Physics 1A– 8 AM class
Quiz # 2   Nov. 2, 2007
Prof. Jose Onuchic

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) A long distance swimmer is able to swim through still water at 4 km/h. She wishes to try to swim from Port Angeles, WA due north to Victoria, B.C., a distance of 50 km. An ocean current flows through the Strait of Juan de Fuca from west to east at 3 km/h. In what direction should she swim to make the crossing along a straight line between the two cities?

  A) $41°$ west of north

  B) $37°$ east of north

  C) $37°$ west of north

  D) $49°$ west of north

  E) $41°$ east of north

2) A 20 kg traffic light hangs midway on a cable between two poles 40 meters apart. If the sag in the cable is 0.4 meters, what is the tension in each side of the cable?

  A) 12,000 N   B) 9,800 N   C) 7,350 N   D) 4,900 N   E) 980 N

3) A bridge that was 5.0 m long has been washed out by the rain several days ago. How fast must a car be going to successfully jump the stream? Although the road is level on both sides of the bridge, the road on the far side is 2.0 m lower than the road on this side.

  A) 5 m/s   B) 7.8 m/s   C) 10.2 m/s   D) 13.0 m/s   E) 25.0 m/s

4) A track star in the broad jump goes into the jump at 12 m/s and launches himself at $20°$ above the horizontal. How long is he in the air before returning to Earth? ($g = 9.8$ m/s^2).

  A) 0.42 s   B) 0.84 s   C) 1.12 s   D) 1.25 s   E) 1.68 s

5) A boxcar of mass 200 tons at rest becomes uncoupled on a $2.5°$ grade. If the track is considered to be frictionless, what speed does the boxcar have after 10 seconds?

  A) 0.37 m/s   B) 0.59 m/s   C) 1.3 m/s   D) 4.3 m/s   E) 5.6 m/s

6) Wiley Coyote has missed the elusive road runner once again. This time, he leaves the edge of the cliff at 50 m/s horizontal velocity. If the canyon is 100 m deep, how far from his starting point at the edge of the cliff does the coyote land?

  A) 226 m   B) 247 m   C) 282 m   D) 339 m   E) 400 m

7) A stone is thrown at an angle of $30°$ above the horizontal from the top edge of a cliff with an initial speed of 12 m/s. A stop watch measures the stone's trajectory time from top of cliff to bottom to be 5.6 s. What is the height of the cliff? ($g = 9.8$ m/s^2 and air resistance is negligible)

  A) 58 m   B) 120 m   C) 154 m   D) 197 m   E) 307 m

8) A cart of weight 20 N is accelerated across a level surface at 0.15 m/s^2. What net force acts on the wagon? (g = 9.8 m/s^2)

A) 3.0 N B) 0.31 N C) 4..5 N D) 0.92 N E) 1.5 N

9) Two blocks, joined by a string, have masses of 6.0 and 9.0 kg. They rest on a frictionless horizontal surface. A 2nd string, attached only to the 9–kg block, has horizontal force = 30 N applied to it. Both blocks accelerate. Find the tension in the string between the blocks.

A) 18 N B) 28 N C) 24 N D) 12 N E) 15 N

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) C
2) D
3) B
4) B
5) D
6) B
7) B
8) B
9) D