Mansoura University Faculty of Engineering Program of Biomedical Engineering Course title: Physics 1 (MTH011)		Mid Term Exam 4th November 2017 Time: 60 min. TOTAL MARK: 20

Name: ..... group: ..... Mark .....

1-a) Is the equation E=2G(1+ν) dimensionally correct? Why? (E is the Young's modulus, G is the shear modulus and ν is the Poisson's ratio). (2 marks)

(b) Sketch a diagram for the Stress-Strain behavior of ductile materials. Give short discussion on the factor of safety. (5 Marks)

(c) The displacement of a 2-Kg block attached to a spring is given by $X=0.2 \sin(50t+\pi)$ m. Find the amplitude, period (T), the max. velocity, and the total energy at t=0.3T. (5 Marks)

2-a) A 200g of ice at 0 °C is added to 500g of water at 20 °C. What is the final temperature and composition of the mixture (take c_{ice} =2100 J/Kg°C, c_{water} = 4186 J/Kg°C, L_f ice = 4.186×10^5 J/Kg. (5 Marks)

(b) In an unmarked mercury thermometer the length l_0 was 4 cm, and l_{100} was 24 cm. What are the temperatures when l_T is (a) 28 cm and (b) 2 cm? (5 Marks)

Good luck *Prof. Abed Nasr*