

Last name: _____

Problem #1: [43 points] Short answers (a) through (o)

[22] For parts a through i, choose true or false and write T or F on the line.

- a. [2] ___ In a completely inelastic collision, the final mechanical energy is zero.
- b. [2] ___ The gage pressure of a substance can be negative.
- c. [2] ___ The absolute pressure of a substance can be negative.
- d. [2] ___ The work done by a tension force is always zero.
- e. [2] ___ The speed of the air passing beneath a Frisbee in level flight is lower than the speed of the air passing above it.
- f. [2] ___ An object at 300K must radiate less energy than an object at 400K over the same time period.
- g. [2] ___ The elastic potential energy of a spring is always positive.
- h. [2] ___ If an iron ball is immersed in water, the net buoyant force on it is upwards.
- i. [2] ___ The rotational inertia of an object is greatest if the axis of rotation passes through the center of mass of the object.
- j. [2] ___ If several blocks are placed on an incline in contact with each other, the magnitude of the acceleration of the smallest block can exceed g .
- k. [2] ___ Increasing the temperature of an ideal pendulum will decrease its period.

l. [8] For each symbol given, write the [name] of the quantity it represents, and the (SI units).

$\beta = [$	_____](_____)
$\tau = [$	_____](_____)
$\vec{J} = [$	_____](_____)
$Y = [$	_____](_____)

m. [4] Name the four fundamental forces:

n. [3] name the three kinds of heat transfer:

o. [4] Name the four conservation principles we studies this semester:
