

Physics A

General Certificate of Secondary Education

Unit **A333/01**: Unit 3 – Ideas in Context plus P7 (Foundation Tier)

Mark Scheme for June 2011

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Question			Answer	Mark	Guidance
1	a	i	<p style="text-align: center;"><input type="checkbox"/></p> <p>gamma, X-ray, ultraviolet, visible ... <input checked="" type="checkbox"/> (1)</p> <p style="text-align: center;"><input type="checkbox"/></p> <p style="text-align: center;"><input type="checkbox"/></p>	1	
		ii	<p>analogue – any continuously varying wave with more than two values (1)</p> <p>digital – a shape with just two values (1)</p>	2	allow on and off, anything with two values
	b	i	300 – 310 inclusive (1)	1	
		ii	larger/ bigger/ opposite direction (1)	1	accept reverse argument i.e driving/speeding up force is smaller
		iii	friction (1)	1	reject braking force
	c	i	<p>any two from:</p> <p>examples of benefits:</p> <ul style="list-style-type: none"> • racing is exciting / enjoyable owtte; • get paid / employment; <p>the risk of a serious crash is small;</p>	2	<p>allow 1 mark for statement that benefit outweighs risk</p> <p>reject references to safety devices e.g. HANs</p>
		ii	<p>any two from:</p> <p>controls / reduces helmet movement;</p> <p>reduces energy absorbed by head and neck;</p> <p>transfers forces (from spine) to forehead;</p> <p>prevents driver's head from hitting steering wheel;</p> <p>increases slowing-down time;</p> <p>reduces force on the head;</p>	2	ignore whiplash injury
	d	i	<p>measure velocity/speed (1)</p> <p>measure mass (1)</p> <p>momentum = mv (1)</p>	3	<p>allow distance and time or how fast instead of velocity</p> <p>allow change in momentum = force × time [1]; measure force and measure time [1];</p> <p>ignore weight but otherwise apply list principle</p>
		ii	2,116,800 (1)	1	
Total				[14]	

Question		Answer	Mark	Guidance
2	a	A – photosphere (1) B – convective zone (1) C – radiative zone (1) D – core (1)	4	
	b	i arrow points radially out from centre (1)	1	does not have to start at the centre
		ii fusion (1)	1	
	c	i hydrogen (1)	1	
		ii helium (1)	1	
Total			[8]	

Question		Answer	Mark	Guidance
3	a	any two from: further away the dimmer; because light spreads out/some blocked by dust; more luminous looks brighter; because more luminous means more light/energy produced by star; more luminous stars can be seen from further away;	2	accept lighter for brighter
	b	luminosity (1) colours / luminosity (1) ionisation (1) line spectra (1) elements (1)	5	
Total			[7]	

Question		Answer	Mark	Guidance
4	a	3 (1)	1	reject -3
	b	temperature increases (1) pressure increases (1) volume decreases (1)	3	accept hotter
	c	pressure <input checked="" type="checkbox"/> (1) <input type="checkbox"/> gravity <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>	2	correct pattern for [2] one mistake for [1]
Total			[6]	

Question			Answer	Mark	Guidance
5	a	i	A (1)	1	
		ii	B (1)	1	
	b	i	1 – A (1) 2 – B (1) 3 – F (1)	3	
		ii	east to west <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>	1	
Total			[6]		

Question			Answer	Mark	Guidance
6	a	i	megaparsec (1)	1	
		ii	parsec (1)	1	
		iii	parsec (1)	1	
	b	i	B (1)	1	
		ii	B (1)	1	
	c		stars (1) nebula / nebulae (1) galaxy (1) cepheid / variable (1)	4	allow Andromeda
d	i	Australia <input checked="" type="checkbox"/>		1	both needed for the mark, in either order
		Chile <input checked="" type="checkbox"/>			
		ii	any 3 from: use computers; automatic control of telescope / tracking / pointing; view images on screen; record images (in computer); transmit / share images; improve / process (digital) images; remote access;	3	accept data for image throughout
			QWC - Clear well ordered answer (1)	1	only award if response attempts to answer the question
Total				[14]	
Paper Total				[55]	

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