



## FORM 3

## PHYSICS

## MARKING SCHEME

SECTION A		40 MARKS	
Question	Answer	Mark	Additional Guidelines
1 a (i)	Any one of the following: crude oil, natural gas, coal, petrol, diesel, kerosene	1	accept other relevant answer
1 a (ii)	Readily available/ Concentrated sources of energy	1	
1 a (iii)	Because they eventually run out	1	can be used only once
1 b (i)	Any <b>one</b> of the following: not readily available, wind farms can be eyesores, danger to birds, noise produced by wind farms, high initial investment required	1	accept other relevant answer
1 b (ii)	Any <b>two</b> of the following: solar, wave, hydroelectric, biomass, geothermal, tidal	2	
1 c	45% efficient	2	accept '0.45'

2 a (i)	Mass remains the same	1	
2 a (ii)	Pressure decreases	1	
2 a (iii)	Density remains the same	1	
2 a (iv)	Speed decreases	1	
2 a (v)	Internal energy decreases	1	
2 b (i)	0.12 m <sup>3</sup>	1	accept '0.12'
2 b (ii)	0.132 kg	1	accept '0.132'
2 c	vacuum	1	

3 a (i)	tilt	1	
3 a (ii)	less	1	
3 b	planet, star, solar system, galaxy	1	
3 c	<ul style="list-style-type: none"> <li>• mass on Mars = 900 kg</li> <li>• weight on Earth = 9000 N</li> <li>• weight on Mars = 3600 N</li> </ul>	1 1 1	
3 d	Any <b>two</b> of the following: use of satellites, industry providing jobs, collaboration between countries, defend our planet from potential dangers, advances in everyday technology, colonisation of other planets	2	accept other relevant answers

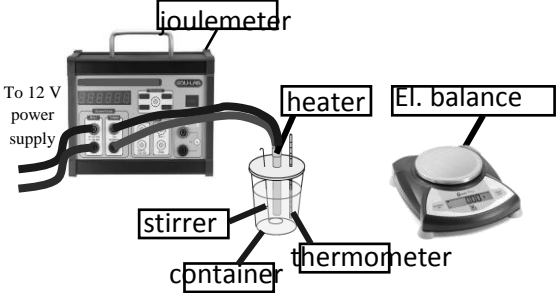
4 a	conservation of energy	1	
4 b (i)	3.125 J	2	1 mark for unit
4 b (ii)	3.125 J	1	accept '3.125'
4 b (iii)	1.25 m	2	accept '1.25'
4 c	heat sound	1 1	

5 a (i)	<ul style="list-style-type: none"> <li>• Friction</li> <li>• Tension</li> </ul>	1 1	
5 a (ii)	Correct drawing of reaction.	1	
5 b (i)	metre rule	1	accept 'ruler'
5 b (ii)	Extension and load are directly proportional	1	graph is a straight line through origin accept any other relevant answers
5 b (iii)	70 cm	2	1 mark if answer given is 30cm
5 b (iv)	Correct straight line with less steep gradient	1	

SECTION B		45 MARKS	
Question	Answer	Mark	Additional Guidelines
6 a	Force Distance	1 1	accept 'weight' instead of 'force'
6 b (i)	Correct graph	5	1 mark for correct labelling of axes 1 mark for graph title 2 marks for correct plotting of graph 1 mark for correct size of graph
6 b (ii)	An increase An increase An increase	1 1 1	
6 c (i)	is equal to total clockwise moments	1	
6 c (ii)	288 N m	2	accept '288'
6 c (iii)	288 N m	1	accept '288'
6 c (iv)	leans backwards	1	

7 a	The density of wood is less than that of water.	2	
7 b (i)	<ul style="list-style-type: none"> <li>• He needs to find the mass of the beaker first when empty and then when filled with liquid</li> <li>• The volume is noted on the measuring cylinder</li> </ul>	1 1 1	
7 b (ii)	density = mass/volume	1	
7 c (i)	Greater, pressure increases with depth	1	

7	c	(ii)	Correct drawing	2	
7	d	(i)	114 450 000 Pa	2	1 mark for unit
7	d	(ii)	17 167 500 N	2	1 mark for unit
7	d	(iii)	As it has to be roughly equal to atmospheric pressure, so that the pilot inside can be safe	1 1	accept any other suitable answer

8	a	(i)	Iron has a greater density than aluminium	1	accept 'they have a different density'
8	a	(ii)	45 W	2	1 mark for unit
8	a	(iii)	It has a lower specific heat capacity than aluminium	2	
8	a	(iv)	Conduction, Radiation	2	
8	b	(i)		3	1 mark for any two correct labels
8	b	(ii)	Add lagging around the container	2	
8	b	(iii)	4200 J / kg °C	3	1 mark for choice of correct equation 1 mark for working 1 mark for correct answer

**Please Note:** When marking questions that involve calculations, apply the 'follow through' rule. This means that if a student gives a wrong value for part (a) of a question and then uses the value of (a) in the subsequent calculations, marks should be deducted for part (a) only. The subsequent parts should be given full marks if these are correct.