

## **Journal: Introduction**

*Answer the following in complete, grammatically correct sentences:*

1. What do we mean by rigid body?
2. In terms of solid mechanics, what do we mean by equilibrium?
3. What differentiates structures from machines?
4. Can some machine components be considered as structures? Explain.
5. Why is it important in this class to read the notes critically prior to class?
6. In what three ways will this be an “integrated” course?
7. What do we mean by modeling as we use the word in this course?
8. What differentiates a “given”, an “assumption”, an “observation”?
9. Compare the “G-O-A-L” approach used discussed in General Engineering to the three activities I have listed as the main stages of modeling.

10. In general terms, how do you define a quantity that is a vector, a unit vector, or a scalar?

11. How will you and your text symbolize vectors, unit vectors, and scalars?

12. What makes a coordinate system a “right-handed, orthogonal” system?

13. What do the acronyms USC and SI stand for?

14. What fundamental quantities are used to define the amount of matter in the USC and the SI systems and what are their units in each case?

15. In physical terms, what do we mean by weight?

16. *Based on your knowledge of Physics, describe in your own words why both the elevation and location on the earth (latitude) have separate and different effects on the weight of a body.*

17. What is the difference between lb, lbf, lbm? Which is the only notation to be used in this class?

18. What is the difference between “ $g$ ” and “ $g_c$ ”?

19. If all given and desired information is expressed in one system of units, we will always use that system in modeling. True or False?

20. Define in your own words the differences between:

a. mass and weight,

b. force and weight,

c. acceleration and the "acceleration of gravity".

21. Are there ever instances when acceleration and the "acceleration of gravity" will have:

a. the same magnitude?

b. the same direction?

c. both the same magnitude and direction?

22. What will be our practice to maintain sufficient computational accuracy in this course?

23. Characterize each of the items listed in the Problem Solving section as things "to do" or "not to do" relative to the three main types of activities listed under modeling section (Development, Solution, Evaluation) by placing D, S, or E by each bullet (some items may be appropriate to more than one of the three activity types. The items are repeated below: