

**B.TECH. SEM -V (E & TC ENGG.) 2014 COURSE (CBCS) : WINTER
- 2017**

SUBJECT: POWER DEVICES & MACHINES

Day: **Thursday**
Date: **18/01/2018**

W-2017-2147-A

Time: **02.30 PM TO 05.30 PM**
Max Marks. 60

N. B

- 1) All questions are **COMPULSORY**
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Assume suitable data if necessary.
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- Q.1**
- a) Write a short note on IGBT. (05)
 - b) Explain power diode with respect to construction switching characteristics & live frequency diode. (05)

OR

Explain Bipolar junction transistor (BJT) with respect to construction, operation, switching, characteristics, voltage breakdown & thermal runaway. (10)

- Q.2**
- a) Explain the different types of protection circuit of thyristor. (05)
 - b) Compare GTO & TRIAC. (05)

OR

Explain SCR with respect to triggering requirement triggering techniques and isolation techniques. (10)

- Q.3**
- a) What are the effects of the freewheeling diode for 1ϕ full converter with RL load? (05)
 - b) What is commutation circuit? Explain different techniques of commutation. (05)

OR

Explain in detail single phase AC voltage controller for R & RL load. (10)

- Q.4**
- a) Write a note on control strategies for chopper. (05)
 - b) What are advantage & disadvantages of half bridge & full bridge inverter? (05)

OR

Explain the working of single phase full bridge inverter with the help of waveform & its performance parameters. (10)

- Q.5**
- a) Explain construction, working principle of universal motor. (05)
 - b) Give classification of stepper motor. Explain working of any one stepper motor. (05)

OR

Explain construction and torque speed characteristics of a three phase induction motor. (10)

- Q.6**
- a) With schematic diagram explain operation of ON line and OFF line Ups. (05)
 - b) Write a note on 'Solar PV'. (05)

OR

Explain illumination & lighting control protocol & LED drives. (10)