PHYSICS – Marking Criteria for Coursework B

Section	Aims	Total Mark	Guide to mark assignment	O.L.
			Investigate the factors that determine the force of friction between a wooden block and the surface on which it is resting.	
Introduction	Clear statement of the problem/topic to be investigated, background research undertaken in preparation for the investigation: people, books, websites, etc. as sources of relevant information.	5	**Statement / identification of problem / topic to be investigated:**	(3)
			Research: Any reference to book / internet (web) / person consulted etc / evidence of research	(2)
Preparation and planning	Identification of variables and controls as required	20	**Variables / Controls:** **Note**: *static or limiting friction* is the maximum force that can be applied without motion occurring and *dynamic friction* is the force that will produce movement at constant speed. Accept treatment of either type Identify *four* variables, **two essential** variables and any **two other** variables and/or indicate how some of these need to be controlled or held fixed	
			<u>**Essential variables**</u>: Weight of block // Contact area // Type of surface (rough, smooth) on which the block rests (moves) // Force applied to move block *Depending on variable student changes, essential variables can become other variables*	(3 + 3)
			<u>**Other variables:**</u> Presence or absence of lubricant // same block// same start position // same method to measure force of friction	(2 + 2)
	List of equipment needed for the investigation		**Equipment needed:** Identify any *five* pieces of equipment used: Block(s) // spring balance (force sensors) // String // Weights (more blocks) // Meter stick (tape measure) // pulley // elastic strip // hook // Surface(s) on which to pull blocks // Any valid piece of equipment pertinent to procedure (except safety equipment)	(5 x 1)
	List of tasks to be carried out during the investigation		**List of tasks**: Identify any *three* tasks carried out in investigation: Procure (prepare) block(s) // set up on surface // set (vary) factor 1 // set (vary) factor 2 // set (vary) factor 3 // ensure that only the variable under test is varied at a time // zero spring balance // measure force of friction // record data // graph (or otherwise present)	(2 + 2 + 1)

Procedure	Procedure, apparatus, safety, data collection/observations ■ Safety precautions required for this investigation ■ Procedures followed in the investigation ■ Recorded data/observations	20	**Safety:** Identify any *two* **specific** safety precautions followed in conducting the investigation	(3 + 2)
			Procedure: <u>State or Show</u> Identify any *five* steps taken in conducting investigation: Mass (weigh) block// block on surface // zero spring balance // attach spring balance (force sensor) to block // attach string to block // pass string over pulley // attach slotted weight set to string // tension elastic fixed amount // pull spring balance (force sensor) to move block at constant speed *or* to a point at which it is just about to move // add weights to string to give same effect // release elastic causing block to move // record force (weight on string), (distance travelled by block) // repeat to verify data // repeat with different weights on block (stack blocks) // area of contact of block with surface // texture of surface on which block moves // repeat procedure to verify second factor // record data // present data (table, graph)	(3 + 3 + 2 + 1 + 1)
			Recorded Data / Observations: **Factor 1** *versus* **force** **Factor 2** *versus* **force** [Table presentation likely]	(3) (2)
Analysis & Conclusions	■ Calculations/data analysis	20	**Calculations / Data analysis:** *One* relevant comment analysing data **or** calculation **or** graph	
			Limited manipulation of data **OR**	(4)
			Good manipulation of data **OR**	(7)
			Excellent manipulation of data	(10)
	■ Conclusion(s) and evaluation of results(s)		**Conclusion:** *One* relevant conclusion drawn **and** evaluation of results obtained	
			Limited treatment **OR**	(4)
			Good treatment **OR**	(7)
			Excellent treatment	(10)
Comment	Comments (e.g. refinements, extensions, sources of error etc.)	10	*One* comment on **refinement / extension / source of error** reliability of data / how process could be improved / sources of error / possible reason for unexpected result / possible extension of the investigation	
			Limited comprehension **OR**	(4)
			Good comprehension **OR**	(7)
			Excellent comprehension	(10)

OWN INVESTIGATION – Marking Criteria for Coursework B

Guide to mark assignment				
Section	**Aims**		**Total Mark**	**O.L.**
Introduction	Clear statement of the problem/topic to be investigated, background research undertaken in preparation for the investigation: people, books, websites, etc. as sources of relevant information.	10	**Statement / identification of problem / hypothesis statement / topic to be investigated:** (must elaborate on title) **Research:** Any *two* references to book / web / person consulted etc (must qualify why this person was a suitable consultant)	(6) (2 × 2)
Preparation and planning	Identification of variables and controls List of equipment needed for the investigation List of tasks to be carried out during the investigation	40	**Variables & Controls*:** Identify any *four* variables / controls: Must include **two essential** variables with respect to title. **Any two other** relevant variables **Equipment needed:** Identify any *five* pieces of equipment used **List of tasks:** Identify any *three* tasks carried out in investigation * If variables/controls not relevant to the type of investigation undertaken allow 10 marks for stating so and then readjust equipment to (5 × 3) and tasks to (3 × 5)	 (2 × 6) (2 × 4) (5 × 2) (4 + 4 + 2)
Procedure	Procedure, apparatus, safety, data collection/observations ▪ Safety precautions required for this investigation ▪ Procedures followed in the investigation ▪ Recorded data/observations	40	**Safety:** Identify any *two* safety precautions followed in conducting the investigation **Procedure:** State <u>or</u> Show Identify any *eight* steps taken in conducting investigation **Recorded Data / Observations:** Identify any *two* points related to method used [Table presentation likely]	(2 × 3) (8 × 3) (2 × 5)
Analysis & Conclusions	Analysis ▪ Calculations/data analysis ▪ Conclusion(s) and evaluation of results(s)	40	**Calculations / Data analysis:** *Two* relevant comments analysing data **or** calculation **or** graph Limited **OR** Good **OR** Excellent manipulation of data **Conclusion:** *Two* relevant conclusions drawn **and** evaluation of results obtained Limited treatment **OR** Good treatment **OR** Excellent treatment	(4) (7) } × 2 (10) (4) (7) } × 2 (10)
Comment	Comments (e.g. refinements, extensions, sources of error etc.)	20	*Four* comments on **refinements / extensions / sources of error** e.g. What was learnt* / reliability of data / how process could be improved / sources of error / extension of investigation / possible reason for unexpected result * Other than conclusions already stated	(5 + 5 + 5 + 5)