

Answer on Question #41016, Physics, Mechanics

During one heartbeat about 0.06 kg of blood is accelerated from rest to a velocity of 1m/s upward in a time 0.1s. What is the force creating this movement?

- a) 10 N
- b) 1 N
- c) 0.6 N
- d) 0.06 N
- e) 0.1 N

Solution:

Given:

$$m = 0.06 \text{ kg},$$

$v_i = 0$ is the initial velocity,

$v_f = 1 \text{ m/s}$ is the final velocity,

$$t = 0.1 \text{ s},$$

$$F = ?$$

The force is

$$F = ma$$

where a is the acceleration.

The equation for acceleration is

$$a = \frac{v_f - v_i}{t} = \frac{1}{0.1} = 10 \text{ m/s}^2$$

Thus,

$$F = 0.06 \cdot 10 = 0.6 \text{ N}$$

Answer. c) 0.6 N

