Key terms to choose from for Questions 1 and 2:

A. Newton’s Law of universal gravitation  I. potential energy
B. G  J. gravitational potential energy
C. linear momentum  K. energy
D. torque  L. joule
E. angular momentum  M. law of conservation of linear momentum
F. work
G. kinetic energy
H. law of conservation of angular momentum

1. (2 points) Fill in the letter that best fits each of the following statements.
   a. _____ the energy of motion
   b. _____ a unit of energy

2. (2 points) Write the letter corresponding to a key term from above that best matches each description below.
   a. _____ the ability to do work
   b. _____ a process for transferring energy

3. (2 points) Circle the best answer for each of the following multiple choice questions.
   a. Which of the following objects has the greatest kinetic energy?
      i) a mass of m with a velocity of 4v
      ii) a mass of 4m with a velocity of v
      iii) a mass of 3m with a velocity of 2v
      iv) a mass of 2m with a velocity of 3v
   b. Gravitational potential energy depends on which of the following?
      i) mass
      ii) acceleration due to gravity
      iii) height
      iv) all of the above
4. (2 points) Fill in the blanks below.
   
a. Mechanical energy consists of kinetic energy and _____________ energy.
   
b. The unit N·m is given the special name of ______________.

5. (2 points) The equation for the gravitational attraction between two bodies is given by:

\[ F = \frac{Gm_1 m_2}{r^2} \]

   a. If the radius between two objects is tripled, by what factor does the gravitational force change (be specific – doubled, quadrupled, cut in half, etc.)?

   b. If the mass of one object is quadrupled and the distance between the two objects is decreased by a factor of 10, by what factor does the gravitational force change (be specific – doubled, quadrupled, cut in half, etc.)?

Potentially useful formulas:

\[ E_k = \frac{1}{2} mv^2 \quad E_p = mgh \]