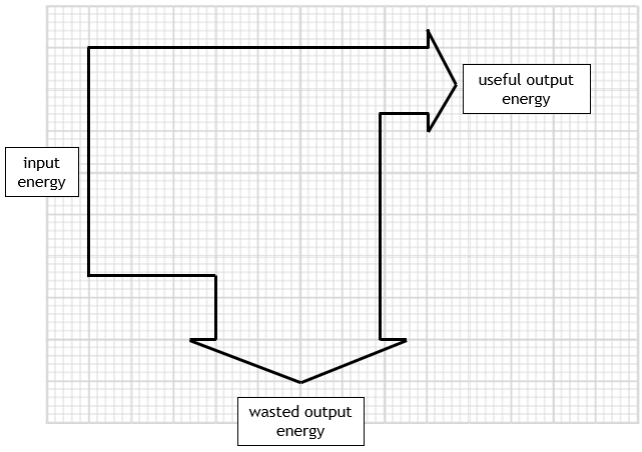
Question number	Answer	Notes	Marks
3 (a) (i)	GPE = mass × *g* × height;	allow standard symbols and rearrangements e.g. h = GPE / m×*g* ignore 'gravity' for *g*	1
(ii)	substitution; rearrangement; evaluation; e.g. 3.2 = 0.40 × 10 × h h = 3.2 / 0.40 × 10 (h =) 0.80 (m)	in either order -1 for POT error due to not converting g to kg but not if due to physics error such as missing *g* accept use of *g* = 9.8(1) accept 1sf answer i.e. 0.8 (m) 0.815 or 0.816 or 0.82 if g used is 9.8(1) and then rounded	3
(iii)	3.2 (J);	this answer only	1
(b)	downward arrow labelled "weight"/"W"/"mg"; vertically downward arrow drawn equal in length to lifting force arrow;	ignore starting position of arrow ignore 'gravity/g/gravitational field strength' allow 'gravitational force' reject if both gravity force and weight force shown mark independently by eye reject any other labelled arrows for second mark	2
(c) (i)	recall of efficiency formula; substitution; evaluation; e.g. efficiency = $\frac{\text{useful energy output}}{\text{total energy output}}$ efficiency = 3.2 / 11.0 (×100%) efficiency = 0.29 or 29%	may be implied from substitution allow 0.29, 0.2909…, 29%, 29.09…% 29 without % is PoT 2 marks	3
(ii)	idea that energy must be conserved; demonstration that 7.8 + 3.2 = 11(.0);	comparison in words e.g total = useful + wasted /eq allow 11(.0) - 3.2 = 7.8	2

(iii)	only one additional arrow drawn pointing to the right; labelled "useful output (energy)" width of arrow drawn = 8 small squares; e.g.  	allow "gravitational (potential energy)", "GPE" etc. reject reference to power by eye	3

Total for question 3 = 15 marks