

Name of the Student: \_\_\_\_\_

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

**Q1.**

(a) 13 500 (J)

*allow 1 mark for correct substitution, ie  $90 \times 10 \times 15$  provided no subsequent step shown*

2

(b) 17

or

$$\sqrt{\frac{\text{their (a)}}{45}}$$

correctly calculated and answer given to 2 or 3 significant figures

*accept 17.3**allow 2 marks for an answer with 4 or more significant figures, ie 17.32***or***allow 2 marks for correct substitution, ie  $13\,500 / \text{their (a)} = \frac{1}{2} \times 90 \times v^2$* **or***allow 1 mark for a statement or figures showing  $KE = GPE$* 

3

(c) work is done

1

(against) friction (between the miner and slide)

*accept 'air resistance' or 'drag' for friction*

1

(due to the) slide not (being perfectly) smooth

*accept miners clothing is rough***or**

causing (kinetic) energy to be transferred as heat/internal energy of surroundings

*accept lost/transformed for transferred**accept air for internal energy of surroundings*

1

**[8]****Q2.**

(a) (i) 7.6

*allow 1 mark for correct substitution and / or transformation*

$$\text{ie } 0.95 = \frac{x}{8}$$

$$95 \times 8.0$$

2

(ii) 25 (hours)

*allow 1 mark for obtaining number of kWh = 200*

*an answer of 26(.3) gains both marks*

2

(b) any **two** from

- transferred to the surroundings / air / atmosphere
- becomes spread out
- shared between (many) molecules
- (wasted as) heat / sound

2

[6]

### Q3.

(a) (i) kinetic

*accept KE*

*do **not** accept movement*

1

(ii) 0.75

$$\frac{60\,000}{80\,000}$$

*allow 1 mark for correct substitution ie*

**or**

75 %

*an answer 0.75 % **or** 0.75 with a unit gains 1 mark only*

*an answer 75 with or without a unit gains 1 mark only*

2

(b) any **one** from:

- large areas of land are flooded  
*uses large areas of land / takes up large areas of land is insufficient*
- people's homes may be destroyed
- habitat (of animals and plants) lost / damaged  
*construct is neutral*  
*very noisy is neutral*

1

(c) (i) system of cables and transformers

*both required for the mark*

*accept power lines / wires for cables*

*ignore reference to pylons*

*inclusions of power stations / consumers negates answer*

1

- (ii) less energy loss / wasted (in the cables)  
*accept heat for energy*  
*do **not** accept no energy loss*  
*do **not** accept electricity for energy*

1

as the cables are shorter

1

**[7]**