Multiple Choice Answers

Q1: D

Q4: C

A-Level Physics: **w25 24**

1(a)(i)	$v_H = 28 \times \cos 34°$ $= 23\ \text{m s}^{-1}$
	$v_V = 28 \times \sin 34°$ $= 16\ \text{m s}^{-1}$
1(a)(ii)	time = 16 / 9.81 = 1.6 s
1(a)(iii)	horizontal straight line at $v = 23\ \text{m s}^{-1}$ from $t = 0$ to $t = 3.2$ s
1(a)(iv)	straight diagonal line starting at a positive velocity from $t = 0$ to $t = 3.2$ s, crossing the time axis
	line starting at $v = 16\ \text{m s}^{-1}$ and ending at $v = -16\ \text{m s}^{-1}$
	line passing through $v = 0$ at $t = 1.6$ s
1(b)(i)	product of mass and velocity
1(b)(ii)	$F = \Delta p / t$
	$= 13 / 3.2$ $= 4.1$ N
1(b)(iii)	$m = \Delta p / v$ $= 13 / (2 \times 16)$ $= 0.41$ kg **or** $m = F / g$ $= 4.06 / 9.81$ $= 0.41$ kg

A-Level Physics: **s25 11**

Multiple Choice Answers

Q1: C

Q4: B

A-Level Physics: **s25 14**

Multiple Choice Answers

Q4: C

1(a)	acceleration and displacement identified as vectors (and no others)
	speed, temperature and gravitational potential energy identified as scalars (and no others)
1(b)(i)	$W = Fs$ **or** $W = mas$
	$s = v^2 / 2a$ **or** $a = v^2 / 2s$ **or** $as = v^2 / 2$
	$W = ma(v^2 / 2a)$ **or** $W = m(v^2 / 2s)s$ **or** $W = m(v^2 / 2)$ **and** (so E_K)= $½mv^2$
	OR $W = Fs$ or $W = mas$
	$F = mv / t$ **and** $s = ½vt$
	$W = mv / t \times ½vt$ **and** (so E_K)= $½mv^2$
	OR $W = Fs$ or $W = mas$
	$a = v / t$ **and** $s = ½vt$
	$W = m(v / t)(½vt)$ **and** (so E_K)= $½mv^2$
	OR $W = Fs$ **or** $W = mas$
	$a = v / t$ **and** $s = ½at^2$
	$W = m(v / t)(½ \times (v / t) \times t^2)$ **and** (so E_K)= $½mv^2$
1(b)(ii)	kinetic energy $= ½\ mv^2$ $= ½ \times 920 \times 17^2$ $= 1.3 \times 10^5$ J
1(b)(iii)	$P = W/t$
	$= (4.7 \times 10^4 + 1.3 \times 10^5) / 5.8$
	$= 3.1 \times 10^4$ W
1(b)(iv)	(at/after t = 5.8 s) the kinetic energy (of the car) does not change / work is done only against resistive forces / no work is done to accelerate (the car) so (power output is) less