravitational potential, elastic potential, thermal
The Law of Conservation of Energy	•Energy cannot be created or destroyed
Pendulum energy changes	Max GPE as highest  Max GPE as highest •Min GPE as lowest •Max KE as most GPE transferred to KE store
Closed system	•A system where no energy transfers take place into or out of the energy stores of the system.
Work	•Work is done on an object when a force causes the object to move
Energy and work	•Energy transferred = Work done
Work and friction	•Work need to be done to overcome friction between objects. •This is transferred as energy to the thermal energy stores of the objects that rub together and to the surroundings.
Examples of work overcoming friction	• Rubbing hands together • Brake pads/discs • Meteorites
Gravitational potential energy store	•Increases as an object is moved higher, decreases as an object is moved lower. •Work is done on the object against the gravitational force acting on it to move it higher.

Kinetic energy store	•The energy an object has because it is moving •Depends on the speed and mass of an object. •Faster = more KE •Heavier = more KE
Elastic potential energy store	•When work is done to stretch an elastic object, the energy is transferred to the EPE store of the object. •Bigger extension (stretch) = more EPE stored •Higher spring constant = more EPE stored •EPE = 0.5 x spring constant x extension^2 •$E_e = 0.5 \times k \times e^2$ *(given in exam)*

Key Equations To Learn	
Work Done, W	Work Done = Force x Distance W = F x s
Gravitational Potential Energy, E_p	GPE = Mass x Gravitational Field Strength x Height $E_p = m \times g \times \Delta h$
Kinetic Energy, E_k	KE = 0.5 x mass x speed^2 $E_k = 0.5 \times m \times v^2$