## 4.6 PHYSICS (232)

## 4.6.1 Physics Paper 1 (232/1)

## SECTION A (25 MARKS)

1.	Earth's gravity is higher than the moon's gravity.	(1 mark)
2.	7.3 - 6.0 = 1.3cm	(1 mark)
3.	- Using the same oil spilled, to measure a known volume.	(3 marks)
	- Determine the area of spread of the measured volume (on the same water (sample).	
	- Estimate the area of spread on the sea.	
4.	The tube will be very long ✓ since water has much lower density ✓ than	(2 marks)
	mercury.	(
5.	Milk particles move to occupy the spaces between the water particles	(1 mark)
V	through diffusion. ✓	
6.	Brass contracts more ✓ than invar hence contracts leaving the side with	(2 marks)
	invar longer ✓ hence the curve.	
7.	Volume of water displaced = $0.5 \times 0.5 \times 0.5$	(2 marks)
	$= 0.125 \text{m}^3$	
0 =	W of cube. = weight of water displaced	
+	(a floating body)	= v
	= 1×125000g ✓	
	= 125kg	
	$= 1,25 \times 10^3 \mathrm{N} \checkmark$	
8.		(3 marks)
	Tension  ✓ Not touching O on y axis & x axis	
	✓ Maximum tension at B	
	✓ Equal tension at A & C	
	Allow straight line	
	(3)	
	Time	

9.	(a)	(1 mark)
	Path curves upwards	
	<b>√</b> (1)	
_		
		4
	E	
	(b) Because of Bernoullis effect caused by difference in air pressure due	
		en -
	move to the left ✓. Spin is anti-clockwise, a region of low pressure	
1	of forms above ✓ lifting the ball.	(3 marks)
10.	Boyle's law.	(1 mark)
11.		( 2 mark)
	cog	-
12.		(1 mark)
	l (cm)	
	(1)	
	F(N)	
13.	- Making the bulb thinner. ✓	(2 marks)
	- Making the bore narrower ✓	

## **SECTION B (55 MARKS)**

14. (a) - Boiling takes place at fixed temperature while evaporation	(2 marks)
takes at all temperatures. ✓	
- Boiling takes place in the entire liquid while evaporation takes	· · · · · · · · · · · · · · · · · · ·
place at the surface. ✓	
(b) - Presence of a vacuum. ✓	(3 marks)
- Poor conductor material used to make stopper. ✓	
- Use of glass (poor conductor). ✓	
(c) (i) Heat lost by steam at 100°C.	
ML <sub>v</sub> =5.0×10 <sup>-2</sup> ×2.26×10 <sup>6</sup> ✓	(2 mortes)
$= 11.3 \times 10^4$	(2 marks)
1.13×10⁵J ✓	¥
(ii) Heat lost by hot water to cool to 0°C.	(2 marks)
$MC\Delta\theta = 5.0 \times 10^{-2} \times 4.2 \times 10^{3} \times 10^{2} \checkmark$	T <sub>a</sub>
$= 2.1 \times 10^4 \text{J} \checkmark$	
	(3 marks)
(iii) Amount of ice melted at 0°C.	
$M_{ice}L_f = MIv+MC\Delta\theta \checkmark$	
$M = \frac{2.1 \times 10^4 + 1.13 \times 10^5}{3.34 \times 10^5} \checkmark$	
= 0.401kg.	
= 401g ✓	

15. (a)	A body remains in its state of rest or uniform motion in a straight	(1 mark)
	line ✓ unless acted upon by an external force. ✓	
(b)	(i) Slope = $\frac{\Delta u^2}{\Delta x}$	(3 marks)
0	$= \frac{50-0}{8-0} \checkmark$	
	= 6.25 ✓	
	$u^2$ $u^2$	
	(ii) $\frac{u^2}{x} = 20$ k but $\frac{u^2}{x} = slope$	(2 marks)
	$k = \frac{slope}{20} \checkmark$	
Q	$=\frac{6.25}{20}$	
X	$k = 0.3125 \checkmark$	
+	(iii) K would reduce ✓ since friction has reduced ✓	(2 marks)
(c)	$Hmax = \frac{u^2}{2g} \checkmark$	(3 marks)
	$=\frac{30\times30}{2\times10}\checkmark$	
	$=\frac{90}{2}=45\text{m} \checkmark$	

16. (a)	(i)	(I) power = $\frac{\text{Work done}}{\text{time}}$	(2 marks)
	1	$=\frac{80000}{4}$	,
	>	= 20000W ✓	
	E		
	-D	(II) $d = \frac{\text{work}}{\text{force}} \checkmark$	(2 marks)
	0	$= \frac{80000}{20000}$	
		= 4 m ✓	
5		(III) Efficiency = $\frac{\text{Workoutput}}{\text{Workinput}} \times 100\%$ $\checkmark$	(2 marks)
π		$= \frac{20000}{25000} \times 100$	
		= 80.00 % <b>✓</b>	
1	(ii)	Mechanical energy → heat and sound.	(2 marks)
(b)	11.		(1mark)
	Po Er	otential nergy	
		Since it accelerates towards the ground	
		√ (1)	
1	-	Time	
		I	

17. (a)	Pres	sure applied at one part in a liquid is transmitted equally to all	(1 mark)
	othe	r parts of the enclosed liquid. ✓	
(la)			(2 1)
(b)	(i)	Liquid y is denser since it $\checkmark$ rises to a smaller height i.e. the	(2 marks)
	>	atmospheric pressure supports a lower height of y than $x$ .	
	E	2.2	( 2
	(11)	$h = \frac{2.2}{3.6} \times 20$	( 2 marks)
	T		
	10	10.00	
	0	= 12.22 cm	
( )			
	(;;;)	d 3.6	(2 marks)
	(111)	$\frac{d}{p} = \frac{3.6}{2.2} = 1.636 \checkmark$	(2 marks)
	-	$d = 1.6  \rho \checkmark$	1
	(1)		
(c)	(i)		(2 )
$\sim$			(3 marks)
	O.	- Two containers	
1	0	placed such that the levels are at different heights	
	11.	Expel air from the tube after placing in	
		container with liquid Diagram	
			e e
1			
	(ii)	<ul> <li>The flushing of a toilet ✓ or</li> </ul>	
		Drinking using a straw.	(1 mark)
		Dilliking using a snaw.	, ,

18. (a)	- Mass	(2 marks)
	- Temperature	* * *
(b)	(i) The gas is less dense than the water. ✓	(1 mark)
	(ii) As it rises the pressre around the bubble reduces and since the	(1 mark)
	temperature is the same, the volume increases. ✓	
(c)	- The size of the molecules is assumed to be neglibible. ✓	(2 marks)
	- Intermolecular forces are also assumed to be negligible. ✓	Lin
	- Real gases can never have zero volume yet the gas laws	
	assume presence of zero volume.	
		2
	(Any two correct)	
(d)	(i) - The pressure law. ✓	(2 marks)
	- Has ability to measure the temperature and the pressure	
•	while keeping the volume constant. ✓	(1 mark)
		0 и
1	(ii) - Source of heating for the temperature to be changed. ✓	2 <u>#</u>
(e)	$\frac{V_1}{T_1} = \frac{V_2}{T_2}  \checkmark$	(3 marks)
-1	$T_2 = \frac{300 \times 90}{500} \checkmark \checkmark$	
	= 54k	