MEDICAL PHYSICS

SEC. ARCHIVE
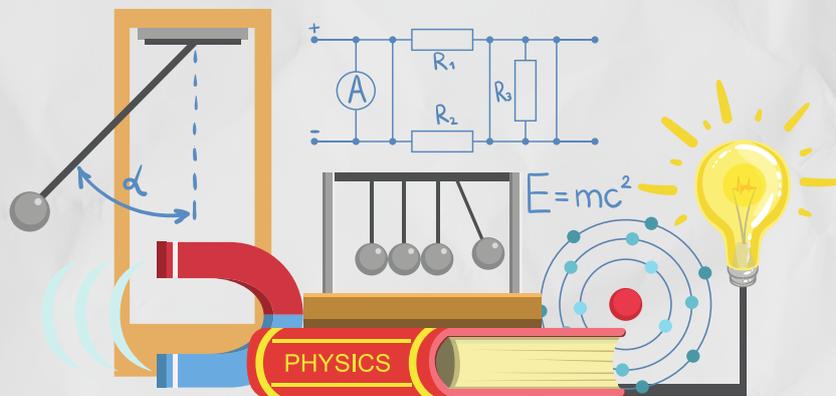
g= 10 m/s*2, 1 atm=1.013x10*5 Pa, p water = 1x10*3kg/m*3, pblood = 1.06x10*3 kg/m*3

1. What is the length of a cube that has a mass of 864 g and a density of 4x10*3 Kg/m??
A) 3 cm.
B) 4 cm
C) 5 cm
D) 6 cm

Answer:D

2.The gauge pressure at a point 4 m below an open surface of a tank filled with water is
A) 40 KPa
B) 30 KPa
C) 87 KPa
D) 50 KPa

Answer:A

3.A 10 kg rock whose density is 5x10*3kg/m*3 is suspended in water by a string such that half of the rock's volume is inside the water. What is the tension in the string?
A) 100 N
B) 110 N
C) 80 N
D) 90 N

Answer:D

4. Water flows throw a multi-sectional pipe placed horizontally on the ground. The velocity is 3 m/s at the entrance and 2 m/s at the exit. What is the pressure difference between these two points?
A) 0.2 KPa
B) 1.0 KPa
C) 2.5 KPa
D) 3.0 KPa

Answer:C

5. At one point in a pipeline, the water's speed is 3 m/s and the pressure is 5×10*4Pa. Find the pressure at a second point in the line, 11 m lower than the first, if the pipe diameter at the second point is twice that at the first.
A) 1.64x10*5 Pa
B) 6.4×10*5 Pa
C) 1.34×10*6 Pa
D) 1.35× 10*6Pa

Answer:A

6. A cable is 100-m long and has a cross-sectional area of 1 mm*2. A 1000-N force is applied to stretch the cable. The elastic modulus for the cable is 1.0x10*11 N/m?. How far does it stretch?
A) 10 m
B) 0.01 m
C) 0.10 m
D) 1.0 m

Answer:B

7. Blood is pumped from the heart at a rate of 5 L/min into the aorta of radius 1.0 cm. What is the speed of blood through the aorta? (1 L=10*-3 m*3).
A) 2.7 m/s
B) 0.27 m/s
C) 12 m/s
D) 1.2 m/s

8. Two blocks, each of mass m, are attached to the ends of a massless rod which pivots as shown in the figure. Initially, the rod is held in the horizontal position and then released. Calculate the magnitude and direction of the net torque on this system when it is first released (l2 > l1).
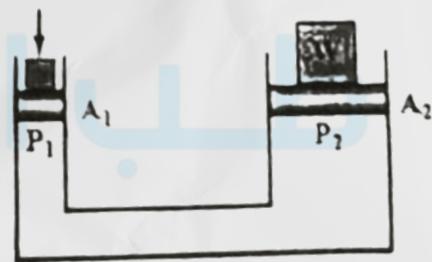A) mg (l1 + l2) clockwise
B) mg (l2 - l1) clockwise
C) mg (l2 - ls) connterclockwise
D) mg (l, + l2) counterclockwise

9. In a hydraulic press, the smaller piston (cuSe) has a diameter of 4 cm, and the larger piston has a diameter of 50 cm. If 2000 kg mass is required to be lifted to 10 cm height, how far must the small piston move?
A) 15.6 m
B) 1.25 m
C) 25.4 cm
D) 15.6 cm