

Code.No: RR310204

RR

SET-1

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
POWER ELECTRONICS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours**Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

- - -

- 1.a) Draw the static characteristics of a SCR. Discuss the salient points of it.
 b) Explain about R-firing and RC-firing circuits of SCR. [8+8]
- 2.a) Explain the two transistor analogy of thyristor.
 b) What is the importance of snubber circuits in respect of thyristors? [8+8]
3. Explain the operation of a single phase, half wave converter with R-load. Derive the average output voltage and current expressions. Compute average output voltage and current when the input is 230V, 50Hz and load resistance is 10 ohms and firing angle is 30° . [16]
- 4.a) Explain the operation of a three phase fully controlled bridge converter with RL load. Consider a firing angle of 30° .
 b) Discuss how the performance of a single phase fully controlled converter is affected due to the presence of source inductance. [8+8]
5. Explain the operation of 3- ϕ dual converter fed to RL loads for both circulating and non- circulating current modes with waveforms and circuits. Mention its applications. [16]
- 6.a) Explain the operation of a single phase ac voltage controller fed to RL load.
 b) A single phase, ac voltage controller controls the power input to a load circuit consisting of $R=3$ ohms and $R_L=4$ ohms. If the supply voltage is 230V, 50Hz, Calculate
 i) control range of firing angle.
 ii) maximum power input to the load. [8+8]
- 7.a) Explain the operation of a single phase bridge type cyclo converter.
 b) A step up chopper with a pulse width of $150\mu s$ operating on 220V, DC supply. Compute the load voltage if the blocking period of the device is $40\mu s$. [8+8]
8. Explain the voltage control in case of single phase bridge inverter circuit, in order to get variable voltage and variable frequency output. [16]

--ooOoo--

Code.No: RR310204

RR

SET-2

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
POWER ELECTRONICS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours**Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

1. Explain the operation of a single phase, half wave converter with R-load. Derive the average output voltage and current expressions. Compute average output voltage and current when the input is 230V, 50Hz and load resistance is 10 ohms and firing angle is 30° . [16]
- 2.a) Explain the operation of a three phase fully controlled bridge converter with RL load. Consider a firing angle of 30° .
 b) Discuss how the performance of a single phase fully controlled converter is affected due to the presence of source inductance. [8+8]
3. Explain the operation of 3- ϕ dual converter fed to RL loads for both circulating and non- circulating current modes with waveforms and circuits. Mention its applications. [16]
- 4.a) Explain the operation of a single phase ac voltage controller fed to RL load.
 b) A single phase, ac voltage controller controls the power input to a load circuit consisting of $R=3$ ohms and $R_L=4$ ohms. If the supply voltage is 230V, 50Hz, Calculate
 i) control range of firing angle.
 ii) maximum power input to the load. [8+8]
- 5.a) Explain the operation of a single phase bridge type cyclo converter.
 b) A step up chopper with a pulse width of $150\mu s$ operating on 220V, DC supply. Compute the load voltage if the blocking period of the device is $40\mu s$. [8+8]
6. Explain the voltage control in case of single phase bridge inverter circuit, in order to get variable voltage and variable frequency output. [16]
- 7.a) Draw the static characteristics of a SCR. Discuss the salient points of it.
 b) Explain about R-firing and RC-firing circuits of SCR. [8+8]
- 8.a) Explain the two transistor analogy of thyristor.
 b) What is the importance of snubber circuits in respect of thyristors? [8+8]

--ooOoo--

Code.No: RR310204

RR

SET-3

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
POWER ELECTRONICS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours**Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

- - -

1. Explain the operation of 3- ϕ dual converter fed to RL loads for both circulating and non- circulating current modes with waveforms and circuits. Mention its applications. [16]
- 2.a) Explain the operation of a single phase ac voltage controller fed to RL load.
b) A single phase, ac voltage controller controls the power input to a load circuit consisting of $R=3$ ohms and $R_L=4$ ohms. If the supply voltage is 230V, 50Hz, Calculate
i) control range of firing angle.
ii) maximum power input to the load. [8+8]
- 3.a) Explain the operation of a single phase bridge type cyclo converter.
b) A step up chopper with a pulse width of $150\mu s$ operating on 220V, DC supply. Compute the load voltage if the blocking period of the device is $40\mu s$. [8+8]
4. Explain the voltage control in case of single phase bridge inverter circuit, in order to get variable voltage and variable frequency output. [16]
- 5.a) Draw the static characteristics of a SCR. Discuss the salient points of it.
b) Explain about R-firing and RC-firing circuits of SCR. [8+8]
- 6.a) Explain the two transistor analogy of thyristor.
b) What is the importance of snubber circuits in respect of thyristors? [8+8]
7. Explain the operation of a single phase, half wave converter with R-load. Derive the average output voltage and current expressions. Compute average output voltage and current when the input is 230V, 50Hz and load resistance is 10 ohms and firing angle is 30° . [16]
- 8.a) Explain the operation of a three phase fully controlled bridge converter with RL load. Consider a firing angle of 30° .
b) Discuss how the performance of a single phase fully controlled converter is affected due to the presence of source inductance. [8+8]

--ooOoo--

Code.No: RR310204

RR

SET-4

III B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
POWER ELECTRONICS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours**Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

- - -

- 1.a) Explain the operation of a single phase bridge type cyclo converter.
 b) A step up chopper with a pulse width of $150\mu s$ operating on 220V, DC supply. Compute the load voltage if the blocking period of the device is $40\mu s$. [8+8]
2. Explain the voltage control in case of single phase bridge inverter circuit, in order to get variable voltage and variable frequency output. [16]
- 3.a) Draw the static characteristics of a SCR. Discuss the salient points of it.
 b) Explain about R-firing and RC-firing circuits of SCR. [8+8]
- 4.a) Explain the two transistor analogy of thyristor.
 b) What is the importance of snubber circuits in respect of thyristors? [8+8]
5. Explain the operation of a single phase, half wave converter with R-load. Derive the average output voltage and current expressions. Compute average output voltage and current when the input is 230V, 50Hz and load resistance is 10 ohms and firing angle is 30° . [16]
- 6.a) Explain the operation of a three phase fully controlled bridge converter with RL load. Consider a firing angle of 30° .
 b) Discuss how the performance of a single phase fully controlled converter is affected due to the presence of source inductance. [8+8]
7. Explain the operation of 3- ϕ dual converter fed to RL loads for both circulating and non- circulating current modes with waveforms and circuits. Mention its applications. [16]
- 8.a) Explain the operation of a single phase ac voltage controller fed to RL load.
 b) A single phase, ac voltage controller controls the power input to a load circuit consisting of $R=3$ ohms and $R_L=4$ ohms. If the supply voltage is 230V, 50Hz, Calculate
 i) control range of firing angle.
 ii) maximum power input to the load. [8+8]

--ooOoo--