Blizzard Day 1

Physical Science Packet B

(Multiple Choice—2pts each All others are marked as 5 or 10 pts)

___1. When you are driving a car, why is braking less effective on a wet road than a dry road?
   a. Kinetic energy is increased by water
   b. water reduces friction
   c. Friction increases when brakes are wet
   d. Reaction time is reduced during a rainstorm

___2. When you are driving a car around a curve, what direction does the car want to travel?
   a. in a curved path due to inertia
   b. in a straight line due to inertia
   c. in a curved path due to gravity
   d. in a straight line due to gravity
   e. in a straight line due to friction

___3. What provides the force to hold a car in a curve?
   a. inertia
   b. mass
   c. gravity
   d. friction

___4. In order to walk, you must push off on one foot. What is needed between your foot and the floor?
   a. inertia
   b. gravity
   c. friction
   d. potential energy

___5. To walk, Timmy pushed on the floor with a force of 500 N, according to Newton's Third Law, what did the floor do?
a. nothing, the frictional force eliminated the need for the floor
b. the floor pushed back with only 5 N since it doesn't take as much force to move Timmy
c. the floor pushed back with an equal force (500 N)
d. nothing, the force was only on the floor, not on Timmy

___6. A radioactive element such as uranium decays by…
a. undergoing nuclear fission and throwing off alpha particles, beta particles, and /or gamma rays
b. joining another element and forming a new substance that is much more stable than the radioactive element
c. undergoing nuclear fusion and combining with another element

___7. The half-life of carbon-14 is 5730 years. How much of a 300g sample would remain if the dead animal had undergone 2 half lives?
a. 75 g b)150 g c) 600 g d) 300 g

The table below shows the results for a metal that was in boiling water and placed in a calorimeter cup containing cold water. Complete the table using $Q = mc\Delta T$

Metal	Mass (g)	Specific Heat (g/cal C °)	T_i (°C)	T_f (°C)	ΔT (°C)	Q Lost (calories)
Iron	70	.031	100	7		
Water (ml)	**Mass (g)**	**Specific Heat (g/cal C °)**	**T_i (°C)**	**T_f (°C)**	**ΔT (°C)**	**Q gained (calories)**
100	100	1.00	6	8	2	200

___8. What type of heat transfer was happening in the water?
- a. conduction
- b. radiation
- c. convection
- d. thermal expansion

___9. The primary reason the metal would feel hot to the touch is…
- e. conduction causes heat to leave the metal
- f. conduction causes coldness to leave your hand
- g. radiation from your hand enters the metal
- h. convection currents leave the metal to your hand

___10. What would be a likely sequence (order) of energy transfer?
a. water transferred energy to the metal
b. water transferred energy to the air which increased the temperature of the metal
c. metal transferred heat to the water and the water transferred cold to the metal
d. metal transferred energy to the water which lowered the temperature of the water

___11. How does the energy lost by the metal compare to the energy gained by the water?
a. The energy lost is slightly less than the energy gained because some of the energy was transferred to the surroundings
b. The energy lost is equal to the energy gained
c. The energy lost is slightly more than the energy gained because the water absorbed heat from the room.
d. The energy lost is slightly more than the energy gained because some of the energy was transferred to the surroundings.