

**IV B.Tech II Semester Supplementary Examinations, Apr/May 2006**  
**INDUSTRIAL ELECTRONICS**

**( Common to Electronics & Communication Engineering, Electronics &  
Instrumentation Engineering and Mechatronics)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) Explain the operation of a two stage D.C amplifier using Miller compensation technique.  
(b) List out the specifications of a D.C amplifier. [10+6]
2. (a) What is the disadvantage of single transistor SMPS and how it can be eliminated using bridge type of configuration?  
(b) A single transistor, fly back SMPS operating at 16 kHz is supplying a mean load power of 120W at a mean voltage of 80 V from a dc source of 110 V. Estimate the mark/ space ratio of the output voltage and the value of inductance required in the circuit. [8+8]
3. (a) How is short-circuit current protection provided for an IC regulator? Draw and explain the circuit diagram.  
(b) Explain voltage regulator system using LM 105 IC and with an external pass transistor. [8+8]
4. Design a general SCR pulse-trigger circuit to obtain a range of conduction angle of 90 to 180 degrees. Assume 60 Hz ,115-V rms (163-V peak) line operation, and a trigger device firing voltage of 40 V. [16]
5. Explain the importance of the freewheeling diodes in single-phase full-wave controlled rectifier circuit. And also justify the statement "Freewheeling diode improves the power factor of the system". [16]
6. Explain the operation of single-phase bridge inverter with the help of load voltage and load current waveforms. [16]
7. Draw and explain the simple heat control circuit for resistance welding with the help of its voltage waveforms. [16]
8. (a) What are the properties of materials used in dielectric heating?  
(b) Explain various methods of coupling electrodes to RF generator in dielectric heating applications. [8+8]

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