



FORM 3

PHYSICS

MARKING SCHEME

SECTION A		40 MARKS	
Question	Answer	Marks	Additional Guidelines
1 (a)	A - floats, B- floats	2	
1 (b)	A - sinks, B- floats	2	
1 (c)	Students should indicate the position of the liquids on the diagram. Water is at the bottom followed by liquid Y then liquid X on top.	2	Do not accept any other answer.
1 (d)	1. An empty measuring cylinder is placed on a balance and its mass read (reading1). 2. The liquid is poured into the measuring cylinder and its mass read (reading2). 3. Reading 2 - Reading 1 to get mass of liquid.	1	Accept any other suitable answer.
		1	

2 (a)	A	1	
2 (b)	Force acting over a small area gives a large pressure / Pressure is inversely proportional to area	1	
2 (c) (i)	3.0 cm ²	2	Deduct 1 mark for missing or incorrect units.
2 (c) (ii)	12 cm ²	1	Accept 12 as answer.
2 (d)	50 N /cm ² or 500,000 N/m ²	2	Deduct 1 mark for missing or incorrect units.
2 (e)	The pressure will increase	1	

3 (a) (i)	Catherine pushes the piston inwards	1	Accept any other suitable answer.
3 (a) (ii)	As pressure increases, the volume decreases	1	Accept any other suitable answer.
3 (a) (iii)	More Remains the same	1	Accept any other suitable answer.
		1	
3 (b) (i)	37.5 J	2	Deduct 1 mark for missing or incorrect units.
3(b) (ii)	3.1 W	2	Accept units J/s. Deduct 1 mark for missing or incorrect units.

4 (a)	The orbits should be drawn, moon around the Earth and the Earth around the Sun.	1,1	
4 (b)	365 days	1	
4 (c)	Gravitational Force/Force of gravity	1	
4 (d)	540N	2	Deduct 1 mark for missing or incorrect units.
4 (e)	John's weight is less on the moon The mass of the moon is less than that of the Earth so the gravitational force is less	1	
		1	

5 (a)	force , extension , elastic	1,1,1	
5 (b)	Draw an appropriate diagram	3	1 mark is dedicated to each of the following : <ul style="list-style-type: none"> • ruler attached to clamp • weight attached to spring • pointer
5 (c)	Taking ruler readings at eye level. Taking repeated readings from the ruler. Placing the ruler exactly vertical next to the spring.	1,1	Accept any two.

SECTION B		45 MARKS	
6 (a) (i)	270J	2	Deduct 1 mark for missing of incorrect units.
6 (a) (ii)	Convection Radiation	1,1	
6 (a) (iii)	Water is a better conductor than air	1	Accept any other suitable answer.
6 (b) (i)	solar, absorb, tank	1,1,1	
6 (b) (ii)	To increase the surface area so more heat energy is absorbed.	1	Accept any other suitable answer.
6 (b) (iii)	Copper – copper is a good conductor of heat energy Black – is a better absorber of heat energy .	1 1	
6 (c) (i)	15°C	1	
6 (c) (ii)	5 040 000J	2	Accept 5040kJ
6 (c) (iii)	2520 s	1	Accept 42 minutes

7 (a) (i)	The weight of the fish	1	Accept 'fish'
7 (a) (ii)	Both arrows drawn correctly close to the line of force in the correct direction	1,1	
7 (a) (iii)	7.5 Nm	2	Deduct 1 mark for missing or incorrect units.
7 (a) (iv)	7.5 Nm	1	
7 (a) (v)	is equal to the sum of the anticlockwise moment	1	
7 (a) (vi)	25 N	2	Deduct 1 mark for missing or incorrect units.
7 (b) (i)	At maximum height it has maximum gravitational Potential Energy .	1	Accept P.E.
7 (b) (ii)	0.5 kg	1	
7 (b) (iii)	6J	2	Deduct 1 mark for missing or incorrect units
7 (b) (iv)	6J	1	
7 (b) (v)	Law of conservation of Energy	1	

8 (a) (i)	Oil	1	
8 (a) (ii)	Pressure is transmitted equally throughout the liquid/liquid is incompressible.	1	Accept any other suitable answer.
8 (a) (iii)	200 Pa	2	Accept N/m ² Deduct 1 mark for missing or incorrect units.
8 (a) (iv)	200 Pa	1	Accept 200.
8 (a) (v)	600 N	2	Deduct 1 mark for missing or incorrect units.
8 (b) (i)	Appropriate 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
8 (b) (ii)	150 kPa 20 cm ³	1 2	Give 1 mark if ans is 0.05 cm ⁻³