Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: EC307

Course Name: POWER ELECTRONICS & INSTRUMENTATION (EC)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks Marks

1 a) Explain the constructional details and the working of power MOSFET. Also bring out the difference between low power MOSFET and power MOSFET. (10)

b) Explain the principle of operation of boost converter. (5)

2 a) Define softness factor of power diodes. (2)

b) Describe the working of IGBT. How does Latch-up occur in IGBT? (5)

c) Explain the switching waveform of power transistor. Also describe its input and output characteristics. (8)

3 a) Explain the working principle of buck converter and illustrate the operation with the inductor current and the switching waveforms. (8)

b) Explain the principle of operation of full bridge isolated converter topology. (7)

PART B

Answer any two full questions, each carries 15 marks

4 a) Explain the working principle of push pull inverter. (5)

b) Describe the principle of operation of Wheatstone bridge and derive the expression for unknown resistance. (8)

c) Distinguish between choppers and inverters. (2)

5 a) Explain the space vector modulation in three phase inverters. (10)

b) Explain Self oscillating type and driven type inverters. (5)

6 a) Explain different classification of instruments. (12)

b) What is the criterion for balance of Schering'sbridge? (3)

PART C

Answer any two full questions, each carries 20 marks

7 a) Explain the range changing circuit of digital voltmeter. (5)

b) Explain the principle of operation of resistance transducer. Explain the difference between bonded and unbounded type strain gauges. (10)

c) Explain the block diagram of swept super heterodyne spectrum analyser. (5)

8 a) Explain the principle of operation of LVDT. List out its advantages. (7)

b) What are the major guidelines for the selection of transducers? (5)

c) Explain about any two types of capacitive transducers. (8)

9 a) Explain the block diagram of frequency synthesizer with waveforms. (6)

b) Draw and explain the basic block diagram of DSO. Sketch the system waveforms and list out its applications. (10)

c) Explain about ramp type digital voltmeter. (4)

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