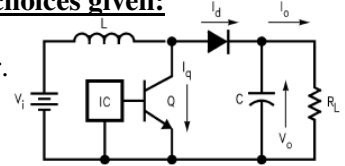


MEDICAL ELECTRONICS 2007
PROBLEM ASSIGNMENT #1
October 8, 2007

I. Answer the following questions by marking the best answer among the choices given:

1. The circuit shown is used to ... the input voltage to the switching regulator.
 - a. reduce
 - b. boost
 - c. invert
2. For a 5V to 15V DC/DC converter based on a switching power supply with an output power of 30W, the input power will approximately be ...
 - a. 15 W
 - b. 35 W
 - c. 45 W
3. Step-down switching regulators are based on ... regulator configuration.
 - a. Buck
 - b. Boost
 - c. Inverting
4. Power density of switching regulators is usually ... than linear regulators.
 - a. Lower
 - b. Higher
 - c. More powerful
5. It is possible to use a linear regulator after a switching regulator because ...
 - a. The output ripple is greatly reduced.
 - b. The efficiency of linear regulators is increased
 - c. Both of the above
6. Given a switching regulator with input source voltage of 12V and output voltage of 100V@0.2A, it is possible to modify it to generate a 150V@0.1A by ...
 - a. Changing the input voltage
 - b. Changing the feedback resistors that control the pulse width modulation
 - c. Changing the capacitance of the boost circuit



II. Mark the following statement as either True (T) or False (F):

7. Load regulation is better in linear regulators than switching regulators
8. Line regulation is better in linear regulators than switching regulators
9. Transient recovery is better in switching regulators than linear types
10. Starting from a +5V, one can design a power supply circuit that produces -15 V
11. No heat sinks are necessary with switching regulators
12. One can modify the output voltage from linear regulators by changing the feedback resistors
13. The efficiency of switching regulators is best suited for high power applications.
14. With a 5V @5A input, we can achieve a 12V @1A output from a linear regulator