Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) (fixed) solar cells aren't always pointed (directly) at the Sun

or

(fixed) solar cells don't track the Sun (through the sky)

1

(fixed) solar cells don't (always) receive maximum intensity of solar radiation

allow solar cells won't receive as much (solar) energy
allow solar cells won't generate as much electricity

1

(b) Q = 3.5 × 3600

1

Q = 12 600 (C)

1

(c)

$$\text{efficiency} = \frac{\text{useful power output}}{\text{total power input}}$$

1

(d)

$$0.16 = \frac{\text{useful power output}}{7500}$$

1

useful power output =
0.16 × 7500

1

useful power output = 1200 (W)

1

(e) the energy becomes less useful

1

(f) a very large area would need to be covered with solar cells

1

[10]

Q2.

(a) gravitational potential

this order only

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kinetic **1**

1

(b) kinetic energy = 0.5 × mass × speed^2

or

$E_k = ½mv^2$ **1**

(c) $5040 = 0.5 \times m \times 12^2$ **1**

$$m = \frac{5040}{0.5 \times 12^2}$$ **1**

m = 70 (kg) **1**

(d) the thermal energy increases. **1**

[7]

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