

Question number	Answer	Notes	Marks
2 (a)	9 (kPa);		1
(b)	(liquid) pressure = depth (of liquid) $\times$ density $\times g$ ;	accept d, h, height for depth rho, $\rho$ for density g.f.s or gravitational field strength for $g$  reject gravity for $g$	1
(c)	substitution; rearrangement; evaluation;  e.g. pressure difference = 9 kPa $9\,000 = d \times 960 \times 10$ $d = 9000 / (9600)$ $d = 0.94 \text{ (m)}$	allow ecf from (a)  allow use of $g = 9.8(1) \text{ m/s}^2$ giving 0.96 m  allow 0.937(5) POT error penalty of 1 mark, except if formula is incorrect i.e. no 'g'	3

Total for Question 2 = 5 marks

Question number	Answer	Notes	Marks
4	MP1 nebula/gas cloud; MP2 protostar; MP3 main sequence (then red supergiant); MP4 supernova; MP5 neutron star/ black hole;	1 mark penalty for any incorrect sequence	5

Total for Question 4 = 5 marks

Question number	Answer	Notes	Marks
5 (a)	substitution into given equation $v^2 = u^2 + (2 \times a \times s)$ ; evaluation of $v^2$ ; evaluation of $v$ to 3sf or more i.e. 16.1 (m/s);  e.g. $v^2 = u^2 + (2 \times a \times s)$ $v^2 = 0^2 + (2 \times 10 \times 13)$ $v^2 = 260$ $v = \sqrt{260} = 16.1 \text{ (m/s)}$	accept $mgh = 1/2mv^2$  accept use of $g = 9.8(1) \text{ m/s}^2$ giving $v = 16.0, 15.97$ etc.	3
(b)	any FIVE from:  MP1 ball has weight;  MP2 ball accelerates;  MP3 drag increases (while accelerating);  MP4 resultant force decreases;  MP5 (so) acceleration decreases;  MP6 drag = weight / resultant = 0 / forces balanced;  MP7 terminal velocity/constant speed /acceleration=0;	allow 'has gravitational force' REJECT 'has gravity'  REJECT 'balls slows down'  allow 'air resistance' for 'drag'	5

Total for Question 5 = 8 marks