



Polytechnic Tutoring Center

Midterm Review – PH 1013 Fall 2021

Disclaimer: This mock exam is only for practice. It was made by tutors in the Polytechnic Tutoring Center and is not representative of the actual exam given by the Academic Department.

1. A cheetah, starting from rest, accelerates uniformly at 8 m/s^2 for 3 s and then continues running at constant speed for an additional 2.8 s. How much ground does the cheetah cover during the entire 5.8 s?
a) 129 m b) 142 m c) 84.0 m d) 103 m e) 116 m
2. A car speeding along a straight road increases its speed from 30 m/s to 50 m/s over a distance of 200 m. If the acceleration is constant, how much time elapses while the car moves this distance?
a) 3 s b) 4 s c) 5 s d) 6 s e) 7 s
3. A car travels 43 km to the east, then 65 km to the north. If the total time of the trip is 2.4 hours find the magnitude of the average velocity.
a) 34.9 km/h b) 40.7 km/h c) 37.7 km/h d) 39.1 km/h e) 32.5 km/h
4. A stone is thrown at an angle of 35° above the horizontal with an initial speed of 6.3 m/s. What will be the speed of the stone 0.12 seconds after it was thrown?
a) 1.89 m/s b) 1.15 m/s c) 5.71 m/s d) 3.75 m/s e) 4.55 m/s
5. Block A has a mass of 8 kg, and Block B has a mass of 2 kg. They are in contact with each other and supported by a frictionless horizontal surface. Block A is pushed toward Block B with a force of 36 N, and Block B is pushed toward Block A with a force of 24 N. What is the magnitude of the force of each block on the other?
a) 25.2 N b) 26.4 N c) 27.6 N d) 28.2 N e) 28.8
6. A turn of radius 100 m is designed for a speed of 25 m/s. At what angle should the turn be banked?
a) 33° b) 28° c) 21° d) 17° e) 36°

7. A mass of 2 kg and a mass $m = 2.5$ kg are suspended by a massless string on either side of a frictionless pulley. If the masses are released from rest, how far does the heavier mass fall in 2 s?
- a) 1.95 m b) 3.92 m c) 5.35 m d) 6.53 m e) 2.18 m
8. What is the normal force exerted on a 65-kg person by an elevator that is accelerating upward at 2.6 m/s²?
- a) 468 N b) 512 N c) 644 N d) 702 N e) 806
9. What is the highest velocity at which a car can drive over the top of a hill of radius 62 m without leaving the ground?
- a) 24.6 m/s b) 28.9 m/s c) 30.2 m/s d) 32.1 m/s e) 34.4 m/s
10. A string attached to an engine pulls a box 220 m along a horizontal road. The string makes 36° with the horizontal, and the tension in the string is 320 N. Find the work done by the engine.
- a) 28.5 kJ b) 37.6 kJ c) 114 kJ d) 57.0 kJ e) 85.4 kJ