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SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2010

EE 04 701-POWER ELECTRONICS

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Time: Three Hours

Maximum: 100 Marks

Part A

Answer the following.

- Briefly discuss the parallel operation of SCRs.
- 2. Compare and contrast between BJT and MOSFET.
- 3. A highly inductive load, such that load current can be assumed to be constant, is to be supplied from a 230 V, 50 Hz, single phase supply by a fully controlled and a half controlled bridges.

 Compare the average load voltage provided by each bridge at a firing angle of 30°.
- 4. Draw and explain a simple series inverter with waveforms.
 - 5. Compare Voltage and current commutated choppers.
 - 6. Explain on-off control and phase control of a.c. voltage regulators.
 - Explain the working of boost regulators.
 - 8. List the characteristics and applications of SMPS.

 $(8 \times 5 = 40 \text{ marks})$

Part B

9. Explain the static and switching characteristics of a GTO.

Or

10. (i) With neat sketch explain the reverse recovery characteristics of a power diode.

(8 marks)

(ii) Explain the series connection of SCRs.

(7 marks)

 Explain the operation of a single phase dual converter with circulating current mode. Draw neat waveforms.

(15 marks)

Or

12. Explain with necessary circuit diagrams and waveforms, the working of a three phase voltage source inverter for 1200 mode of operation.

(15 marks)

Turn over

	04 (Pages 2) Name	C 5454
13.	Draw the schematics of step down and step up chopper and derive an expression for output	voltage
	in terms of duty cycle. GIAN GIANTEN MONTANIMANA (15	marks)
	EE 04 701—POWTOR ELECTRONICS	
14.	Explain with a neat circuit diagram and waveforms the operation of a 1¢ to 1¢ cyclocon	verter.
Mark	001; mumixeM	marks)
15.	Explain the various configurations of SMPS and brief its characteristics.	
	Answer the following.	marks)
	Briefly decuse the parallel operation of SC70	.1
16.	Draw the circuit of cuk regulator and explain its working principle with necessary way. Derive the expression for peak to peak ripple voltage of the capacitor that is present ac	
	from a 230 V, 50 Hz, single phase supply by a fully controlled and a hall controlled	
	(1)mpare the average load voltage provided by each bridge at a firing angle of 30°.	
	$60 = 21 \times 4$ xplain a simple series inverter with waveforms.	
	Compare Voltage and current commutated choppers. Explain on off control and phase control of a.c. voltage regulators.	
	Explain the working of boost regulators.	.0
	List the characteristics and applications of SMPS.	
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	Part B	
	Explain the static and switching characteristics of a GTO. Or	.6
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aw nea	Explain the operation of a single phase dual converter with circulating current mode. Drawaeforms.	. 11
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