

[I] (ア) \sqrt{gR} (イ) $\frac{3}{2}mg$ (ウ) e^2R
 (エ) $\frac{(1+e)mM}{m+M}\sqrt{2gR}$ (オ) $\frac{m}{m+M}\sqrt{2gR}$ (カ) $\frac{e^2M}{m+M}R$
 (キ) $\sqrt{\frac{2m^2gR}{M(m+M)}}$ (ク) $\frac{2m}{m+M}R$ (ケ) e^2R

[II] (ア) $t_1 + \frac{x_0 - ut_1}{V+u}$ (イ) $2\pi f_0 \left(\frac{V+u}{V}t - \frac{x_0}{V} \right)$ (ウ) $\frac{V+u}{V}f_0$
 (エ) $\frac{V}{f_0}$ (オ) $\frac{\pi r}{v_s} + \frac{2r}{V}$ (カ) $\frac{\pi r f_0}{v_s}$
 (キ) $\frac{r}{L}$ (ク) $\frac{V}{V+v_s}f_0$ (a) (1)

[III] (ア) $\frac{Q}{Cd}$ (イ) $\varepsilon_1 C$ (ウ) $\frac{Q}{\varepsilon_1 C}$
 (エ) $-Q \left(1 - \frac{1}{\varepsilon_1} \right)$ (オ) $\frac{(\varepsilon_1 - 1)Q^2}{2\varepsilon_1 C}$ (カ) $\frac{Q}{\varepsilon_2 Cd}$
 (キ) $\frac{Q}{3C} \left(\frac{2}{\varepsilon_1} + \frac{1}{\varepsilon_2} \right)$ (ク) $3C \cdot \frac{\varepsilon_1 \varepsilon_2}{\varepsilon_1 + 2\varepsilon_2}$ (ケ) $q - Q$

解答図 (III-A)

