FIRST YEAR

Kerala Board Answer Key 2023



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ANSWER KEY

Code No	FY-424

FIRST YEAR HIGHER SECONDARY EXAMINATION MARCH 2023

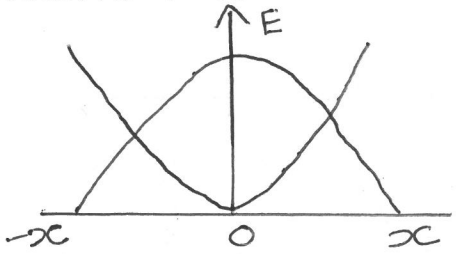
PART-~~I~~II/III

SUBJECT : PHYSICS

60 SCORES 2 HOURS

Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
1		IV. 10^{-10} m.	1	5
		or any option. Score - 1		
2.		Mass	1	
3.		True	1	
4.		Centre of mass.	1	
5		Fusion / Freezing / Solidification.	1	
6.		Temperature.	1	
7		Frequency / wave length.	1	
8.		Initial velocity, $u = u$. acceleration, $a = -g$ $V = 0$ $V = u + at$ $0 = u - gt$ $t = \frac{u}{g}$. OR $t = \frac{u\sin\theta}{g}$ / $V = u + at$ —(1 Score)	1 1 1	2
9		The magnitude of vector is zero and has an arbitary direction Any two properties / magnitude is zero -(2 Score)	1 1	2

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
10	a)	Conservative force. 	1	2
	b)		1	
11		1. Mass of the body 2. Size and shape 3. Distribution of Mass about the axis of Rotation 4. position and orientation. (Score $\frac{1}{2} \times 4 = 2$) OR $I = MR^2$ / $I = MK^2$ (1 score)	2	2
12	a.	ii). $t_1 = t_2$	1	2
	b.	Statement OR LAW OF Area / kepler's 2nd Law. (1 score)	1	
13	a.	Surface tension / To minimise Surface area.	1	2
	b.	Surface Tension OR A or B Correct (2 Marks)	1	
14	a.	Conduction	1	2
	b.	Convection. OR RADIATION - (1 score)	1	
15.	a.	At the Maximum height of a body projected Vertically upward OR Any correct example / SHM (1 score)	1	3
	b.	Proof OR Graph only - 1 Any relevent method - 2	2	

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
16	a.	Law of Conservation of momentum.	1	
	b.	Derivation or Mass of the gun more / mass of the bullet Less / equation score - (2)	2	3
17	a.	Young's Modulus OR Any Explanation about elasticity (score - 1)	1	
	b.	for a given stress, Strain is less	1	3
	c.	Compressibility $= \frac{1}{\text{Bulk modulus}} = \frac{1}{2\times10^{9}} = 0.5\times10^{-9}$	1	
18	a	YES explanation or equation of Continuity / Bernoulli's principle / Area increases pressure decreases. score (1)	1 1	3
	b.	Definition. or η = stress / strain rate / $\eta = \frac{F}{6\pi a v}$ (Score - 1)	1	
19.	a.	Statement OR equation (Score - 1)	1	
	b.	Derivation OR $W = \int p\,dV$ / $pV = nRT$ / Final equation only (Score - 1)	2	3

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
20.	a	statement. or $E = \frac{1}{2} k_B T$ – (Score – 1)	1	
	b.	Hydrogen $V_{rms} \propto \frac{1}{\sqrt{m}}$ or Hydrogen (Score – 1)	1	3
	c.	Explanation. or. Correct equation / $KE \propto T$ (Score – 1)	1	
21	a	Derivation or equation only / Fig. only Score – 1 Any method. Score (2)	2	3
	b.	No / Explanation	1	
22.	a.	Definition or [LHS] = [RHS] (Score – 1)	1	4
	b.	Correct Derivation or Dimension of M, V, g, h ($\frac{1}{2}$ score each) Dimensionally Correct (score 1)	2	
	c.	i. 5 (score ½) ii. 5 (Score ½)	1	

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
23	a.	Diagram and marking.	2	4
	b.	[illegible] derivation or Derivation $V_{max} = \sqrt{\frac{Rg(\mu+\tan\theta)}{1-\mu\tan\theta}}$ Score $(1\frac{1}{2})$ $\mu = 0$ $V_{max} = \sqrt{Rg\tan\theta}$ Score $\frac{1}{2}$	2	
24	a	$P = \sqrt{2mE}$ $M_L > m_e$ so $P_L > P_c$ or Lorry (Score - 1)	1	4
	b	Proof or Statement / Final equation (score 1)	3	
25	a.i)	Standing wave Definition or Figure only (score 1)	1	4
	ii)	Derivation or Figure of two mode (Score 2) / both equation	2	
	b.	Antinode / Node	1	
26	a.	Parabola. or Figure Score - 1	1	
	b.	Derivation	2	

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
	C.	$H = \frac{R}{2}$		
		$H = \frac{u^2 \sin^2\theta}{2g}$	1	
		$H_{max} = \frac{u^2}{2g} = \frac{1}{2}\frac{u^2}{g} = \frac{1}{2}R$	1	5
		OR equation of H / Equation of R (Score -1 (each))		
27	a.	Statement	1	
		or equation (Score -1)		
	b.	$L = I\omega$		
		i. Out stretching I increases, ω decreases.	1	
		ii. folding I decreases, ω increases.	1	5
		OR $L = I\omega$ (Score - 1)		
	C.	Derivation	2	
		or Final answer (Score 1)		
28	a	iv. 11 km/s	1	
	b.	Derivation	3	
		or Final equation only (1 Score)		
		$V = \sqrt{2gR}$ / $V = \sqrt{\frac{2GM}{R}}$ Score (1)		5
	C.	r.m.s velocity of gas molecules > escape velocity from moon.	1	

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Qn. No	Sub Qns	Answer Key/Value Points	Score	Total Score
29	a.	i). Acute	1	
	b.	Derivation Or Diagram only (1 score) /final equation	3	5
	c.	$h \propto \frac{1}{r}$ Or $h = \frac{2S\cos\theta}{r\rho g}$ (Score 1)	1	

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