AQA Physics GCSE

Paper 2 questions

Question	Answers	Extra information	Mark
GCSE Physics only			
01.1	water pressure acts in all directions water pressure depends on depth		1 1
01.2	301056 Pa	**1** mark each for answer and unit	2
01.3	density of air in gas bottle and diver is less than the density of sea water so upthrust will make them float weights belt will balance the upthrust		1 1
01.4	833 Pa	accept 0.083 N/cm^2 for **2** marks **1** mark each for working, calculation and answer	3
02.1	answers in correct boxes: white dwarf supernova neutron star		4
02.2	nuclear fusion in stars between hydrogen atoms creates helium. fusion continues and other heavier elements are formed up to, but not including, iron. in a supernova, a massive explosion creates the heaviest elements including iron		1 1 1 1
02.3	the satellite is continually changing direction velocity is a vector and has a speed and direction		1 1

Question	Answers	Extra information	Mark
03.1	the comet is a vast distance away. The spacecraft cannot have enough fuel to use the motor all the way, so it relies on gravity from other planets to help the motion.		1
03.2	28 420 N	**1** mark each for workings and answer	2
03.3	gravitational pull of the comet is very weak, so resultant force will be very small		1
	so speed of descent will be very slow		1
03.4	0.89 m/s	**1** mark each for workings, answer and unit	3
03.5	any sensible answer		1
04.1	**any one from:** to enable a comparison to be made (fair test is insufficient) **or** they are control variables		1
04.2	the manufacturer may be biased		1
04.3	10.53 kg m/s	**1** mark each for workings and answer(include unit)	2

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04.4	$10.53 = (0.046v)+(0195 \times 42)$		1
	$V = 2.34/.046$		1
	50.87 m/s		1

04.5	the light transmitted travels to the object and is reflected back to a receiver		1
	the time of the journey is measured		1
	distance = (speed of light x time)/2		1
04.6	laser light should not be shone directly at a person's eyes		1
	because it can cause blindness		1

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05.1	children and parents may be on the road, so the reduced limit allows more time for driver to avoid collision a faster speed increases the braking distance and therefore stopping distance		1 1
05.2	**one from:** yes because it is more likely to have road traffic accident near lots of children (or any sensible answer) **or** no because all speed offences should be treated the same there may be other circumstances (or any sensible answer)		2
05.3	any sensible suggestions, such as: barriers on pavement school crossing office pedestrian crossing road safety lessons	**1** mark each for any sensible suggestion	2
05.4	2000 N	**1** mark each for workings and answer	2
06.1	mass of the wooden block		1
06.2	0.1N		1
06.3	as the grade of sandpaper increases the force of friction decreases the results are not proportional		1 1
06.4	similar results are obtained by different investigators using different equipment		2
06.5	only one variable is continuous		1

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07.1	15 orbits	allow **1** mark for 15.5 orbits **1** mark each for workings and answer	2
07.2	656 640 km	**1** mark each for workings and answer	2
07.3	Newton's 1st law states a body stays in uniform motion unless acted upon by external forces there is no atmosphere at the height the ISS travels so there will be no air resistance **or** the ISS does not have a motor to drive it forward.		1 1

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08.1	correct diagram drawn to scale		1
08.2	line drawn from object to lens and passing through focus line drawn from object through centre of lens two lines drawn back and crossing at top of image		1 1 1
08.3	virtual image because cannot be projected onto screen		1 2
08.4	magnification ×2	**1** mark each for workings and answer	2
09.1	curved line chosen or student A		1
09.2	both variables are continuous		1
09.3	1.5		1
Ⓗ 10.1	32A (2)		2
Ⓗ 10.2	62400 turns (2)		2

10.3	increasing the voltage reduces the current		1
	therefore reducing energy loss in the cables		1
11.1	weight = arrow down from base of crate	4 marks for 3 correct lines and labels	4
	reaction force = arrow up from top of crate	3 marks for 2 correct lines and labels	
		2 marks for 1 correct line and label	
	friction force = arrow pointing right from right side of crate	1 mark for all lines correct but no labels	
11.2	a correct vector diagram drawn to scale	an answer of 122-1280N in a WSW direction gains **1** mark	3
12.1	elastic potential		1
12.2	the velocity of rocket increases so the air resistance increases		1
	eventually the air resistance will balance the weight		1
	so the rocket will reach terminal velocity		1
12.3	rocket A will land first		1
	(because) it will gain more gravitational energy to convert to kinetic energy so the descent speed will be greater		1
Ⓗ 13.1	a sound above the range of human hearing or above 20,000Hz		2
Ⓗ 13.2	5.6×10^{-3} m	11.2×10^{-3} gains **2** marks $(3.5 \times 10^{-6})(3.2 \times 10^{3})$ gains **1** mark	3
Ⓗ 13.3	important there are no cracks or flaws in the material for safety reasons		2
Ⓗ 13.4	pre-natal scans/ checking for internal injuries	do not accept non imaging answer e.g. smashing kidney stones	1
14.1	884 N		3
14.2	elastic potential energy		1
14.3	75 joules		3
14.4	the point at which it will not return to original length after loading		1
14.5	to avoid bias		1
Ⓗ 15.1	20000 Hz		1
Ⓗ 15.2	waves can be absorbed or transmitted at the boundary between two different materials		2
Ⓗ 15.3	X-rays can harm the baby/cause cancer		1

		(but) ultrasound is considered safe		1
H	16.1	7.4m/s in the original direction		4
H	16.2	3400N		2
H	16.3	seat belt stretches (so) this increases the impact time (and) the force of the impact is spread across the chest		1 1 1
H	16.4	thick rubber edges on dodgem car		1