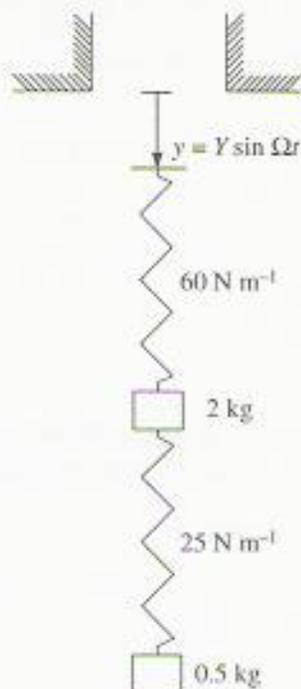


Question 6



The figure shows an undamped lumped-parameter model for a vibration absorber of the type discussed in the television programme associated with *Unit 24*. The masses of the particles and the stiffnesses of the springs are shown in the figure. Select the option which is nearest to the angular frequency  $\Omega$ , in  $\text{rad s}^{-1}$ , for which the particle of mass 2 kg does not move.

Options

- A 3.54    ~~B~~ 5.48    ~~C~~ 7.07    D 11.0  
 E 12.5    F 30.0    G 50.0    H 120

Unit 25

Questions 7 to 10

Consider the function

$$f(x, y) = x^3 y^2 + x^3 + 2xy.$$

- 7 Which option is the value of  $\frac{\partial f}{\partial x}(1, -1)$ ? **F**  
 8 Which option is the value of  $\frac{\partial^2 f}{\partial x^2}(1, -1)$ ? **H**  
 9 Which option is the value of  $\frac{\partial^2 f}{\partial x \partial y}(1, -1)$ ? **A**  
 10 Which option is the value of  $\frac{\partial^2 f}{\partial y^2}(1, -1)$ ? **E**

Options for Questions 7 to 10

- A -4    B -1    C 0    D 1  
 E 2    F 4    G 10    H 12