Printed Pages:02 **Sub Code: MTEE 042**

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M TECH
(SEM-II) THEORY EXAMINATION 2017-18
MODELLING AND SIMULATION OF POWER ELECTRONIC CIRCUIT

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a Give an overview of PSPICE.

b How does latch-up occur in an IGBT?

c What is modeling of diode?

d What is the role of POWERGUI in MATLAB?

e Enumerate advantages of MATLAB SIMULINK software?

f. What is the role of scope in MATLAB?

g What do you understand by workspace?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. How simulation and design of AC voltage controller is done in MATLAB SIMULINK software?

b. What are main types of Spice .Also write down the limitations of PSPICE?

c. Explain the criteria for switch selection in detail.

d. Explain Independent and Dependent DC sources.

e. How to generate x and y co-ordinates of 100 equidistant points on a unit circle in MATLAB.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain how modeling and simulation of any chopper circuit can be done using MATLAB SIMULINK software?

(b) Explain Voltage controlled switch in PSPICE. How can an idealized MOSFET drive circuit in PSPICE be drawn?

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain switch selection in power electronics devices and also draw the switch implementation using a MOSFET and Diode.

(b) Draw the model of Thyristor using NPN and PNP transistors in MATLAB.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Draw and Explain the modeling of MOSFET in MATLAB.

(b) Explain the major differences between PSPICE and MATLAB simulink software.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Design Transistor Snubber circuits and Thyristor snubber circuits using Pspice.

(b) Explain MOSFET and IGBTs Drive circuit in detail.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) Draw the equivalent circuit using N-Channel MOSFET and PNP Bipolar Transistor.

(b) How the circuit diagram of over-voltage snubber can be drawn in MATLAB.