

解 答 紙

(3 枚のうち 1 枚目)

[1] (45点)

[] の採点

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問1

(1) $\sqrt{2gl(\cos \theta - \cos \theta_0)}$

(2) $\frac{3}{5}\sqrt{2gl(1 - \cos \theta_0)}$

(3) $\frac{6}{5}mgl(1 - \cos \theta_0)$

(4) $\frac{9}{25}l(1 - \cos \theta_0)$

問2

(1) $-ev_0$

(2) $\pi\sqrt{\frac{l}{g}}$

(3) $(-1)^{n-1}3mv_0$

(4) $-e^nv_0$

(5) $\frac{3}{5}v_0$

解答紙

(3枚のうち2枚目)

[] (40 点)

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問 1	(1)	qE					
	(2)	$\frac{E}{v}$					
	(3)	$2qE_px_1$					
	(4)	$\frac{mv^2}{4qx_1}\left\{\left(\frac{B_w}{B_V}\right)^2-1\right\}$					
	(5)	A	(c)			T	(g)
問 2	(1)	$\frac{Kv_1ab}{R}$					
	(2)	$IKab$					
	(3)	RI^2t_0					

解答紙

(3 枚のうち 3 枚目)

〔Ⅲ〕 (40 点)

〔Ⅲ〕の採点

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問 1	(1)	$p_B = \frac{p_A V_A}{V_B}$	
	(2)	4	
	(3)	$\Delta U = \frac{3}{2} n R (T_{CD} - T_{AB})$	
	(4)	$\frac{V_C}{V_B} = \frac{T_{AB}}{T_{CD}} \sqrt{\frac{T_{AB}}{T_{CD}}}$	
問 2	(1)	(ア)	$W_{AB} = Q_{in}$
		(イ)	$W_{BC} = \frac{3}{2} n R (T_{AB} - T_{CD})$
		(ウ)	$W_{CD} = -Q_{out}$
		(エ)	$W_{DA} = \frac{3}{2} n R (T_{CD} - T_{AB})$
	(2)	$Q_{in} = n R T_{AB} \log_e \left(\frac{V_B}{V_A} \right)$	
		$Q_{out} = n R T_{CD} \log_e \left(\frac{V_B}{V_A} \right)$	
	(3)	$e_1 = 1 - \frac{T_{CD}}{T_{AB}}$	
	(4)	5	
問 3	(1)	$\frac{V_{C'}}{V_C} = \frac{T_{AB}}{T_{CD}}$	
	(2)	e	