No. of Printed Pages : 2

BIEEE-018

B.Tech. – VIEP – ELECTRICAL ENGINEERING (BTELVI)

Term-End Examination

00028

December, 2015

BIEEE-018 : ADVANCED POWER ELECTRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Missing data, if any, may be suitably assumed. Use of calculator is permitted.*

1. Give the structure of an n-channel and a p-channel depletion-type MOSFET. Explain their operation and draw their transfer characteristic curve. *4+4+2=10*

2. Explain the operation of a fully controlled bridge rectifier circuit with *5+5=10*

(a) RL load

(b) RC load

3. What are the various modes of operation of an inverter ? Explain the operation of each mode with suitable diagram and waveforms. *4+6=10*

4. Draw the circuit diagram and explain the working of a 3-phase bridge rectifier with necessary mathematical calculations and input-output waveforms. *10*

5. What are the various areas of application of a current regulated voltage source inverter ? Explain in detail. *10*

6. Differentiate between 3-phase square wave and a stepped wave inverter with the help of a necessary circuit diagram and mathematical calculations. *5+5=10*

7. Explain the various types of static reactor compensation techniques based on thyristors, with advantages and disadvantages. *10*

8. Explain the role of PWM current regulated VSI for static reactive VAR generation, with advantages and disadvantages. *10*

9. Write short notes on any ***two*** of the following : *2×5=10*

   (a) Insulated Gate Bipolar Transistor (IGBT)

   (b) Switched Mode Rectifier

   (c) Shunt Reactive-power Compensators
