

〔 I 〕

$$\begin{array}{lll}
 (\text{ア}) & \sqrt{2gh_1} & (\text{イ}) & -\frac{k}{M}z & (\text{ウ}) & -\frac{2m}{M+m}\sqrt{\frac{2Mgh_1}{k}} \\
 (\text{エ}) & \frac{\pi^2 Mg}{8k} \left(\frac{M+m}{M-m} \right)^2 & (\text{オ}) & \sqrt{2gh_1} & (\text{カ}) & \frac{m}{M+m}\sqrt{2gh_2} \\
 (\text{キ}) & -\frac{mg}{k} \left\{ 1 + \sqrt{1 + \frac{2kh_2}{(M+m)g}} \right\} & & & (\text{ク}) & \frac{Mg}{k} \\
 (\text{ケ}) & \frac{(M+m)g}{2k} \left\{ \left(\frac{M+m}{m} \right)^2 - 1 \right\} & & & &
 \end{array}$$

〔 II 〕

$$\begin{array}{lll}
 (\text{ア}) & -\frac{5\sqrt{5}}{8}q & (\text{イ}) & -\frac{kq}{8d} & (\text{ウ}) & \frac{kq}{8d^2} \\
 (\text{エ}) & ke \left\{ \frac{q}{X^2} - \frac{QX}{(X^2+d^2)^{3/2}} \right\} & (\text{オ}) & ke \left(\frac{q}{X} - \frac{Q}{\sqrt{X^2+d^2}} \right) & & \\
 (\text{カ}) & 5\sqrt{5}q & (\text{キ}) & \sqrt{\frac{7kqe}{md}} & (\text{ク}) & \frac{1}{8}q
 \end{array}$$

〔 III 〕

$$\begin{array}{lll}
 (\text{ア}) & 4\pi P_0 r^2 \Delta r & (\text{イ}) & 8\pi K r \Delta r & (\text{ウ}) & \frac{2K}{r} \\
 (\text{エ}) & \frac{4}{3}\pi r_1^3 \rho g & (\text{オ}) & P_0 + \rho g d_1 & (\text{カ}) & 2\pi r_1^2 \{ (P_0 + \rho g d_1) r_1 + 2K \} \\
 (\text{キ}) & 2\pi P_0 (r_1^3 - r_2^3) + 2\pi \rho g (d_1 r_1^3 - d_2 r_2^3) + 4\pi K (r_1^2 - r_2^2) & & & & \\
 (\text{ク}) & \left(d_1 + \frac{P_0 r_1 + 2K}{\rho g r_1} \right) \left(\frac{r_1}{r_2} \right)^5 - \frac{P_0 r_2 + 2K}{\rho g r_2} & & & &
 \end{array}$$