

R09

Code No: C4207, C4307, C4507

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I - Semester Examinations March/April-2011

MODERN POWER ELECTRONICS

(COMMON TO POWER AND INDUSTRIAL DRIVES, POWER ELECTRONICS, POWER ELECTRONICS & ELECTRIC DRIVES)

Time: 3hours

Max.Marks:60

Answer any five questions
All questions carry equal marks

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1. a) Explain the turn-on and turn-off operation of MTO with its equivalent circuit.
b) What are the advantages and disadvantages of ETOs? [6+6]
2. With the help of neat circuit diagram and related wave forms explain the operation of Half-bridge and Full-bridge series inverter with bidirectional switches. [12]
3. Explain the dc link capacitor voltage balances in multilevel inverter. What are the advantages of flying capacitor multilevel inverters? [12]
4. Explain the various modes of operation of Half-Bridge converter using a neat circuit diagram and also mention the advantages and disadvantages of Half-Bridge converter. [12]
5. Explain the two commonly used control methods for power supplies. [12]
6. The zero current resonant converter (ZCS) delivers a maximum power $Q P_L = 400$ mw at $V_o = 4$ V. The supply voltage $V_s = 15$ V the maximum operating frequency is $f_{max} = 50$ kHz. Determine the values of L and C. Assume that the intervals t_1 and t_3 are very small and $x = 1.5$. [12]
7. a) Explain the operation of class E Resonant inverter.
b) What are the applications of bidirectional power supplies? [6+6]
8. Write short notes on the following:
a) Cascaded multilevel inverters.
b) Integrated Gate commutated thyristor.
c) Double ended fluback converter. [12]
