

INTRODUCTION TO COMPOSITES -- MFET555

Fall 1999 -- Exam 2

Professor: Brent Strong

Name: _____

All problems have the same value, although some problems may have several parts.

1. Filament winding has the capability of using three types of feedstock: (1) tow which is impregnated as it is applied (wet winding), (2) tow which has been previously impregnated (prepreg tow), and (3) tape which has been previously impregnated (tape winding). Indicate two advantages and two disadvantages in using each of these materials.

2. Identify in two or three sentences and with sufficient detail to uniquely characterize the following terms:

a) powder coated fiber

b) b-stage

c) bleeder layer

d) roll wrapping

e) helical path

3. Give three reasons why vacuum bagging is almost always required for prepreg manufacturing but is rarely used for wet layup.

4. Describe how RTM might be adopted to the use of thermoplastic resins.

5. You have been asked to prepare a manufacturing plan for making carbon fiber/epoxy golf club shafts. A preliminary plan identified the following as possible manufacturing methods: filament winding, pultrusion, RTM and roll wrapping. Indicate two advantages and disadvantages in the use of each of the methods **for this application**. You have been told to expect production volumes of 10,000 shafts per year. Comment on the costs, quality, and performance expected from each of the methods.