

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh semester B.Tech examinations (S), September 2020

**Course Code: EE465****Course Name: Power Quality**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer all questions, each carries 5 marks.*

Marks

- | | | |
|---|---|-----|
| 1 | Define power quality. Comment on the growing concern on the quality of electric power by both electrical utilities and end users. | (5) |
| 2 | Define triplen harmonics and explain its effects in power system? | (5) |
| 3 | Explain how non periodic signals are analysed? | (5) |
| 4 | What is meant by power quality monitoring? List any 6 specifications of a power quality monitoring equipment. | (5) |
| 5 | Explain hybrid filters. | (5) |
| 6 | Distinguish between active and passive filters. | (5) |
| 7 | Distinguish between common mode rejection ratio and common mode noise. | (5) |
| 8 | Explain high frequency interference. | (5) |

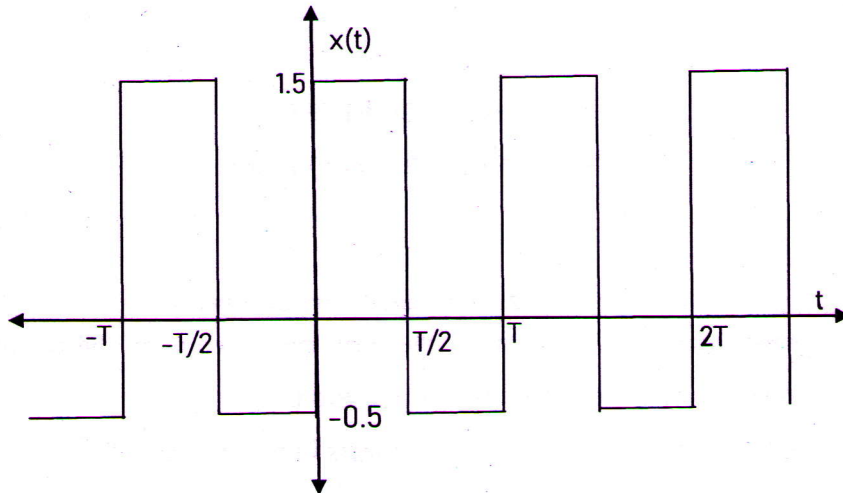
PART B*Answer any two full questions, each carries 10 marks.*

- | | | |
|----|--|-----|
| 9 | a) Explain the various short duration voltage variations. | (6) |
| | b) With the help of waveform explain the term DC offset. | (4) |
| 10 | a) List any five objectives for framing power quality standards. | (5) |
| | b) Discuss the effects of harmonic distortion on capacitors. | (5) |
| 11 | a) Briefly discuss the common non-linear loads which cause voltage distortion. | (5) |
| | b) Find the harmonic distortion of a voltage with following harmonic components: | (5) |

Fundamental=308V, 3rd harmonic=30V5th harmonic=16V, 7th harmonic=9V9th harmonic=4V

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

- 12 a) Find the amplitude of the 5th harmonics of the given wave form. (5)



- b) Also find the dc component and rms value of the fundamental component of the above waveform. (5)
- 13 Write short note on the following (10)
- Powerline disturbance analyzer
 - Flicker meter
- 14 a) Define Windowing. How window function can be used for harmonic analysis. (5)
- b) What are the information that are obtained from monitoring as part of site surveys? (5)

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

- 15 Explain in detail about principles of operation of shunt APF and series APF with neat schematic. (10)
- 16 a) Explain the Power Quality issues of Grid connected Renewable Energy Sources. (10)
- 17 a) What are the advantages and drawbacks of active power filters? (5)
- b) Explain the procedure for reducing conducted emission. (5)
