

INTRODUCTION TO COMPOSITES -- MFET555

Summer 2004 – Exam 2

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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) exotherm

b) SMC

c) bleeder layer

d) VARTM

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. A company has recently decided to change their supplier of prepreg materials (carbon/epoxy). List 5 considerations they should examine in the quality aspects of the new prepreg material to assure that the use of this material will not cause problems in their manufacturing process.

5. As a manufacturing engineer for an automobile company, you have been asked to find a way to reduce the cost of an electrical junction box in the car. The box also serves as a support for some small motors so it must also be structural. The current part is made of aluminum but is coated with an epoxy paint for corrosion protection and to reduce the conductivity of the box in the case of an electrical short. Suggest a material for this application and justify your suggestion. Suggest and justify a manufacturing method.