Question Bank

Advanced Power Electronics

Multilevel Converters

1. Explain half bridge and full bridge topology of inverter with wave form?
2. Discuss 180^o conduction mode of 3-phase full bridge inverter.
3. Discuss 120^o conduction mode of 3-phase full bridge inverter.
4. What are the features of Multilevel Inverter? Explain each in detail.
5. Classify multilevel inverter and write down the applications of multilevel inverter.
6. Explain Neutral Point Clamped 3-level inverter with switching table, circuit diagram and relevant waveforms.
7. Discuss 3-level Flying capacitor inverter topology in detail.
8. Explain the d.c voltage balance techniques for capacitor clamped multilevel inverter.
9. Explain different H-bridge topology of multilevel inverter. Write down advantages and disadvantages of the H-bridge topology over other inverter topology.
10. Discuss 3-level symmetric H-bridge inverter with circuit diagram, waveform and switching table.
11. Discuss 5-level symmetric H-bridge inverter with circuit diagram, waveform and switching table.
12. Discuss 7-level asymmetric H-bridge inverter with circuit diagram, waveform and switching table.
13. What is redundancy? How it is useful in case of multilevel inverter fed Induction Motor drive? What advantages we gain using redundancy?
14. Give the comparison between all three configurations of multilevel inverter.

Question Bank

Advanced Power Electronics

Multi-pulse Converters

1. Classify multi-pulse converter, write down advantages, disadvantages and applications of it.
2. Explain 6 pulse diode rectifier with relevant circuit diagram & waveforms.
3. Discuss various transformer connections for multi-pulse converter.
4. Draw circuit diagram and output voltage phasor diagram of 12-pulse converter. Explain 5th and 7th harmonics elimination in 12-pulse converter.
5. Explain 18 pulse converter with circuit diagrams & waveforms.
6. Discuss 24 pulse converter in detail.

Question Bank

Advanced Power Electronics

Power Supply

1. Discuss Advantages disadvantages and applications of SMPS.
2. Explain Buck Converter with output voltage equation.
3. Discuss Boost Converter with output voltage equation.
4. Discuss Buck-boost converter with output voltage equation. How output voltage can be changed?
5. Explain Flyback converter with neat circuit diagram & waveforms.
6. Discuss Forward converter with relevant circuit diagram and waveforms.
7. Explain Push-pull converter.
8. Explain Half bridge converter in detail.
9. Discuss full bridge converter.
10. With neat circuit diagram explain resonant dc power supply
11. With neat circuit diagram explain resonant ac power supply.
12. Draw block diagram of UPS and discuss each block in detailed.
13. Discuss On line UPS in detail.
14. Explain Off-line UPS.

Question Bank

Advanced Power Electronics

Electronically commutated motors

1. Give the comparison between BLDC motor with Brushed D.C. motor and induction motor.
2. What do you mean by electronically commutated motors? Discuss switching circuit of BLDC motor drive.
3. Which current control techniques are used for control of BLDC motor. Explain one of them very briefly.
4. Explain construction and working of switch reluctance motor.
5. Explain difference between sinusoidal and trapezoidal BLDC motor.
6. Discuss stepper motor control strategy with appropriate diagram.
7. Discuss control of brushless dc drive. Give its applications.
8. Discuss energy conversion process in SRM. Give its applications

Question Bank

Advanced Power Electronics

Resonant Pulse Inverters

1. Explain the zero voltage switched half bridge multi-resonant converter.
2. Explain parallel resonant inverter circuit with wave form.
3. Discuss L type ZCS resonant inverter with neat circuit diagram and waveform.
4. With neat circuit diagram and waveform discuss class E resonant inverter.
5. Discuss series resonant inverter with neat circuit diagram and waveform.