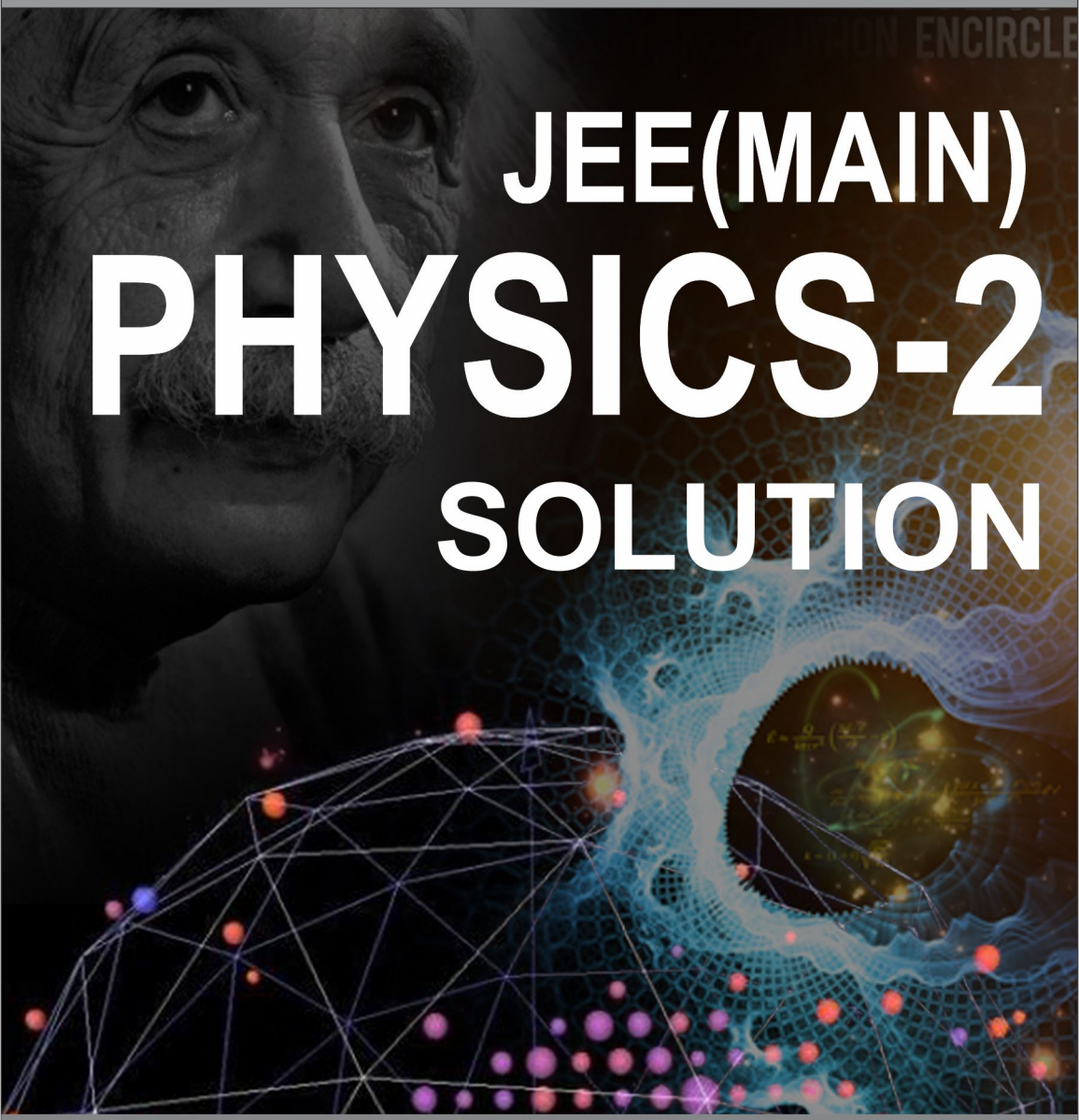
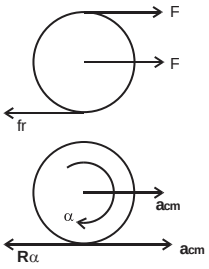


JEE(MAIN)
PHYSICS-2
SOLUTION

Author- Pie Education

SOLUTIONS
PHYSICS

1. **(D)**



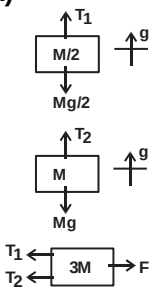
$2F - f_r = ma_{cm}$ **- (1)**

$FR + f_r = \frac{1}{2}mR^2\alpha$ **-(2)**

$a_{cm} = R\alpha$ **(3)**

on solving equation (1), (2) and (3) we get $f_r = 0$

2. **(A)**



$T_1 - \frac{M}{2}g = \frac{M}{2}g$

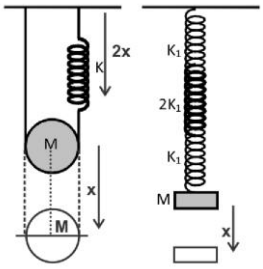
$T_1 = Mg$ **- (1)**

$T_2 - Mg = Mg$
$T_2 = 2Mg$ **- (2)**

$F - (T_1 + T_2) = 3Mg$
$F = 6Mg$

3. **(C)**

In both case time period of oscillation should be same
On displacing the block by x then F_{rest} in both case should be same



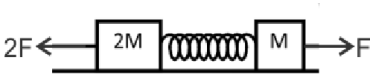
2 x K (2x) = $\frac{2K_1}{5}x$

$\frac{1}{K_{eq}} = \frac{1}{K_1} + \frac{1}{2K_1} + \frac{1}{K_1}$

$K_1 = 10$

$K_{eq} = \frac{2K_1}{5}$

4. **(B)**



$x_{max} = 2\left(\frac{m_1 \times F_2 + m_2 \times F_1}{K(m_1 + m_2)}\right)$

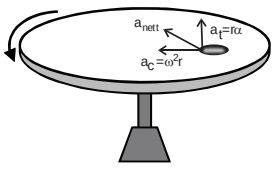
$x_{max} = 2\left[\frac{F(2m) + 2F(m)}{K(2m + m)}\right] = \frac{8F}{3K}$

5. **(D)**

$F_{nett} = \sqrt{N^2 + f_{s\max}{}^2} = 0.5N$

N = mg = 0.4N

$f_{smax} = \mu N = 0.3N$



$f_{smax} = ma_{net}$

$\mu_s mg =$ $m\sqrt{(r\alpha)^2 + (\omega^2 r)^2}$