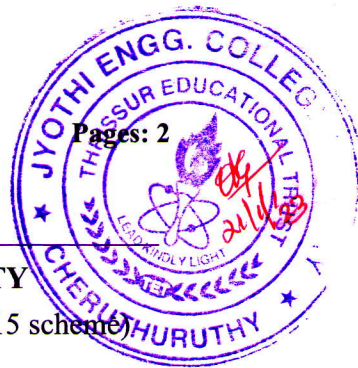


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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S,FE) Examination January 2023 (2015 scheme)

Course Code: EC307

Course Name: POWER ELECTRONICS & INSTRUMENTATION

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) Define softness factor in power diode and explain soft recovery diode and fast recovery diode (6)
- b) Explain the channel formation in IGBT. Also draw and explain its switching characteristics (9)
- 2 a) Draw the circuit of a Buck regulator and explain its working with relevant waveforms (12)
- b) Compare low power diode and power diode (3)
- 3 a) Explain Half bridge DC-DC converter with circuit diagram and relevant waveforms (10)
- b) Explain switching characteristics of Power BJT (5)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Explain the working principle of single phase half bridge inverter with RL load (8)
- b) Explain space vector modulation in three phase inverters (7)
- 5 Explain the generalized static characteristics of instruments (15)
- 6 a) Write any five differences between single phase half bridge and full bridge inverters (5)
- b) How to measure inductance using Maxwell-Wein bridge? (5)
- c) How to measure capacitance using Schering's bridge? (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Explain the classification of transducers (7)
- b) Explain the working of capacitor microphone and list some of its applications (8)
- c) With the help of a neat diagram explain the working of spectrum analyzer (5)

- 8 a) Explain the following briefly (15)
- i) Audio power meter
 - ii) RF power meter
 - iii) Proximity transducer
- b) Explain the selection criteria of transducer (5)
- 9 a) What are the specifications of a Digital voltmeter? Explain the block diagram of digital voltmeter (7)
- b) What are capacitive transducers? Explain its working principle (7)
- c) Explain the measurement of time using digital instrument (6)
