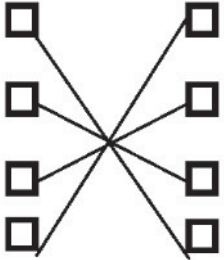


**WJEC Physics GCSE Topic
2.5: Stars and planets
Mark Schemes for Questions by
topic**

1.

Question		Marking details	Mark
4.	(a)	Earth, Sun, Solar system. Milky Way, Universe. All in correct positions – 4 marks, 4 correct- 2 marks, 3 correct – 2 marks, 2 correct – 1 mark	4
	(b)	Milky Way	1
	(c)	It is a <u>distance</u> (travelled by light in 1 year)	1
Question total			[6]





2.

Question	Marking details	Marks
1	 <p>All four correct – 3 marks 2 or 3 correct - 2 marks 1 correct – 1 mark AWARD a MAXIMUM OF 3 marks</p>	3
Question total		[3]

3.

Question			Marking details	Marks
5.	(a)	(i)	30 thousand [years]	1
		(ii)	8.3 [minutes] (ignore reference to light if written)	1
		(iii)	13 [light hours]	1
		(iv)	accept > 0.4 [AU] and < 1 [AU]	1
	(b)	(i)	absorbing (1)	2
		(ii)	red shifted (1)	
	(c)	(i)	A	1
		(ii)	B	1
Question total				[8]

4.

Question		Marking details	Mark	
2.	(a)	red super giant  <input type="checkbox"/> supernova  <input type="checkbox"/> black hole  <input type="checkbox"/> main sequence star  <input type="checkbox"/> 3 marks for all correct 2 marks for 2 or 3 correct 1 mark for 1 correct double lines from or to any box earns no credit	3	
		(b)	radiation pressure / gas pressure / pressure / force due to fusion	1
		(c)	fusion (1) helium (1) uranium (1) iron (1)	4
Question total			[8]	

5.

Question			Marking details	Mark
5.	(a)	(i)	accept any value between 5 500 and 6 500 K inclusive	1
		(ii)	[ACB is] <u>smaller</u> /cooler or lower temperature/dimmer or converse if referring to Sun but must be clear referring to Sun [any 2 x 1]	2
		(iii)	Both main sequence stars (accept balanced forces)	1
	(b)	(i)	radiation pressure/outward force becomes greater than gravitational force / inward force N.B. must compare the both. Unbalanced forces must be qualified.	1
		(ii)	becomes <u>larger</u> / expands, <u>brighter</u> , <u>cooler</u> / <u>redder</u> [3 x 1] Award marks if appropriate values for the properties given.	3
	(c)		X marked near white dwarf section	1
			Question total	[9]

6.

Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a) (i)	1	Gravity and radiation / pressure			
(ii)	1	Forces are balanced / they are balanced	Equal and opposite / forces cancel each other out		The same / equal / because it has a supply of hydrogen / its balanced
(b) (i)	1	$4\text{}^1_1\text{H} + \text{}^1_1\text{H} + \text{}^1_1\text{H} + \text{}^1_1\text{H} \rightarrow \text{}^4_2\text{He} + \text{}^0_1\text{e} + \text{}^0_1\text{e}$	$4\text{}^1_1\text{H} \rightarrow \text{}^4_2\text{He} + 2\text{}^0_1\text{e}$		
(ii)	3	Four hydrogen [nuclei] / protons <u>join</u> / <u>fuse</u> (1) to form a helium [nucleus] (1) and <u>two</u> positrons (1)	Antielectron instead of positron		Positive electron / react / bond / collide / alpha particle
(c)	1	Energy / gamma is released	They annihilate / destroy each other / cancel each other out	An explosion takes place	They neutralise each other

7.

1.1	any one from: <ul style="list-style-type: none"> • Earth is at the centre (not the Sun) • there are fewer planets 	accept there is no asteroid belt shown accept there are only 5 planets (and not 8) accept other planets have no moons shown	1	AO1/1 4.8.1.1 WS1.1
1.2	Shows the moon in orbit around the Earth	accept the planets have circular orbits	1	AO1/1 4.8.1.1 WS1.1
1.3	circular	accept elliptical	1	AO1/1 4.8.1.3
1.4	gravity		1	AO1/1 4.8.1.3
1.5	Mira is much more massive		1	AO1/1 4.8.1.2
Total			5	