

Name of the Student: _____

Max. Marks : 24 Marks

Time : 24 Minutes

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
	substitutions (2) $(\Delta GPE = m \times g \times \Delta h)$ $= 0.052 \times 10 \times (0.0)5 \text{ (1)}$ converts 5 cm to 0.05 m (1) evaluation (1) $= 0.026 \text{ (J)}$	0.05 seen award full marks for the correct answer without working 0.026 to any other power of ten scores 2 marks	(3) AO2

Question number	Answer	Additional guidance	Mark
i	substitution (1) $(I = \frac{P}{V}) = \frac{1.9 (x 10^3)}{230} (1)$ evaluation (1) 8.3 (A)	8.3 / 8.26 (A) award full marks for correct answer without working award one mark for $8.26 \times 10^{-3} / 0.0083$	(2) AO2
Question number	Answer	Additional guidance	Mark
ii	choice and substitution (1) $E = I \times V \times t$ $= 7.4 \times 230 \times 120$ evaluation (1) 200000 (J)	accept 204000 / 204240 award full marks for correct answer without working award 1 mark for 3400 / 3404 (J) (using 2 minutes as time)	(2) AO2

Q3.

Question number	Answer	Additional guidance	Mark
(i)	recall and substitution into (1) $gpe = m \times g \times h$ $(gpe) = 4.5 \times 10 \times 20$ evaluation (1) 900(J)	allow 90(J) for 1 mark award full marks for the correct answer without working	(2)

Question number	Answer	Additional guidance	Mark
ii	900(J)	allow ecf from bi	(1)

Question number	Answer	Additional guidance	Mark
iii	recall and substitution (1) $power = work\ done / time\ taken$ $(power =) 900 / 4$ evaluation (1) 200 (W)	allow ecf from bi or bii 230(W) 225(W) award full marks for the correct answer without working	(2)

Question number	Answer	Additional guidance	Mark
i	substitution (1) $(\Delta GPE) = 72 \times 10 \times 7.0$ evaluation (1) 5040 (J)	do not penalise any power of ten error (p.o.t.e.) at this stage do not accept an answer without value for g (10) being used award full marks for correct answer without working	(2) AO2

Question number	Answer	Additional guidance	Mark
ii	an explanation to include (potential / kinetic) energy is transferred / dissipated (1) to surroundings / water / air / slide (1)	accept lost / decreases accept friction / air resistance acts accept to thermal (store)	(2) AO3

Q5.

Question Number	Answer	Additional guidance	Mark
(i)	<p>substitution (1) $(\Delta GPE =) (0.0)46 \times 10 \times 2.05$</p> <p>evaluation (1) 0.94(3) (J)</p>	<p>allow $g=9.8(1) \text{ m/s}^2$</p> <p>0.9 (J) values that round to 0.92 or 0.93 (from using $g = 9.8$ or 9.81)</p> <p>do not award for 1(J)</p> <p>no POT error in evaluation</p> <p>award full marks for the correct answer without working.</p>	(2)

Question Number	Answer	Additional guidance	Mark
(ii)	<p>recall (1) $(KE =) \frac{1}{2} \times m \times v^2$</p> <p>substitution (1) $(KE =) \frac{1}{2} \times (0.0)46 \times 3.5^2$</p> <p>evaluation (1) 0.28 (J)</p>	<p>allow answers that round to 0.28 e.g. 0.28175 (J)</p> <p>allow max 2 marks for POT error e.g. 0.00028</p> <p>award full marks for the correct answer without working</p>	(3)

Question Number	Answer	Additional guidance	Mark
(iii)	Any value between 0.8 (m) and 0.95 (m) inclusive		(1)

Question Number	Answer	Additional guidance	Mark
(iv)	An explanation linking (the ball) has lost energy (1) identification of what has happened to that energy (1)	accept (energy) dissipated or (transferred to) surroundings / ground or thermal energy or heat / sound or system is not 100% efficient or bounce is not (100%) elastic or squashing (the ball or the ground)	(2)