Week 9 Assignment 9

1. A block of steel is dropped from a height of 200 cm. Calculate the kinetic energy of the block just before it strikes the ground.

2. A spring with a spring constant of 200 N/m is attached to a mass of 0.5 kg. The spring is compressed by 0.1 m. Calculate the potential energy stored in the spring.

3. A pendulum of length 1 m is released from rest at an angle of 30° from the vertical. Calculate the maximum velocity of the pendulum bob.

4. A particle moves in a circle with a constant speed of 5 m/s. Calculate the centripetal force acting on the particle if its mass is 0.1 kg.

5. A 1 kg mass is dropped from a height of 5 m. Calculate the work done by gravity on the mass.

6. A 2 kg mass is attached to a spring with a spring constant of 100 N/m. The mass is compressed by 0.2 m. Calculate the total mechanical energy of the system.

7. A 3 kg object is moving with a velocity of 4 m/s. Calculate the momentum of the object.

8. A 4 kg mass is dropped from a height of 10 m. Calculate the final velocity of the mass just before it strikes the ground.

9. A 5 kg object is moving with a velocity of 2 m/s. Calculate the kinetic energy of the object.

10. A 6 kg object is dropped from a height of 2 m. Calculate the potential energy of the object.

11. A 7 kg object is moving with a velocity of 3 m/s. Calculate the momentum of the object.

12. A 8 kg mass is dropped from a height of 3 m. Calculate the kinetic energy of the mass just before it strikes the ground.

13. A 9 kg object is moving with a velocity of 1 m/s. Calculate the kinetic energy of the object.

14. A 10 kg mass is dropped from a height of 4 m. Calculate the potential energy of the mass.

15. A 11 kg object is moving with a velocity of 2 m/s. Calculate the momentum of the object.

16. A 12 kg mass is dropped from a height of 5 m. Calculate the total mechanical energy of the system.

17. A 13 kg object is moving with a velocity of 3 m/s. Calculate the kinetic energy of the object.

18. A 14 kg mass is dropped from a height of 6 m. Calculate the potential energy of the mass.

19. A 15 kg object is moving with a velocity of 1 m/s. Calculate the momentum of the object.

20. A 16 kg mass is dropped from a height of 7 m. Calculate the total mechanical energy of the system.