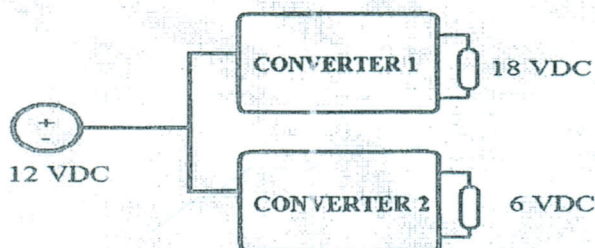
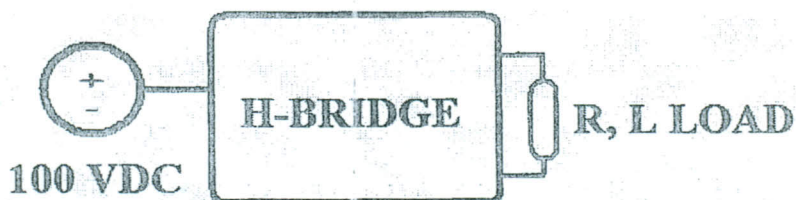


Q1) for the given figure, suggest a system to provide

- 1-an output of 18 V from a 12V source, the load is 20 W. The output voltage ripple must be less than 0.5 percent. Specify the duty ratio, the inductor size, the peak voltage rating of each device. Design for continuous current. Let the inductor be 25 percent larger than the minimum, the switching frequency is 100kHz, assume ideal components.
- 2-an output voltage of 6V across a 10Ω load resistor for the same source (12VDC). The output voltage ripple must not exceed 0.5 percent. Design for continuous inductor current. Specify the duty ratio, the values of the inductor and capacitor, the peak voltage rating of each device, and the rms current in the inductor. Assume ideal components. Let the inductor be 25 percent larger than the minimum, the switching frequency is 100kHz.
- 3- The total power supplied by the source (12VDC).



Q2) The following circuit is intended to supply ac-RL load from DC source as shown. The switching frequency is 60 Hz,  $R=10\Omega$ , and  $L = 25 \text{ mH}$ . Draw the complete circuit and determine (a) an expression for load current, (b) the power absorbed by the load, and (c) the average current in the dc source.



Q3) Draw three-phase inverter and the Switching sequence for six-step output, Line-to-line output voltages, deduce -by the equivalent circuit and the current- the Line-to-neutral voltages for an ungrounded balanced Y connected load for an RL load.

*With best wishes*

*Dr. Ahmed E. M. SHAHIN*

Mansoura University  
Faculty of Engineering  
Electrical Engineering Department  
Full Degree 45

4<sup>th</sup> Year Exa.  
Power Electronic Exam.  
Time Allowed 1.5 hours

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Answer the following

In type A DC Chopper circuit  $V=110\text{ V}$ ,  $L=1\text{mH}$ ,  $R=.25\ \Omega$ ,  $V_c = 11\text{V}$ ,  $T=2500\mu\text{s}$ ,  
 $T_{\text{ON}}=1000\ \mu\text{s}$ ,

- a) Design the commutation circuit elements (15)
- b) Determine the pulse strategy during a complete one cycle for the all circuit thyristors.(30)