

Department of Physics National Dong Hwa University, 1, Sec. 2, Da Hsueh Rd., Shou-Feng, Hualien, 97401, Taiwan General Physics-I, Quiz 3 PHYS1000AA, Fall Semester-104 2015-11-12, Thursday

St. ID:_____, Name:_____

Chapter -13, Serway; ABSOLUTELY NO CHEATING! Please write down the answers on the blank space or on the back of this paper. Answer should be in english. [] indicates the question points.

Q1. (a) Write down the Newton's law of universal gravitation. (b) Suppose a giant meteoroid coming towards the earth from the universe and rather not falling to the earth, if it starts to evolve around Earth's orbit due to earth's strong gravitation, what will be the acceleration of the meteoroid? (c) Calculate the speed / velocity of it. Let the meteoroid is at 5 times the earth's radius away from the earth surface.(Here, M_{earth} = 6.0×10^{24} kg, R_{earth} = 6400 km and G = 6.67×10^{-11} N-m²/kg²). [10+20+20 = 50]



Q2. (a) Write down the Kepler's third law of planetary motion. (b) Let the Mars is moving in an elliptical orbit around the Sun. Its distance from the Sun ranges between 0.5 AU to 2.5 AU. Calculate the eccentricity of Mars orbit (c) Find out the period of it around the sun. (Here, 1 AU= one astronomical unit, the average distance from Sun to Earth = 1.496×10^{11} m and $K_s = 2.97 \times 10^{-19} \text{ s}^2/\text{m}^3$). [5+ 20 + 25 = 50]



You may use the backside of the paper