



# PRESIDENCY UNIVERSITY

BENGALURU

Roll No.																			
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## Mid - Term Examinations - MARCH 2026

Date: 10 - 03- 2026

Time: 02:00pm - 03:30pm

School: SOE	Program: B. Tech		
Course Code : ECE3016	Course Name: Electronic Controlled Converter		
Semester: VI	Max Marks: 50	Weightage: 25%	

CO - Levels	C01	C02	C03	C04	C05
Marks	25	25	-	-	-

### Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

### Part A

Answer ALL the Questions. Each question carries 2marks.

5Q x 2M=10M

1	Mention various applications of power electronics?	2 Marks	L1	C01
2	How do you convert DC power to AC power?	2 Marks	L1	C01
3	What is the difference between uncontrolled rectifier and controlled rectifier?	2 Marks	L2	C01
4	What is GTO? Why it is used?	2 Marks	L2	C02
5	What is the purpose of gate drive and isolation circuits in controlled converters	2 Marks	L1	C03

### Part B

Answer the Questions.

Total Marks 40M

6.	a.	Define power electronics, draw and explain the block diagram, and discuss major applications.	10 Marks		C01
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<b>Or</b>					
<b>7.</b>	<b>a.</b>	Discuss the control characteristics of SCR, GTO and IGBT.	<b>10 Marks</b>	<b>L2</b>	<b>CO1</b>

<b>8.</b>	<b>a.</b>	Explain peripheral effects of power electronics.	<b>10 Marks</b>	<b>L1</b>	<b>CO2</b>
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<b>Or</b>					
<b>9.</b>	<b>a.</b>	Draw the circuit diagram and explain the operation of a single-phase full bridge controlled rectifier using four SCRs with input and output waveforms.	<b>10 Marks</b>	<b>L2</b>	<b>CO2</b>

<b>10.</b>	<b>a.</b>	In the circuit diagram of a single-phase full bridge controlled rectifier using four SCRs what if one SCR is replaced by diode, explain its operation with input and output waveforms.	<b>10 Marks</b>	<b>L2</b>	<b>CO2</b>
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<b>Or</b>					
<b>11.</b>	<b>a.</b>	Discuss the requirements of gate pulses and different methods of pulse generation and isolation	<b>10 Marks</b>	<b>L2</b>	<b>CO2</b>

<b>12.</b>	<b>a.</b>	Discuss the need for an isolation and explain any one isolation technique for an SCR with circuit diagram	<b>10 Marks</b>	<b>L3</b>	<b>CO3</b>
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<b>Or</b>					
<b>13.</b>	<b>a.</b>	The half wave controlled rectifier has a purely resistive load of R and the delay angle is $\alpha = \pi/2$ . Determine (i) $\eta$ (ii) FF (iii) RF (iv) TUF (v) PIV	<b>10 Marks</b>	<b>L3</b>	<b>CO3</b>