

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S,FE) Examination January 2022 (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) Compare linear electronics and power electronics (3)
- b) Explain the turn off characteristic of a power diode with the help of waveform (5)
- c) Explain the working of a buck converter with the help of circuit diagram and waveform (7)
- 2 a) Explain the switching characteristics of a power MOSFET with relevant diagram (10)
- b) Illustrate the development of flyback converter topology with the help of diagrams (5)
- 3 a) List out the advantages of isolated converters (3)
- b) Explain the working of forward converter with the help of waveform (7)
- c) Explain the structure of IGBT (5)

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

- 4 a) Explain the working of switched mode power supply with the help of a block diagram (8)
- b) Describe the dynamic characteristic of a first order instrument. Define the time constant. Give an example (7)
- 5 a) Explain the working of single phase push pull inverter with the help of relevant diagram (8)
- b) Describe the space vector modulation technique in three phase inverter (7)
- 6 a) Explain the following Static characteristics with respect to a voltmeter (5)
 - i. Accuracy
 - ii. Precision
 - iii. Resolution
 - iv. Sensitivity
 - v. Repeatability

- b) With neat sketches derive the balance conditions of Schering's bridge. How capacitance can be found out. (10)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) What is meant by passive and active transducers? Give examples. (6)
b) Describe the basic principle of a strain gauge. What is gauge factor? (6)
c) Describe with the help of necessary diagrams, how strain gauge can be used to measure weight. (8)
- 8 a) With the help of block diagrams describe Logic State analyzers. (6)
b) With the help of block diagrams describe RF power meter. (6)
c) Explain the digital measurement technique of time, phase and frequency (8)
- 9 a) Explain with necessary diagrams how capacitive transducers can be used to measure liquid level. (6)
b) With the help of block diagram describe digital voltmeter. (6)
c) List out the application of digital storage oscilloscope (4)
d) Describe the basic principle of hall effect transducer (4)
