

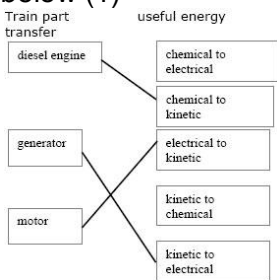
Name of the Student: _____

Max. Marks : 20 Marks

Time : 20 Minutes

Mark Schemes

Q1.

	Answer	Acceptable answers	Mark
(ai)	A line connecting a train part with a useful energy transfer as shown below (1) 	Lines need not be straight Ignore any arrow heads drawn Note: if more than one line is drawn from a train part then zero mark for that train part.	(3)
(a ii)	(transfer of energy to) thermal (1)	heat/sound	(1)
(bi)	1400 – 1300 (= 100) (kJ) (1)		(1)
(bii)	Substitution (1) $1300 / 1400 \times 100$ Evaluation (1) 93(%) or 0.93	A value which rounds to 93(%) or 0.93 Correct answer with no working scores 2 marks	(2)
(c)	Any one from black is a good thermal radiator (1) (helps to) prevent motors overheating (1)	(good) emitter (helps to) remove wasted energy/ heat (from the motor)	(1)

Q2.

Question number	Answer	Additional guidance	Mark
	infrared (1) thermal (1)	must be in first sentence space must be in second sentence space award 2 marks for answers in this order	(2) AO2

Q3.

Question number	Answer	Additional guidance	Mark
	an explanation linking blurred / fuzzy/ distorted (1) rays are reflected in different directions / randomly (from mirror S) (1)	allow reverse arguments (reflection in mirror) S is diffuse allow light for rays (reflection in mirror) R is specular rays reflected from R are parallel	2 AO3.2

Question Number	Answer	Additional guidance	Mark
	<p>an explanation linking two from:</p> <p>identifies curve Q is the black can OR that curve P is for the silver can (1)</p> <p>(because, as) black is a better emitter</p> <p>(then) (curve) Q shows a faster rate of cooling (1)</p> <p>OR</p> <p>(curve) Q is steeper (1)</p>	<p>IGNORE reference to absorb</p> <p>allow Q is at a lower temperature/stays cooler</p> <p>OR</p> <p>P is at a higher temperature /stays hotter</p> <p>may quote numbers from graph e.g. curve Q cools by 75(°C) in 20 minutes but curve P only shows a 60(°C) in the same time</p>	(2)

Question Number	Answer	Additional guidance	Mark
	<p>an explanation linking: infrared is absorbed / blocked (by the armchair/objects) / cannot pass through it</p> <p>OR</p> <p>radio waves can go through (the armchair/objects) (1)</p> <p>WITH</p> <p>(infrared and radio have) different wavelengths / frequencies OR infrared requires 'line-of-sight' (idea) OR radio waves do not require 'line-of-sight' (idea) OR diffraction (idea) (1)</p>	<p>allow stopped</p> <p>transmitted</p> <p>accept comparison</p>	(2)

Q6.

Question Number	Answer	Additional guidance	Mark
(i)	an explanation linking (X-rays/they) pass through/penetrate (the bags/cases) (1) to see contents/to show objects of greater density (1)	accept see through accept look/see inside accept check contents/dangerous items	(2) AO1

Question Number	Answer	Additional guidance	Mark
(ii)	an explanation linking X-rays/they are ionising (1) cause cancer/mutations (of cells/DNA) (1)	accept harmful/dangerous accept a description of ionising accept high energy accept kill/damage cells	(2) AO2