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Ch 5.4 - Page 181 - Practice Problems F - Power

1. A 1.0 x 103 kg elevator carries a maximum load of 800.0 kg. A constant frictional force of 4.0 x 103 N retards the elevator’s motion upward. What minimum power, in kilowatts, must the motor deliver to lift the fully loaded elevator at a constant speed of 3.0 m/s?
2. A car with a mass of 1.5 x 103 kg starts from rest and accelerates to a speed of 18.0 m/s in 12.0 s. Assume that the force of resistance remains constant at 400.0 N during this time. What is the average power developed by the car’s engine?
3. A rain cloud contains 2.66 x 10 7 kg of water vapor. How long would it take for a 2.00 kW pump to raise the same amount of water to the cloud’s altitude, 2.00 km?
4. How long does it take a 19 kW steam engine to do 6.8 x 107 J of work?
5. A 1.50 x 103 kg car accelerates uniformly from rest to 10.0 m/s in 3.00 s.
6. What is the work done on the car in this time interval?
7. What is the power delivered by the engine in this time interval?