國立彰化高級中學 113 學年度校內學科能力競賽物理科答案卷

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共 45 題填充題，每格 4 分共 180 分

1(a)	1(b)	1(c)	2(a)	2(b)
$3x^2 + 10x - 3$	$15\cos(3x+8)$	$\dfrac{5}{5x+2}$	$-21\cos\dfrac{t}{3} + C$	2030
3	**4**	**5(a)**	**5(b)**	**5(c)**
$T(r) = \dfrac{M\omega^2}{2L}(L^2 - r^2)$	$\dfrac{\sqrt{2}R}{v}$	$R' = 8R$	$v' = \dfrac{1}{6}v$	$T = \dfrac{27}{\sqrt{2}}\dfrac{\pi R}{v}$
6	**7**	**8**	**9**	**10**
2:3	60º	6W	$v = \sqrt{\dfrac{gR}{2}}$	$v' = \dfrac{d}{\sqrt{d^2 + L^2}}v$
11	**12**	**13**	**14**	**15**
$v_{max} = \dfrac{\sqrt{3gR}}{2}$	$\dfrac{v_0^2(\mu\sin\theta + \cos\theta)}{g(\mu\cos\theta - \sin\theta)}$	ACD	$\dfrac{20}{9}mg$	20
16	**17**	**18**	**19**	**20**
1.25	2	$\dfrac{3W}{8}$	$\dfrac{mgR}{4S}$	$\sqrt{\dfrac{2m_2 gh\cos^2\theta}{m_1 + m_2\cos^2\theta}}$
21	**22**	**23**	**24**	**25**
$\dfrac{GMm}{9R}$	$\dfrac{g}{\sqrt{2}}$	1.5	$\dfrac{\pi}{4}$ or $\dfrac{\pi}{2} - \alpha$	16
26(a)	**26(b)**	**26(c)**	**26(d)**	**27**
$2\pi\sqrt{\dfrac{R^3}{GM}}$	$\sqrt{\dfrac{GM}{R}}$	$\sqrt{\dfrac{14GM}{9R}}$	$\dfrac{27}{4}\pi\sqrt{\dfrac{R^3}{GM}}$	$\dfrac{5m^2 g^2}{48k}$
28(a)	**28(b)**	**29(a)**	**29(b)**	**30**
$l - \dfrac{v}{\omega}\sin\omega t$	$\dfrac{2m_1}{m_1 + m_2 + m_3}v$	$\dfrac{1}{k}\sqrt{m^2 g^2 + mghk}$	$\sqrt{\dfrac{mg^2 + ghk}{2k}}$	$\cos\theta = 1 - \dfrac{6m^2 h}{(3m+M)(2m+M)l}$
31(a)	**31(b)**	**32**	**33**	**34**
30º	W	$\sqrt{\dfrac{46}{27}gR}$	1.5	$\dfrac{\sqrt{3}}{2}R$