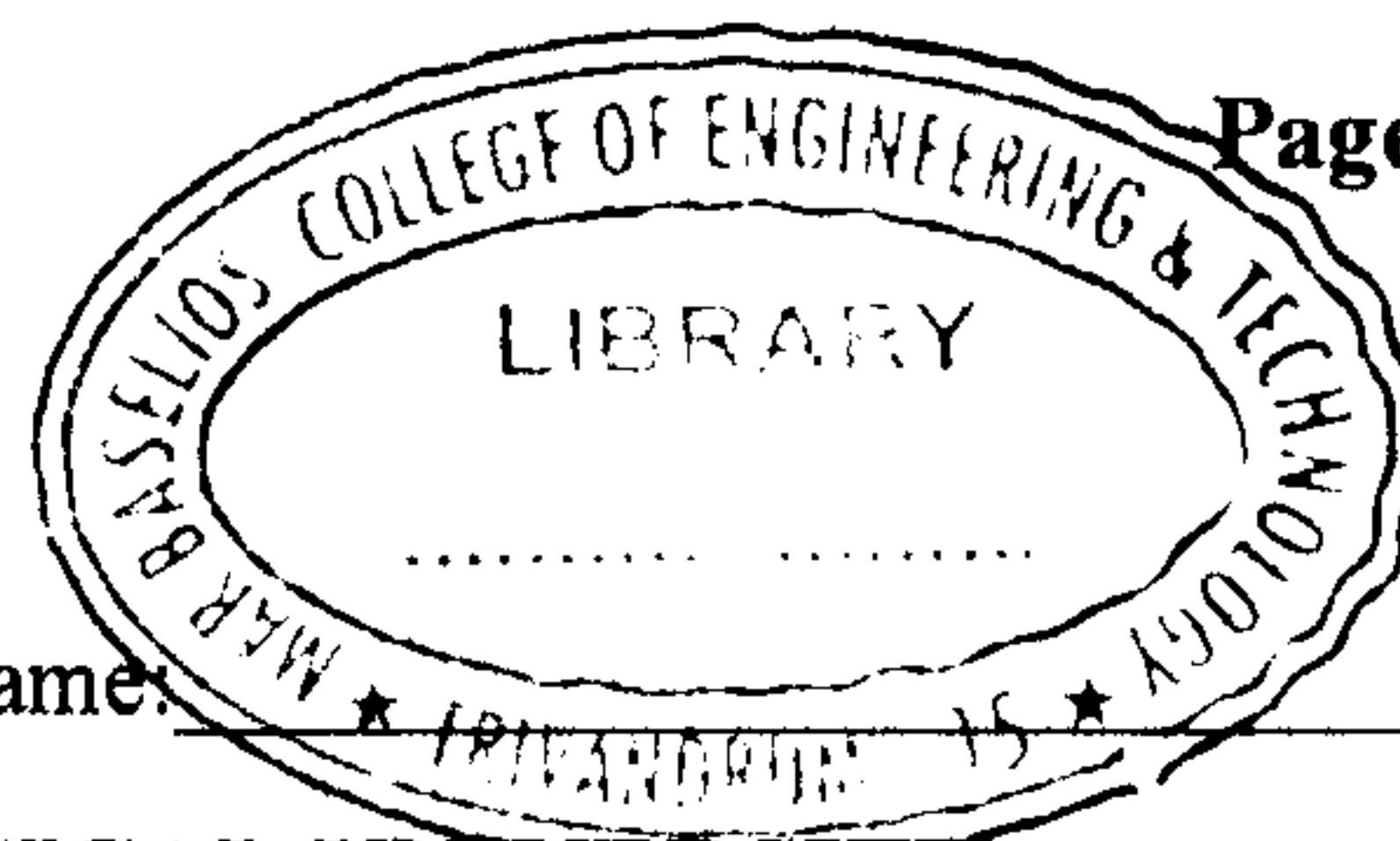


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Pages:3



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)

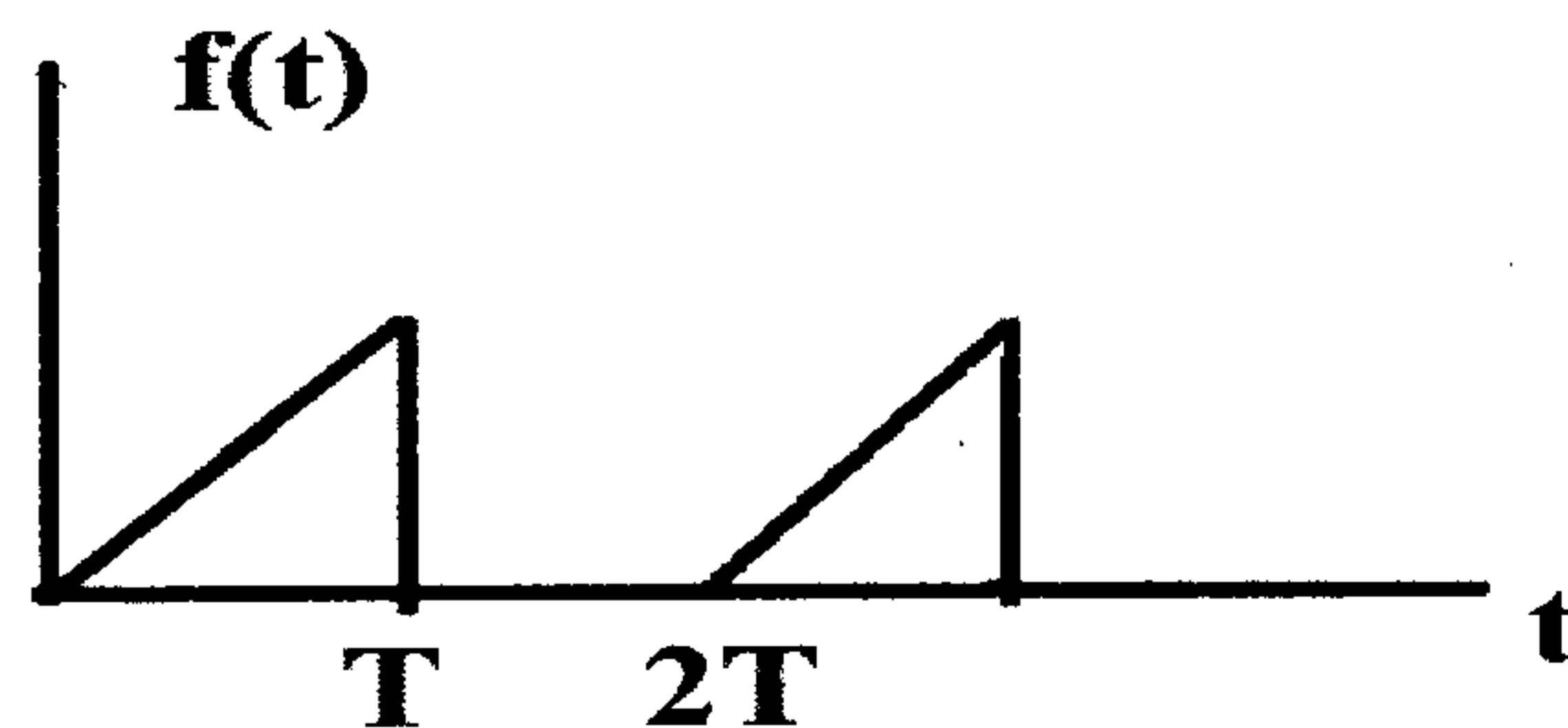


Figure:1

- 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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