



General Physics-II, Quiz 7
PHYS1000AA, Spring Semester-103
2015.03.12, Thursday

St. ID: _____ Name: _____

Chapter 22, Serway; ANY TYPES OF CHEATING WILL MAKE YOU FAIL!

Please write down the answers on the blank space or on the back of this paper. Answer should be in English. [] indicates the question points.

- (a) Draw the PV diagram for the Carnot Cycle. (b) Suppose you are working for a power company as a engineer. You have been given a duty to build a heat engine of efficiency 80%. To get this efficiency the engine is needed to operate between a hot and cold reservoir with temperature T_h and T_c . Calculate T_h if $T_c = 400^\circ\text{C}$. (c) How much mechanical power does the engine produce if it absorbs 500 kJ energy per second from its hot reservoir? [10+20+20]
- Now according to question no.1 if this 500 kJ of heat energy is transferred by a copper bar connected from hot to cold reservoir, (a) what will be the change in entropy for the hot and the cold reservoir. (b) Calculate the entropy change of the universe for this process. (c) If the entropy of the universe reach at maximum, will it be possible to build any heat engine? Explain shortly. [Use T_h & T_c from Q.1] [20+20+10]

You may use the backside of the paper