1. What is not a factor in a conditioning design load calculation?
   a) Solar heat gains
   b) Temperature set point
   c) Thermal masses
   d) Duct leakage

2. Which among the following statements about building insulation is least true?
   a) Insulation performance is typically reported in terms of its Thermal Transmittance value
   b) XPS or Extruded Polystyrene has a relatively high R value and excellent moisture resistance but is a plastic with a very high Global Warming Potential and Embodied Energy
   c) Insulation provides some thermal resistance
   d) All insulation should be carefully installed according to manufacturers instructions to meet published performance metrics

3. Which among the options below best describes a scenario that will result in infiltration or exfiltration?
   a) A hole in the building envelope
   b) A temperature difference from inside to outside
   c) A hole in the envelope and a pressure difference between inside and out
   d) A relative humidity differential between the inside and the outside of the building

4. Which choice below is NOT a source of internal heat gains in a building?
   a) Insolation = Solar Gain
   b) Light fixtures
   c) Electric appliances
   d) People and pets

5. Increasing thermal mass within the building envelope is a common part of what efficient design strategy?
   a) Pursing LEED certification
   b) Passive Solar Design
   c) Meeting the ASHRAE 90.1 standard

      d) Advanced Framing

6. Which of the following is NOT a unit of the rate of change of energy with respect to time (power)?

      a) BTUh

      b) Therms

      c) Calorie/minute

      d) kW

7. A cord of wood contains 85 cubic feet of wood (net volume of wood; does not include air-space between logs). The density of this wood is 28 lb/ft^3. The heat capacity of the wood is 6,387 BTU/lb. How much energy in BTU can be converted from stored chemical energy by burning one cord?

      a) 15,201,060 BTU

      b) 663,378 BTU

      c) 63,338 BTU

      d) 46,534 BTU

8. A wall section that is 12 feet long by 9 feet tall contains 1 window. The area not including the windows has an average assembly R-value of R-22 hr*ft^2*F/BTU (for the stud framed area not including the window). The window is a 4' x 2' window, with an overall U-value of 0/30 BTU/hr*ft^2*F. If the temperature on one side of the wall (outside) is 20F, and the temperature on the other side of the wall is 70F, what is the rate of heat transfer through the wall in units of BTUh?
Remember $Q = U*A*(T2 - T1)$

      a) 347 BTUh

      b) 976 BTUh

      c) 804 BTUh

      d) 9,760 BTUh

9. A concrete wall is 10 feet long by 1 foot deep by 4 feet tall. Assuming a density of concrete of 150 lbs/ft^3 and a specific heat of concrete of 0/18 BTU/(lb*F). Over a 1 hour period, solar energy incident upon the wall results in the wall absorbing 10,000 BTUs of energy. What is the resulting rise in temperature of the wall in degrees F?

a) 12.5 degrees F
b) 9.3 degrees F
c) 276 degrees F
d) 112 degrees F

10. Use the Psychometric Chart in the Appendix of your class text (pg 301 in 6th Ed.) What is the approximate enthalpy in BTU/lb of 80F air at 80% relative humidity?

a) 23.5 BTU/lb
b) 5 BTU/lb
c) 38 BTU/lb
d) 42 BTU/lb