

3(a)	any two from: - fossil fuels / named fossil fuel - biofuels / named biofuel / biomass - wave(s) - wind (turbines) - Hydroelectric - solar panels / solar cells
3(b)(i)	$E_k = \frac{1}{2} mv^2$ $(m =) 11000 \times 2 \div [6.3]^2$ OR $(m =) 11000 \times 2 \div [39.69]$ OR 554 (kg) SEEN
3(b)(ii)	55 (%) efficiency = useful energy out(put) / (total) energy in(put) $\times$ 100 % OR $(6000 \div 11000) \times 100$
3(c)	(tides) follow a regular / predictable pattern OR (tides) are reliable OR A for wind

Multiple Choice Answers

Q13: B

3(a)	<u>gravitational</u> (potential) energy (store before / as the ball falls) kinetic energy (store) <u>increases</u> (as the ball falls) OR energy transferred to kinetic energy (store as the ball falls) (energy transferred from) kinetic energy (store) to internal / thermal energy (store)
3(b)	5.9 m / s $(\Delta)E_p = (\Delta)E_k$ OR E_p lost = E_k gained OR gravitational potential energy lost = kinetic energy gained OR $mg(\Delta)h = \frac{1}{2}mv^2$ $v^2 = 2g(\Delta)h$ OR $v^2 = 2 \times 9.8 \times 1.8$ OR $v^2 = 35(.28)$

Multiple Choice Answers

Q3: C

1(a)	constant speed
	constant / uniform deceleration
	stationary
1(b)(i)	$7.1 \times 10^5 \text{ J}$ OR 710 000 J OR 710 kJ
	$E_k = \frac{1}{2}mv^2$ OR ($E_k =$) $\frac{1}{2}mv^2$ OR $\frac{1}{2} \times 18\,000 \times (8.9)^2$
1(b)(ii)	31 000 N OR 31 kN
	$W = Fd$ OR ($F =$) W / d OR $710\,000 / 23$
	$F = 710\,000 / 23$