Printed pages:2 **Sub Code:NEE502**

Paper Id: | 2 | 0 | 3 | 2 | **Roll No:** | | | | | | | | | | |

B TECH

(SEM 5) THEORY EXAMINATION 2017-18

POWER ELECTRONICS

Time: 3 Hours ***Total Marks: 100***

Note: (i) Attempt all questions. If required any missing data; then choose suitably.

(ii) All questions carry equal marks.

SECTION -A

1. Attempt all question in brief. **(2x10=20)**

a) Draw transfer characteristic of MOSFET.
b) What are the advantage and disadvantage of of on-off control?
c) What are the advantage and disadvantage of phase angel control?
d) What is a cycloconvertor?
e) What are the advantage and disadvantage of cycloconvertor?
f) What is meant by step-up and step-down chopper?
g) What are the advantages of GTO over SCR?
h) What do you mean by holding current and latching current?
i) What are the applications of dc chopper?
j) What are the advantages of single phase bridge converter over single phase mid-point converter?

SECTION -B

2. Attempt any **three** parts of the following **(10x3=30)**

a) Draw the two transistor model of SCR and derive an expression for anode current.
b) Write the applications of power electronics devices.
c) What is the need of protective device in power electronics devices? Explain the snubber circuit with the help of circuit diagram?
d) Explain the construction and working principle of SCR. Also draw the V-I characteristics of SCR.
e) Explain the working principle of single phase to single phase cycloconvertor with appropriate Waveform and bridge circuit?

SECTION -C

3. Attempt any **one** part of the following **(10x1 =10)**

a) Describe the principle of step-up chopper. Derive an expression for the average output voltage in terms of input dc voltage & duty cycle.

b) Draw and explain output characteristic of power MOSFET.

4. Attempt any **one** part of the following **(10x1 =10)**

a) A step up chopper has input voltage 220 V and output voltage 660 V. If off time of chopper is 100 micro second, find chopping frequency.

b) What does ac voltage controller mean? What are the applications of ac voltage controllers?

5. Attempt any **one** part of the following **(10x1 =10)**

a) Explain working of TRIAC.

b) Explain working of GTO.

6. Attempt any **one** part of the following **(10x1 =10)**

a) Explain single phase transformer connection changer. Draw waveform for input and output voltage.

b) Explain single phase to single phase cycloconvertor and draw circuit and waveform for resistive load.

7. Attempt any **one** part of the following **(10x1 =10)**

a) Explain three phase to single phase cycloconvertor with neat diagram

b) Explain operation of three phase bridge inverter..