Reg No.:_____ **00000EC30712190** 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^o, 90^o, 180^o, 270^o and 360^o (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)

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