LAIKIPIA EAST TERM 2 2022 FORM 4 EVALUATION EXAM

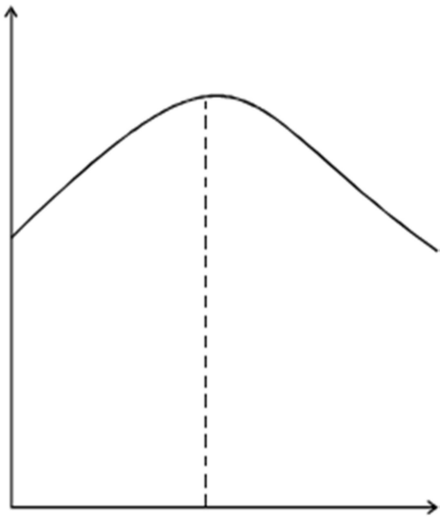
Kenya Certificate of Secondary Education – K.C.S.E

PHY PP1
MARKING SCHEME

1.	(a)	$0.01mm$	1mk
	(b)	Main scale reading = 10.00mm Head scale reading = 0.26mm 10.26 mm Add zero error 0.12 mm 10.38mm	2mks
2.		- Cold water higher density hence greater upthrust - Hot water lesser density hence lower upthrust	2mks
3.		- Body moves with decreasing acceleration	1mk
4.		Detergent lowers / breaks / reduces surface tension	1mks
5.		- Water in a container A - Cold water from the melted ice in container A sinks to the bottom setting up convectional current	2mks
6.		$P_A + h_2Pg = Pg + h_1Pg$ $1.02\times10^5 + 0.12\times800\times10 = Pg + 0.08\times1800\times10$ $102000+960 = Pg + 15168$ $Pg = 1.014\times10^5\, pa$	3mks
7.		- The smoke particles lower their speed due to decrease K. E	1mk

8.	Clockwise moment = anticlockwise moment $0.4 \times T = 1.6 \times 40$ $0.4T = 64$ $T = \frac{64}{0.4} = 160N$	3mk
9.	2g causes extension of 1.5cm (6g - 4g) = 2g x = 3.5 + 1.5 = 5 cm	2mks
10.	- The centripetal force at the top of the path is greater than the weight of the water	1mk
11.	(a) A expands move than B.	1mk
	(b) A expands more than B at same temperature change hence higher upthrust in A than in B. momentum (clockwise) is greater than anticlockwise moment. 1	
12.	R = V t −6	

		SECTION B (55 MARKS)	
13.	(a)	Velocity Ratio = 5	1mk
	(b)	Mechanical advantage = 4000/1000 = 4	1mk
	(c)	E = MA/VR X 100 4/5 X 100 = 80%	
	(d)	- Energy lost in overcoming the friction - Energy lost is raising the moving parts of the machine.	1mk (Either)
	(e)	Work done = Load × distance moved by load. $= 4000 \times \frac{5}{100} = 200J$	
14.	(a)	Temperature is measured in Kelvin while heat is measure in Joules.	1 mk

(b)	(i)	4°C + 273	
	(ii)	 **Density gm/cm³**	
(iii)	I	Q = Pt = 300 × 5 × 60 =90000 J	
	II III	Q = CΔθ 90000 = C (40 - 0) C = 45000/40 =2250J/K Q = MCΔθ M = 90000/4200 X 40 = 0.5357Kg	
15.	a)	A floating body displaces its own weight of the fluid it floats on	1mk
1	b)i)	1.10g/cm³ lower mark in the water Volume of liquid displaced = $\frac{165}{1}$ = 165cm³ Volume of liquids displaced = $\frac{165}{1.10}$ = 150cm³	

2	ii)	Volume = area × length $15 = 0.75 \times L$ $L = 20cm$	
	iii)	Making the stem very narrow.	
	c)	$= g$ 450 $\times 10 \rightarrow 4.5$ 1000 $= eighi\ ai - ph$ $4.5 - 1.6$ $= 2.9$	
16. a)	Electrostatic force of attraction between the electron and nucleus		1mk
b) I	$F_C = \omega^2$ $0.4 = 0.05 \times 0.1 \times \omega^2$ $\omega^2 = \frac{0.4}{0.005} \rightarrow 80$		
II	$\omega = \frac{2\pi}{T}$ $8.944 = \frac{2 \times \pi}{T}$ $T = \frac{2\pi}{8.944}$ $= 0.7025$		

17. a) i) The volume (represented by the scale) and corresponding pressure reading on the burden gauge.

ii) Take at least 5 pairs of volume and pressure
Plot a graph of pressure against $\frac{1}{\text{volume}}$
If a graph of a straight line passing through the origin is obtained.
This is a proof that Boyles law is obeyed.

NB (Points are joined with the line of best fit) 1mk

b)	i) K = Gradient ii) Gas liquefies at high temperatures before reaching O Kelvin. High pressure may liquify the gas even before reaching 0°C iii) 47°C = 47 + 273 = 320K Pressure at 320K = 10×10^4 pascals (it must be shown on the graph)	1mk
c)	$P_1V_I/T_I = P_2V_2/T_2$ $4X4.5/300 = 4V_2/380$ $V2 = 3.25L$	
18. a)	Mass M was at state of rest	1mk
b)	i) Inelastic collision ii) $M_1V_1 + M_2V_2 = (M_1 + M_2)\ V$ $(10000 \times 20) + 0 = (10{,}000 + 4{,}000)\ V$ $200{,}000 = 14{,}000\ V$ $V = 14286\ ms^{-1}$ iii) Kinetic energy is lost / not conserved	3 mks
c)	Normal reaction - W = Ma Reading = m(g + a) ***1*** = 50 (10 + 2) = 600N ***1***	