APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020

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)	Explain the structure of power BJT with neat schematic.	(6)
	b)	Explain switching characteristics of power diode with the help of waveform.	(6)
	c)	What is the importance of free-wheeling diodes in converters?	(3)
2	a)	Draw and explain the circuit diagram of Boost converter with inductor current and switching waveform.	(8)
	b)	Describe the working of IGBT and draw input and output characteristics. How does latch up occurs in IGBT?	(7)
3	a)	Define the working of fly back converter with neat diagram.	(5)
	b)	Draw the VI characteristics of GTO and list its various modes.	(3)
	c)	Explain the working of full bridge isolated converters with help of circuit diagram and relevant waveform.	(7)

PART B
Answer any two full questions, each carries 15 marks.

4	a)	List any five differences between offline UPS and online UPS.	(5)
	b)	With neat circuit diagram and switching waveform explain the working of push pull inverters.	(10)
5	a)	Explain how to measure an unknown resistance using Wheatstone's bridge with the help of schematic.	(5)
	b)	Describe phase vector modulation of three phase inverter.	(5)
	c)	Define the following Static Characteristics:	(5)
		i) Accuracy ii) Precision iii) Repeatability iv) Reproducibility v) Resolution	
6	a)	List any two differences between half bridge and full bridge inverter.	(3)
	b)	Explain different classification of instruments.	(8)
	c)	Define Q-factor.	(4)

PART C
Answer any two full questions, each carries 20 marks.

7 a) Differentiate transducer from sensor. Explain various classification of transducer with examples. (10)

   b) Describe the working of Audio power meter with circuit diagram. (10)

8 a) What is the working principle of resistance transducer? Explain the working of stain gauge with neat sketch. (8)

   b) Describe the operation of proximity transducer with neat diagram. (6)

   c) Explain the block diagram of logic state analyser. (6)

9 a) List out any four specifications of digital voltmeter. (4)

   b) Explain the working principle of Hall effect transducer with neat diagram. (6)

   c) Explain the measurement of frequency using digital instrument with neat schematic. (10)

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