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| **Scheme of Valuation/Answer Key**(Scheme of evaluation (marks in brackets) and answers of problems/key) |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**SIXTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019 |
| **Course Code: AE312** |
| **Course Name: POWER ELECTRONICS** |
| Max. Marks: 100 |  | Duration: 3 Hours |
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| **PART A**  |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | Marks |
| 1 | a) | Construction Figure -2marksExplanation -4 marksComparison 4 points -2marks | (8) |
|  | b) | 4 modes explanation -1.5\*4 =6marksFigure – 1mark | (7) |
|  |  |  |  |
| 2 | a) | Turn on characteristics and explanation– 3.5 marksTurn off characteristics and explanation – 3.5 marks | (7) |
|  | b) | Circuit – 1markDescription -3marksWaveform -1 marksAny two methods to improve power factor – (1.5\*2) =3 marks | (8) |
|  |  |  |  |
| 3 | a) | Circuit diagram -1markWaveform – 2 marksExplanation -3 marks | (6) |
|  | b) | Circuit diagram -1markWaveform – 2 marksExplanation -3marksDerivation of RMS and Average voltage – 3marks | (9) |
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| **PART B**  |
| ***Answer any two full questions, each carries 15 marks.*** |
| 4 | a) | 1 quadrant operation -3 marks2 quadrant operation -3 marksCircuit diagram -1mark | (7) |
|  | b) | Each expression – 2 marks\*4 | (8) |
|  |  |  |  |
| 5 | a) | Circuit diagram – 2marksWaveform -2 marksExplanation – 3 marks | (7) |
|  | b) | Circuit diagram – 1 markWaveform – 2 marks5 Modes of operation -5marks | (8) |
|  |  |  |  |
| 6 | a) | Circuit diagram – 1.5 marksWaveform – 2.5 markExplanation – 4 marks | (8) |
|  | b) | Single PWM -2marksMultiple PWM- 2marksSine PWM-3marks | (7) |
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| **PART C**  |
| ***Answer any two full questions,each carries 20 marks.*** |
| 7 | a) | Circuit diagram – 2 marksWaveform – 2marksOutput Voltage equation -2marksExplanation -4 marks | (10) |
|  | b) | Driver circuit diagram -1 markDescription and design -4mark | (5) |
|  | c) | Circuit diagram-1markDescription and waveform -4mark | (5) |
| 8 | a) | Online UPS – 4marksOffline UPS – 4 marks | (8) |
|  | b) | Any circuit -2marksExplanation -5 marks | (7) |
|  | c) | Converter diagram-1markExplanation – 4 marks | (5) |
| 9 | a) | 2 isolation circuits – 4marks each | (8) |
|  | b) | Explanation -5 marksCircuit diagram – 2 marks | (7) |
|  | c) | Circuit – 1markExplanation -4 marks | (5) |
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