

PHYSICS 1
FOUNDATION TIER

Question			Marking details	Marks Available
1.	(a)	(i)	<u>Step-down transformer</u>	1
		(ii)	Ticks in box 2, 4 & 5 [for each extra tick – 1 mark]	3
	(b)	(i)	700 [MJ]	1
		(ii)	lost as <u>heat</u>	1
		(iii)	equation (1) correct subs of 1000 & 300 (1) 30[%] (1)	3
			Question total	[9]
2.	(a)	(i)	4 [m]	1
		(ii)	50 [cm]	1
	(b)	Correct substitution (1) answer 0.7 [Hz] (1) ecf for wavelength	2	
(c)	Subs of 2.8 (1) answer 280 [m] (1)	2		
			Question total	[6]
3.	(a)	Travel at the same speed [in a vacuum] / transverse waves / transfer energy / can be reflected / refracted / are not ionising	1	
	(b)	Different wavelength / frequency / energy	1	
	(c)	Infra red/visible (1) microwaves,(1) microwaves/infra red (1)	3	
			Question total	[5]
4.	(a)	(i)	<u>Gas</u>	1
		(ii)	Use of 800 and 2 (1) = 400 (1)	2
		(iii)	<u>Generating</u> costs are cheaper or cost per unit is cheaper (1) <u>output</u> power is more (1) [or compare using numbers]	2
(b)	Containment (1) to absorb radiation (1) or <u>Containment</u> of the <u>waste</u> (1) because it remains radioactive for a long time (1) The 2nd mark must be linked to the 1st mark.	2		
			Question total	[7]
5.	(a)	Easily replaced / replenished / will not run out / sustainable Don't accept can use it again – treat this as neutral with other acceptable answer	1	
	(b)	(i)	[£] 2000	1
		(ii)	Wind - variable wind speed (1) Solar - hours of sunshine / roof may not face South or intensity of Sun (1) Fuel costs could change (1)	2
(c)	Reduces CO ₂ (1) which reduces the greenhouse effect / global warming (1) or Less SO ₂ (1) which results in less acid rain (1) or Use less fossil fuels (1) so less extraction needed / less CO ₂ / less SO ₂ (1) Don't accept less pollution. The 2nd mark must be linked to the 1st mark.	2		
			Question total	[6]

Physics 1 Foundation Tier (Contd.)

Question		Marking details	Marks Available	
6.	(a)	Subs (1) answer 2000 [W] (1)	2	
	(b)	Units used = power x time $\frac{100 \times 5(1)}{1000(1)}$ 0.5 ecf x 12 (1) 6 [p] (1) If convert to £ must be correct and no p present. If no workings shown: £0.06 (4 marks) 6000 p (3 marks), £60 (3 marks), 0.06 p (3 marks), 6 000 000 p (2 marks), 60 p (2 marks), 120 p (2 marks) If kettle used award a maximum of 2 marks	4	
	(c)	(i)	All plots correct (2), 4 plots correct (1), 3 or less plots correct (0), line of best fit that passes through the origin (1)	3
		(ii)	Economy plan ecf (1) cheaper (1)	2
		(iii)	240[kWh] ecf accept 235 - 245	1
Question total			[12]	
7.	(a)	(i)	380[units]	1
		(ii)	$\frac{10}{5}$ (1) = 2 [mm] (1) [$\frac{1}{5} = 0.2$ Award 1 mark only]	2
	(b)	(i) (ii)	Big Bang Universe started at one point / singularity (1) [matter thrown out] by an <u>explosion</u> (1)	1 2
Question total			[6]	

Physics 1 Foundation Tier (Contd.)

Question		Marking details	Marks Available
8.	(a)	<p>Indicative content:</p> <p>The count rate due to background radiation needs to be determined first. This is 0.5 counts per second. The paper absorber reduces the count rate showing that alpha radiation must be emitted, since it will be blocked by paper. The aluminium absorber does not affect the count rate so beta radiation cannot be present. Thick lead reduces the count rate, but it still remains above the background level, showing that gamma radiation must also be emitted.</p> <p>5 – 6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3 – 4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1 – 2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p>	6
	(b)	<p>(i) Stored in a <u>lead</u> [lined] container</p> <p>(ii) To absorb / block radiation (1) which would be harmful / to prevent exposure (1) The 2nd mark must be linked to the 1st mark.</p> <p>Question total</p>	1 2 [9]
Total For Foundation Tier paper			60