Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 7_ Astronomy

Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Mark Schemes

Q1.

	Answer	Additional guidance	Mark
	an explanation linking: telescopes are above Earth / in space / outside the Earth's atmosphere (1) less interference from dust / clouds (1) wavelengths that are absorbed by Earth's atmosphere (microwaves / IR / UV) (1) can view the whole sky (1)	allow any other sensible benefit allow atmospheric distortion/ (light/air) pollution accept named examples of satellites or waves do not accept idea that telescope is closer to object in space	**(2)** **AO1**

Q2.

Question number	Indicative content	Mark
*	Answers will be credited according to the 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. **A01 (6 marks)** • Gravity is an attractive force • Gravity pulls stellar matter inwards • Fusion reactions in the core release thermal energy • Thermal energy gives rise to expansion force • Sun is (currently) stable because these two forces are in equilibrium • Mass of Sun is important factor • Red supergiants explode in supernova • Sun does not have enough mass to be a red supergiant	**(6)**

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–2	• Demonstrates elements of physics understanding, some of which is inaccurate. Understanding of science ideas lacks detail (A01) • Presents an explanation with some structure and coherence (A01)
Level 2	3–4	• Demonstrates physics understanding, which is mostly relevant but may include some inaccuracies. Understanding of scientific ideas is not fully detailed and/or developed. (AO1) • Presents an explanation that has a structure which is mostly clear, coherent and logical. (AO1)
Level 3	5–6	• Demonstrates accurate and relevant physics understanding throughout. Understanding of the scientific ideas is detailed and fully developed. (AO1) • Presents an explanation that has a well-developed structure which is clear, coherent and logical. (AO1)

Q3.

	Answer	Additional guidance	Mark
	An explanation linking **two** from: $a = \frac{\Delta v}{t}$ (1) velocity/ acceleration is a vector (1) the direction (of Vesta/velocity) is changing (1)	velocity is changing vector has magnitude and direction	**(2)** **AO1**

Q4.

Question Number	Answer	Mark
	D vector vector **is the only correct answer** ***A*** *'scalar scalar' is incorrect, both force and velocity are vectors* ***B*** *'scalar vector' is incorrect, with force being described incorrectly as a scalar* ***C*** *'vector scalar' is incorrect, with velocity being described incorrectly as a scalar*	**(1)** AO 1 1

Q5.

Question Number	Answer	Additional guidance	Mark
(i)	gravitational / centripetal (1)	accept gravity / weight/ gravitational field strength	(1) AO 2 1

Question Number	Answer	Additional guidance	Mark
(ii)	arrow from the satellite towards the centre of Earth - by eye (1)	direction must be clear	(1) AO 2 1

Q6.

Question Number	Answer	Acceptable answers	Mark
(a)	An explanation linking any two of: MP1 magnify (1) with one of: MP2 the (real) image from objective (lens) (1) MP3 to provide greater detail (1)	 enlarges / bigger ignore zooming the real image (in the telescope) / image at focal point ignore make it clearer inversion of image focuses image	**(2)**

Question Number	Answer	Acceptable answers	Mark
(b)	One sensible suggestion, such as • made recording results {easier /quicker} (1) • results more convincing to other people (1) • photograph is to scale (1)	For example, don't have to keep looking through telescope would be (better) proof / evidence (i.e. between geo- and helio-centric models) (eg multiple photographs would prove movement/orbit of moons) (photograph) is more {accurate / precise / reliable}/ can measure (relative) separations of moons (from planet) better ignore more detail/clearer/zooming	**(1)**

Question Number	Answer	Acceptable answers	Mark
(c)	Substitution (1) $3.0 \times 10^{8} = 4.3 \times 10^{14} \times \lambda$ Transposition (1) $(\lambda=) \quad \frac{3.0 \times 10^{8}}{4.3 \times 10^{14}}$ Evaluation (1) 6.98×10^{-7} (m)	 Substitution and transposition in either order Ignore triangle correct answer no working = 3 power of ten error = 2 to at least 2sf (eg 7.0/6.97.....)x10^{-7} Ignore powers of 10 until evaluation	**(3)**

Question Number		Indicative content	Mark
QWC	*** (d)**	A description to include some of the following points description of models • geocentric • heliocentric description of one set of observations of Jupiter's moons explanation of how observation contradicts geocentric but does not prove the other NB beware that you do not reward repetitions of the question stem	**(6)**
Level	**0**	no rewardable material	
1	**1-2**	• a limited explanation of the geocentric **AND** the heliocentric model such as *geocentric model said everything orbited the Earth while the other was for everything going round the Sun.* **OR** clearly explains the one model and describes Galileo's observations *eg geocentric model said everything orbited the Earth but Galileo observed that Jupiter had moons going around it* • the answer communicates ideas using simple language and uses limited scientific terminology e.g. allow confusion between geocentric and heliocentric • spelling, punctuation and grammar are used with limited accuracy	
2	**3-4**	• a simple explanation of geocentric **AND** heliocentric models **AND** Galileo's observations of Jupiter's moons/explains heliocentric not proved e.g. *The geocentric model said everything orbited the Earth while the heliocentric was for everything orbiting the Sun. Galileo observed that Jupiter had moons orbiting around it.* • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately e.g. correct use geocentric and heliocentric • spelling, punctuation and grammar are used with some accuracy	
3	**5-6**	• a detailed explanation of geocentric **AND** heliocentric models **AND** the role of Galileo in providing evidence against the geocentric **BUT** not enough for the heliocentric such as *The geocentric model said everything orbited the Earth while the heliocentric was for everything orbiting the Sun. Galileo's observations that Jupiter had moons orbiting arou(nd it showed that the geocentric model was wrong **but not** that Jupiter or anything else went around the Sun.* • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately e.g. distinguishes between the necessary and insufficient conditions • spelling, punctuation and grammar are used with few errors	