



SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
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QUESTION BANK

Subject: ADVANCED POWER ELECTRONIC CIRCUITS

Course & Branch: M.Tech -PE

Year & Sem: I-M.Tech & I-Sem

Regulation: R19

UNIT – I

1. Explain about single phase CSI with Ideal switches. [12M]
2. Draw the circuit diagram for 1- ϕ capacitor commutated CSI with R-load and explain in detail. [12M]
3. What are the operating modes of basic series inverter? [12M]
4. Explain circuit analysis of series inverter. [12M]
5. Explain about modified series inverter with neat circuit diagram and waveforms. [12M]
6. What are the designing aspects required for the series inverter. [12M]
7. Explain the working operation of half bridge series inverter. [12M]
8. (a) List the advantages and disadvantages & applications of CSI. [6M]
- b) Comparison between VSI and CSI. [6M]
9. Explain the operation of three phase series inverter with neat circuit diagram. [12M]
10. Draw the circuit diagram & waveforms for high frequency series inverter [12M]

UNIT – II

1. a) What is switched mode rectifier. [6M]
- b) Classify SMR's based on different aspects. [6M]
2. Explain about the operation of single phase SMR's with neat circuit diagram. [12M]
3. Explain about the operation of three phases SMR's. [12M]
4. How to correct the active power factor by using single phase boost type APFC SMR. [12M]
5. What is working principle of three phase boost type APFC SMR & explain the operation. [12M]
6. Explain the controlling scheme of single phase boost SMR. [12M]
7. How to control dc side voltage in SMR. [12M]
8. How to control the voltage in SMR by voltage control loop. [12M]

9. How to control current in SMR through current control loop. [12M]
10. Explain about DC-clamped switched mode rectifier. [12M]

UNIT –III

- 1) What is the working principle of step-down converter with RL-load? [12M]
- 2) Explain the principle and operation of the step-up converter with RL-load? [12M]
- 3) Classify the converters based on various aspects. [12M]
- 4) Draw a circuit diagram and waveforms for step-up converter and explain in detail. [12M]
5. (a) What is a dc-dc converter? [6M]
 (b) What is the principle of operation of step up and step down converters. [6M]
6. What are the operating modes of Buck converter? [12M]
7. Explain the principle and operation of the Boost converter. [12M]
8. Explain the principle and operation of the Buck-Boost converter. [12M]
9. Explain the principle and operation of the cuk converter. [12M]
10. Draw the waveforms for three phase controlled converter? [12M]

UNIT-IV

1. Explain the operation of flyback converter with continuous mode with neat circuit and Waveforms. [12M]
2. Explain the operation of flyback converter with dis continuous mode with neat circuit and waveforms. [12M]
3. What is a Forward convertor? Explain its modes of operation using a neat circuit diagram and related waveforms. [12M]
4. a) Compare flyback converter and forward converter. [6M]
 b) Compare forward and half –bridge converter. [6M]
5. With a neat circuit diagram and waveforms explain the operation of push pull converter. [12M]
6. With the help of neat circuit diagram and waveforms explain the modes of operation of half-bridge converter. [12M]
7. Explain the modes of operation of full-bridge converter. [12M]
8. How to control the voltage and current in forward converter. [12M]
9. Draw the control circuit and waveforms for fly back converter. [12M]
10. What are the designing considerations for transformer design. [12M]

UNIT-V

- 1.Explain about series resonant inverter with unidirectional switches. [12M]
- 2.Explain about series resonant inverter with bidirectional switches. [12M]
3. Explain about parallel resonant inverter with neat circuit diagram and waveforms. [12M]
4. How to control the voltage in series resonant inverter. [12M]
- 5.With a neat circuit diagram and related waveforms explain the modes of operation of Class-E resonant inverter. [12M]
6. What is the necessity of resonant dc link inverters and explain the operation. [12M]
7. With a neat circuit diagram and related waveforms explain the operation of L-type ZCS resonant converter. [12M]
- 8.Explain about M-type ZCS resonant converter. [12M]
- 9.Explain about the modes of operation of zero voltage switching resonant converter. [12M]
- 10.a).Compare ZCS and ZVS. [6M]
b).What are the advantages and disadvantages of resonant power supplier? [6M]

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