

Reg No.: _____

00000EC307121901 Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Examination (Regular and Supplementary), December 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) With neat sketch explain in detail the static and dynamic characteristics of power diode. (7)
- b) Compare VI characteristics of power BJT with conventional BJT. (4)
- c) How a GTO can be TURN ON and TURN OFF? (4)
- 2 a) Draw the structure of power MOSFET and explain its channel formation. (6)
- b) Describe the working principle of buck converter with help of circuit diagram and relevant waveform. Write the expression of its output voltage and ripple current. (9)
- 3 a) Describe the working of forward converter with neat schematic. (5)
- b) What is the advantage of power electronics over linear electronics? (2)
- c) With neat circuit diagram and switching waveform explain the working of push pull converters. (8)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Explain Schering's bridge with neat diagram and derive the balancing condition. (8)
- b) With block diagram explain the working of online UPS. Mention two applications. (7)
- 5 a) Write short notes on SMPS. (4)
- b) Distinguish static and dynamic characteristics of instrument. Define any 4 static characteristics. (7)
- c) List the various PWM switching schemes. (4)
- 6 a) With neat block diagram explain the functional elements of instrumentation system. (7)

- b) Explain the working of full bridge isolated inverters with help of circuit diagram and relevant waveform. (8)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Discuss various characteristics for transducer selection. (6)
- b) Describe the operation of hall effect transducer with neat diagram. Write the expression for Hall effect voltage. (10)
- c) What is the working principle of resistive transducer? (4)
- 8 a) Write notes on (8)
- a) Digital voltmeter
 - b) Logic State analyzer
- b) Explain the use of Lissajous pattern. Draw the Lissajous patterns for phase angle 0° , 90° , 180° , 270° and 360° (8)
- c) Explain the working principle of DSO (4)
- 9 a) Explain the construction and working of LVDT with neat schematic. (5)
- b) With neat diagram explain the working of capacitor microphone. (5)
- c) Describe the block diagram of spectrum analyser. (10)
