選擇題 (16×3 分=48 分)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
F	E	D	C	B	A	B	C	F	A	C	E	D	D	A	E

17. (10 分)

(1) 需要 $= 0.7085$ 年 $=$ 258.8 天.

(2) $\dfrac{75-44.32159475}{\dfrac{360}{365.24}(1-\dfrac{1}{1.88})}=66.494$ 11 6

18. (14)

(1) m C $T = 2\pi\sqrt{\dfrac{R}{g}}$ _____.

(2) $\dfrac{h}{R}=\sqrt{1-\dfrac{(M+m)^2}{8M(M-m)}}$.

19. (14)

(1) C B $F=4mg$.

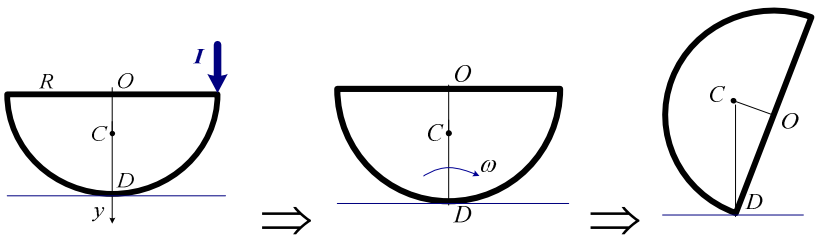
(2) C B

(a) $F=3\sqrt{2}mg$.

(b) $h=\dfrac{v^2}{2g}=\dfrac{3mg}{2k}$; $x_1=\dfrac{3mg+F}{k}=\dfrac{3(1+\sqrt{2})mg}{k}$. $H=h+x_1=\dfrac{3(3+2\sqrt{2})}{2}\dfrac{mg}{k}$.

20. (14 分)

(1) $y_C=\dfrac{1}{m}\int_0^R ydm=\dfrac{\int_0^R y\cdot(\dfrac{2m}{\pi R^2}(2\sqrt{R^2-y^2})dy)}{m}=\dfrac{4}{3\pi}R=0.4244\,R$.

(2) $J_O=J_C+my_C{}^2, J=J_C+m(R-y_C)^{2^2}=(\dfrac{3}{2}-\dfrac{8}{3\pi})mR^2=0.65mR^2$.

(3) $I=\sqrt{(3-\dfrac{16}{3\pi})(\dfrac{4+\sqrt{9\pi^2+16}}{3\pi}-1)}\,m\sqrt{gR}=0.8156m\sqrt{gR}$.