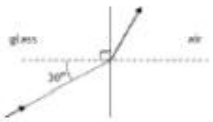
Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 5_ Light And Electromagnetic Spectrum

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

Question Number	Answer	Acceptable answers	Mark
(a)	B 		**(1)**

Question Number	Answer	Acceptable answers	Mark
(b)(i)	substitution: (1) 3.2×10^{7} = power/6.3×10^{-6} transposition (1) (power) = $3.2 \times 10^{7} \times 6.3 \times 10^{-6}$ evaluation: (1) 200 (W)	substitution and transposition in any order ignore powers of 10 until evaluation 202(W) or 201.6(W) or 201(W) full marks for the correct numerical answer without working	**(3)**

Question Number	Answer	Acceptable answers	Mark
(b)(ii)	An explanation linking: EITHER • no light / energy is lost (1) OR • no light is refracted (out) (1) WITH • (because) idea of (total) internal reflection (1)	Ignore references to power No light / energy escapes All light stays in (the fibre) TIR Accept "All light is internally reflected" for 2 marks	**(2)**

Downloaded from www.merit-minds.com

Question Number	Answer	Acceptable answers	Mark
(c)	substitute and evaluate (sin c) = 1/1.7 (sin c) = 0.59 (1) from graph or calculation c = any value between 34° and 38° (1)	 0.588, 0.58, 0.6 full marks for the correct numerical answer without working	**(2)**

(Total marks for question = 8 marks)

Downloaded from www.merit-minds.com

Q2.

Question number	Answer	Additional guidance	Mark
	An explanation that combines application of knowledge (1 mark) and reasoning (1 mark) linking: • (faces of) people are at a higher temperature than the background (1) • therefore they emit more (infrared) at shorter wavelengths than background (1)	accept higher frequency / higher intensity	**(2)**

Downloaded from www.merit-minds.com

Q3.

Question number	Answer	Mark
	An answer that provides a description by making reference to: • leaf appears black (1) • background appears blue (1)	**(2)**

Downloaded from www.merit-minds.com

Q4.

	Answer	Additional guidance	Mark
	example 1 e-m wave (1) corresponding result of energy transfer (1) example 2 e-m wave (1) corresponding result of energy transfer (1)	e.g. radio waves: communication, oscillations (of electrons) in wires microwaves: cooking, communications and satellite transmissions, internal heating of body cells, increase KE/vibration of water molecules infrared: cooking, thermal imaging, optical fibres, television remote controls, skin burns ultraviolet: security marking, fluorescent lamps, detecting forged bank notes and disinfecting water, damage to surface cells and eyes, skin cancer x-rays: observing the internal structure of objects, airport security scanners and medical x-rays, mutation or damage to cells in the body, cancer gamma rays: including sterilising food and medical equipment, and the detection of cancer and its treatment, mutation or damage to cells in the body, cancer additional effect for visible light scores 1 mark e.g. : including vision, photography and illumination	**(4)** **AO1**

Downloaded from www.merit-minds.com

Q5.

Question number	Indicative content	Mark
*	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant. **AO2 (6 marks)** • the soot could make the ice black • black ice will absorb more IR radiation than white ice • black ice might cause an increase in the temperature of the Earth because absorption of IR radiation (can) cause an increase in temperature • reduction in soot might reduce warming because the ice will not be as black/will be more white • shiny sulfates (are good at) reflecting/scattering IR radiation which means less heat absorbed • sulfates scatter the IR and this reduces the amount of IR radiation falling on the Earth • sulfates might cause a decrease in the temperature of the Earth • reduction in sulfates might increase warming	**(6)**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–2	• The discussion attempts to link and apply knowledge and understanding of scientific ideas, flawed or simplistic connections made between elements in the context of the question. (AO2) • Lines of reasoning are unsupported or unclear. (AO2)
Level 2	3–4	• The discussion is mostly supported through linkage and application of knowledge and understanding of scientific ideas, some logical connections made between elements in the context of the question. (AO2) • Lines of reasoning mostly supported through the application of relevant evidence. (AO2)
Level 3	5–6	• The discussion is supported throughout by linkage and application of knowledge and understanding of scientific ideas, logical connections made between elements in the context of the question. (AO2) • Lines of reasoning are supported by sustained application of relevant evidence. (AO2)

Downloaded from www.merit-minds.com