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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019**

**Course Code: EE465**

**Course Name: Power Quality**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

- |  | Marks |
|--|-------|
| 1 Differentiate between impulsive and oscillatory transients   | (5)   |
| 2 Calculate the total harmonic distortion of a voltage waveform with following harmonic frequency makeup: Fundamental $V_1=114V$ , $V_3=4V$ , $V_5=2V$ , $V_7=1.5V$ , $V_9=1V$ | (5)   |
| 3 Define windowing. How window function can be used for harmonic analysis  | (5)   |
| 4 What are the objectives of power quality monitoring?   | (5)   |
| 5 Differentiate between active and passive filters used for harmonic elimination.  | (5)   |
| 6 Explain how transformer connection employing phase shift helps in the cancellation of current harmonics?   | (5)   |
| 7 What do you mean by CMRR?  | (5)   |
| 8 Explain power frequency fields.  | (5)   |

**PART B**

*Answer any two full questions, each carries 10 marks.*

- |  |      |
|--|------|
| 9 What are the disturbances coming under the term waveform distortion? Explain each with neat figures. | (10) |
| 10 a) With the help of neat figure illustrate about transients.  | (6)  |
| b) Define the following  | (4)  |
| i) THD   |      |
| ii) TDD  |      |
| 11 Explain the effects of harmonic distortion on power system.   | (10) |

## PART C

*Answer any two full questions, each carries 10 marks.*

- 12 Obtain the Fourier series expression for the waveform shown below. Peak value of the waveform is unity. (10)

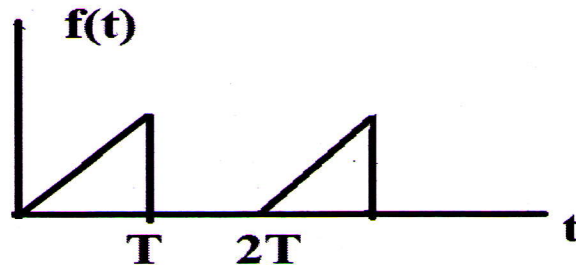


Figure:1

- 13 a) Explain why waveforms need processing? (4)  
 b) Explain spectrum analysers and harmonic analysers. (6)
- 14 With the help of a neat diagram explain flicker meter. (10)

## PART D

*Answer any two full questions, each carries 10 marks.*

- 15 Explain in detail about principle of operation and various configurations of active power filter with neat schematic diagrams (10)
- 16 a) What are the limitation of passive filters (5)  
 b) Mention any five power quality issues of grid connected renewable energy sources. (5)
- 17 a) Explain conducted emission and radiated emission (4)  
 b) Write a note on EMI Mitigation methods (6)

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