

1

問 1

(1) $mg \cos \theta$ (2) $mg \sin \theta$ (3) $\frac{1}{2} \mu mg \cos \theta$

問 2

(4) $\frac{1}{\sqrt{3}}$ (5) $2\sqrt{\frac{2l}{g}}$ (6) $\sqrt{\frac{gl}{2}}$ (7) $\frac{m}{M}\sqrt{\frac{gl}{2}}$ (8) $\frac{1}{\sqrt{3}}$

問 3

(9) $\sqrt{\frac{2l}{g}} \left(2 + \frac{Md}{ml} \right)$ (10) $\frac{g}{2} \left\{ Md + ml \left(1 - \frac{m}{2M} \right) \right\}$ (11) $\frac{1}{4} mgl$ (12) $\frac{1}{2} Mgd$

(13) $\frac{(M-m)mgl}{4M}$

2

問 1

(1) $\frac{V}{h}$ (2) $enabv$ (3) $\frac{k}{e^2 n}$ (4) evB (あ) (ア) (5) $\frac{IB}{eaV}$

問 2

(イ) (ウ) (6) 0.5 (7) $\frac{V}{R} \left(\frac{N_2}{N_1} \right)^2$ (8) $r \left(\frac{N_1}{N_2} I \right)^2$ (9) VI

3

問 1

(1) $a \sin \frac{2\pi}{T} t$ (2) $\frac{x}{\lambda} T$ (3) $a \sin 2\pi \left(\frac{t}{T} - \frac{x}{\lambda} \right)$ (あ) (ウ) (4) $\left(\frac{7}{4} - \frac{x}{\lambda} \right) T$

(5) $a \sin 2\pi \left(\frac{t}{T} + \frac{x}{\lambda} \right)$ または $-a \cos 2\pi \left(\frac{t}{T} + \frac{x}{\lambda} - \frac{7}{4} \right)$ (6) $2a$ (イ) B, D, F

問 2

(7) $\sin i = n \sin r$ (8) $2d\sqrt{n^2 - \sin^2 i} = \left(m + \frac{1}{2} \right) \lambda$ (9) $2d\sqrt{n^2 - \sin^2 i} = m\lambda$

(10) 4.3×10^2 (11) 1.4