**Energy Physics Unit Test** Full Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Multiple Choice Section – Choose the BEST answer – 1 mark each

1. In Physics, energy is the ability to do
   1. Work
   2. Power
   3. Impulse
   4. Momentum
2. A 30 kg object is lifted at constant velocity from the floor to a height of 10 m. How much work is done on the object?
   1. 3 J
   2. 30 J
   3. 300 J
   4. 3000 J
3. If a box is pushed with a force of 200 N over a distance of 1.00 m, how much work is done on the box?
   1. 2 J
   2. 20 J
   3. 200 J
   4. 2000 J
4. If a 50.0 kg object is pulled 11.0 m along a level surface by a rope that makes an angle with the surface of 30.0°, and the force exerted through the rope is 60.0 N, how much work is done on the box?
   1. 572 J
   2. 660 J
   3. 5400 J
   4. 6600 J
5. A 5.0 kg object is held 2.0 m above the floor for 20 s. How much work is done on the object?
   1. 0 J
   2. 4.9 J
   3. 10 J
   4. 98 J
6. What is the power output of a 60.0 kg student runs at a constant velocity up a flight of stairs 4.50 m high in 7.00 s?
   1. 200 W
   2. 378 W
   3. 2.60 x 103 W
   4. 3.78 x 103 W
7. A 1500 kg car accelerates from rest to a velocity of 10.0 m/s in 5.00 s. Calculate the power output of the car in this 5.00 s.
   1. 3000 W
   2. 15000 W
   3. 75000 W
   4. 80000 W
8. If a 200 kW electric motor has an efficiency of 85%, how long will it take to lift a 75.0 kg object to a height of 10.0 m?
   1. 4.32 x 10-2 s
   2. 1.00 s
   3. 43.2 s
   4. 100 s
9. A 215 kg box is pulled 15 m along an incline plane by a force of 335 N parallel to the incline to a height of 1.0 m. What is the efficiency of the incline?
10. You exert a force of 250 N in pulling 10.0 m of rope using a pulley system to lift a 410 N object 5.25 m. What is the efficiency of the system?
    1. 23.5 %
    2. 45.8 %
    3. 86.1 %
    4. 116 %
11. An archer pulls a bow string with an average force of 11.0 N back a distance of 0.20 m. What is the potential energy of the system?
    1. 2.2 J
    2. 11 J
    3. 110 J
    4. 220 J
12. What is the potential energy of a 10 kg mass, 10 m above the floor?
    1. 1 J
    2. 10 J
    3. 100 J
    4. 1000 J
13. What is the kinetic energy of a 60 kg student running at 2.5 m/s?
14. A 20.0 N object has kinetic energy of 400 J. What is the speed of this object?
    1. 2.00 m/s
    2. 4.00 m/s
    3. 19.8 m/s
    4. 392 m/s
15. An object is dropped from a vertical distance of 50.0 m above the ground, what is the speed of the object as it hits the ground?
    1. 10.2 m/s
    2. 31.3 m/s
    3. 981 m/s
    4. 1001 m/s
16. The Coaster at Playland has the highest peak of 20.0 m, what is the speed of the roller coaster at the bottom of the drop?
    1. 2.00 m/s
    2. 19.8 m/s
    3. 392 m/s
    4. 450 m/s
17. George of the Jungle runs through the jungle at 3.8 m/s, and grabs a hanging vine, how high can he swing?
    1. 0.10 m
    2. 0.19 m
    3. 0.74 m
    4. 1.50 m
18. When a 0.250 kg copper mass heated from 25o to 200 ° how much energy is used? (ccopper= 390 J/kg°C)