

# CHE 201

## HW# 1

**Q1) Using conversion factors ,convert the following :**

- a) **62.4 Ibm/ ft<sup>3</sup> to Kg /m<sup>3</sup>**
- b) **6000 KJ/min to hp**
- c) **800 miles/h to m/s**

**Q2) Using one dimensional equation ,estimate the number of steps it would take you to walk from the earth to one of the planet at a distance 5.0 light years .The speed of the light is  $1.86 \times 10^5$  miles /s .**

**Q3) Calculate the following**

- a) **The weight in dynes of 20 ton object**
- b) **An object has a weight of 30 newtons,find the mass in grams**
- c) **An object has a mass of 20 Ibm , find the weight in Ibf**

**Q4) A tank is 20 meters long and 10 meters wide and has 2 meters height .This tank has a certain solution of an average density of 85 Ibm/ft<sup>3</sup> .Calculate the weight of the solution in Ibf using one single dimensional equation in your calculation**

**Q5) A poundal is the force required to accelerate a mass of 1.0 Ibm at a rate of  $1.0 \text{ ft/s}^2$  ,and a slug is the mass of an object that will accelerate at a rate of  $1.0 \text{ ft/s}^2$  when subjected to a force of 1.0 Ibf**

- a) **Calculate the mass in slugs and the weight in poundals of a 200 Ibm man (i) on the earth and (ii) on the moon ,where the acceleration of gravity is one-sixth of its value on earth**
- b) **A force of 400 poundals is exerted on a 20-slug object.At what rate (  $\text{m/s}^2$ ) does the object accelerate**