

**BAE 103**  
**Energy in Biological Systems**

**Quiz 5**  
**Concepts: Psychrometrics**

Name: \_\_\_\_\_

- 5.1 A low temperature deep-bed dryer is used to dry feedstocks for preservation. Drying air at 32 C and 10% relative humidity is passed through the deep-bed dryer. Upon exiting the bed the drying air is saturated. If the volumetric flow rate of the drying air is 2,000 cfm (cubic feet per minute), how much moisture is removed per hour (kg/hr)?
- 5.2 Air at 15 C and 20% relative humidity is heated to 32 C for use in the deep-bed dryer in problem 5.1 above. Assuming that an electrical resistance heater is used to heat the drying air (conversion of electric energy into heat is 100%), how much power does the heater consume (kW)?
- 5.3 As the drying process (deep-bed dryer above) proceeds, the exiting air contains less moisture. If the exiting air temperature is 70 °F, what is the new moisture removal rate (kg H<sub>2</sub>O/hr)?