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Bengaluru

Mid Term Examinations - October 2026

Date: 07/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: ECE3204 **Course Name:** Electronic Controlled Converters

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	46	44

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	List the **advantages and disadvantages** of power electronic converters.	2	CO1	BT1
2	Define holding current for the SCR device.	2	CO1	BT1
3	Differentiate between a **power diode** and an **SCR** based on control capability.	2	CO1	BT1
4	What is the function of **triggering pulse** in a controlled rectifier?	2	CO2	BT1
5	What is the purpose of gate drive and isolation circuits in controlled converters?	2	CO2	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Define power electronics, draw and explain the block diagram, and discuss major applications.	10	CO1	BT3
7	Explain the working of Power Diode and SCR in any of the application of power converter?	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

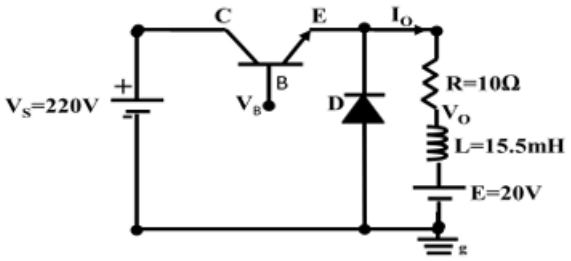
Q.N.	Questions	M	CO	BT
8	Draw the circuit diagram and explain the operation of a single-phase full bridge controlled rectifier using four SCRs with input and output waveforms.	10	CO1	BT3
9	What is the necessity of base drive control? Explain any two methods of base drive control in BJT.	10	CO1	BT2

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Explain peripheral effects of power electronics.	10	CO2	BT3
11	Explain the working of pulse transformer and opto-isolator based gate drive circuits in high-power SCR applications.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

12	A step down chopper is operating from a 220V DC source. The load has R=5Ω and very large inductance so that the load current is constant of 22A. If the chopper frequency is 250Hz. Calculate the ON-period, OFF-period and duty cycle of the chopper, Average load current and minimum and maximum load current	10	CO2	BT3
13	For the chopper circuit shown in Fig. below the duty cycle k=0.7 and chopper frequency f = 2kHz. Calculate (i) Minimum instantaneous load current (ii) Maximum instantaneous load current (iii) Maximum peak-to-peak load current (iv) Average load current (v) Check whether chopper is operating in continuous or discontinuous mode. 	10	CO2	BT3