

Unit 4 - Week 3

Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

• Basic Introduction to Power Devices

• Introduction to Multilevel Converters

• Cascaded H-bridge Multilevel Converters

• Output Voltage Waveform Synthesis in CHB Converter and Basic of Asymmetrical CHB Converters

• Lecture Slides Week 3

• **Quiz : Assignment 3**

• Week 3 Feedback Form

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

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Week 11

Week 12

Download Videos

Assignment Solutions

Text Transcripts

Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-02-19, 23:59 IST.

1) Which devices among the following is most suitable for an application requiring a voltage blocking capability of 7kV, current rating of 200 A and switching frequency of 50 Hz?

1 point

- MOSFET
 IGBT
 Thyristor
 BJT

No, the answer is incorrect.
Score: 0

Accepted Answers:
Thyristor

2) A power electronics circuit handles 250 W power with a device switching at 100kHz inside it. Which of the following devices is most suited for this application?

1 point

- Thyristor
 IGBT
 MOSFET
 GTO

No, the answer is incorrect.
Score: 0

Accepted Answers:
MOSFET

3) Which of the following devices cannot be turned OFF by withdrawing gate pulses?

1 point

- MOSFET
 IGBT
 Thyristor
 GTO

No, the answer is incorrect.
Score: 0

Accepted Answers:
Thyristor

4) The most important function of a heat sink associated with a power devices is _____.

1 point

- Improvement from vibration
 Dissipation of heat
 Isolation
 Mechanical Support

No, the answer is incorrect.
Score: 0

Accepted Answers:
Dissipation of heat

5) What is the possible combination of devices conducting in the following circuit (Fig.1) for the given direction of current (i) when S1 has been turned on?

1 point

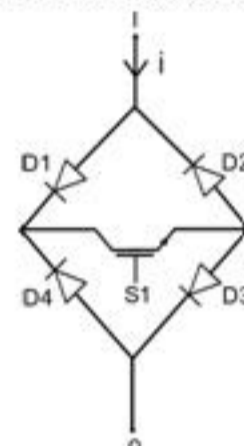


Figure 1

- D1, S1 and D3
 D1, S1 and D2
 D1, S1 and D4
 D3, S1 and D4

No, the answer is incorrect.
Score: 0

Accepted Answers:
D1, S1 and D3

6) Among the following, what is the disadvantage of a multilevel converter

1 point

- Improvement of waveform quality
 Low dv/dt
 Reduced device voltage rating
 Large number of devices

No, the answer is incorrect.
Score: 0

Accepted Answers:
Large number of devices

A three phase cascaded H-bridge converter with 5 cells in each phase supplies 5 MW active power and 1 MVAR reactive power to a load. The dc link voltage of each cell is 2 kV.

7) How many levels will be presented in the pole voltage waveform of the converter?

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 11

1 point

8) What will be the peak fundamental pole voltage of the converter if sine PWM is used with 0.9 modulation index ?

1 point

- 4720 V
 9000 V
 6363.96 V
 4500 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
9000 V

9) What will be the device voltage rating?

1 point

- 800 V
 1000 V
 2000 V
 12000 V

No, the answer is incorrect.
Score: 0

Accepted Answers:
2000 V

10) The rms value of converter output current is

1 point

- 266.60
 286.60
 276.60
 296.60

No, the answer is incorrect.
Score: 0

Accepted Answers:
266.60

11) What will be the device current rating?

1 point

- 266.60
 286.60
 276.60
 296.60

No, the answer is incorrect.
Score: 0

Accepted Answers:
266.60