Total No. of Questions : 8] *[Total No. of Printed Pages : 4*

Roll No .....

EE/EX-504(A)-CBGS

B.Tech., V Semester

Examination, June 2020

Choice Based Grading System (CBGS)

Industrial Electronics

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

iii)In case of any doubt or dispute the English version question should be treated as final.

1. a) Define latching current and holding current. Distinguish between holding current and latching current of SCR.7

   b) Why are IGBT becoming popular in their application to controlled converters? State the advantages of IGBT over 7

2. a) Draw the VI characteristics of SCR and mark the holding current and latching current in the characteristic. How SCR differs from TRIAC? 7

b) Compare the following power devices with respect to their advantages and limitations. 7

3. a) Discuss the operation of single phase half wave rectifier with RE load. Also derive its average output voltage equations. 7

b) Derive the expressions for average output voltage and RMS output voltage of single phase semiconverter. 7

4. a) Explain the operation of Zener diode voltage regulator. 7

b) Draw the circuit of a second order Butterworth active low pass filter and derive its transfer function. 7

5. a) What are the assumptions made from ideal Op-Amp characteristics? Define CMRR and SVRR of an Op-Amp. 7

Ideal Op-Amp

Op-Amp Ho &

b) What are the advantages of PLC over relays? Explain the functions of PLC-input and output modules. 7

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6. a) Explain the block diagram of PLC and how PLC's are used in microprocessor. 7

b) Explain the principle of operation and draw the characteristics of MOSFET. 7

7. a) Discuss the different modes of operation of thyristor with the help of its static VI characteristics. 7

Static VI

b) Draw and explain the two transistor model of a SCR. Using this model describe the various mechanisms of turning on a thyristor. 7

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8. a) Explain the switching performance of BJT with relevant waveforms indicating clearly the turn-on, turn-off times and their components. Also define the term safe operating. 7

b) Draw the block diagram and explain the operation of SMPS which can be employed for low power applications and other for high power applications. 7

SMPS

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