

Printed pages: 02

Sub Code: NEN042

Paper Id: 121802

Roll No: XXXXXXXXXX

**B TECH
(SEM-VIII) THEORY EXAMINATION 2017-18
POWER QUALITY**

*Time: 3 Hours**Total Marks: 100***Note:** Attempt all Sections. If require any missing data; then choose suitably.

SECTION - A

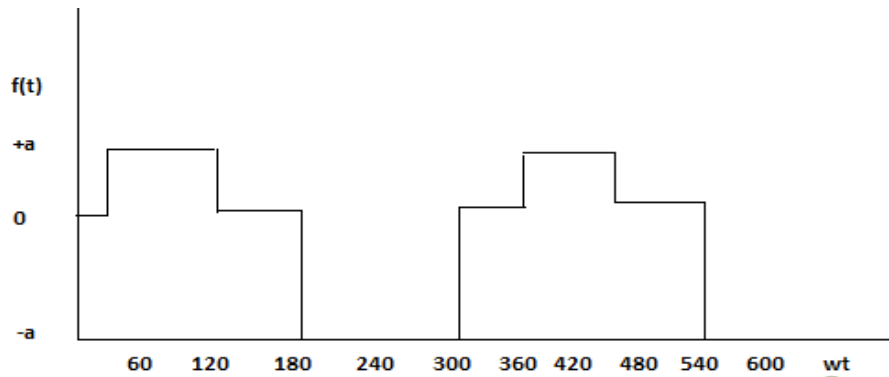
1. Attempt all questions in brief.**2 x 10 = 20**

- a. Define DC Offset
- b. What is Long duration Voltage variation?
- c. What is Neutral Voltage swings?
- d. What do you mean by harmonics?
- e. What is power factor?
- f. Define momentary interception.
- g. Difference between Voltage sag and voltage swell.
- h. What is Voltage Swell?
- i. Define Notches.
- j. What is Rotatory UPS?

SECTION - B

2. Attempt any three of the following:**10 x 3 = 30**

- a. What are the major power quality issues? Explain in details.
- b. What is Voltage Sag? Explain Motor Starting and Arc Furnace.
- c. What are the sources of transient over voltage? Explain some with suitable example.
- d. What are the causes of voltage and Current harmonic? Determine RMS and THD of the following waveform.



- e. Explain the operation of Distribution STATIC COMPENSATOR (DSTATCOM) used for sag mitigation.

SECTION – C

3. **Attempt any one part of the following:** **10 x 1 = 10**
 (a) Explain Long duration Voltage variation with suitable example.
 (b) Describe the following terms with suitable example:
 (1) Inrush Current
 (2) Power factor
 (3) Transient
 (4) Nonlinear loads
 (5) Voltage Imbalance
4. **Attempt any one part of the following:** **10 x 1 = 10**
 (a) What are the principle of Voltage Sag performance? Give Solution at end user level.
 (b) Explain Active Series Compensator with neat diagram.
5. **Attempt any one part of the following:** **10 x 1 = 10**
 (a) Explain power factor improvement using capacitor switching transient.
 (b) What are the devices for over voltage protection? Explain at least two giving suitable diagram.
6. **Attempt any one part of the following:** **10 x 1 = 10**
 (a) What are the effect of harmonics on Transformers and AC Motors?
 (b) Write a short notes on:
 I. Harmonic Indices
 II. Inter Harmonic
7. **Attempt any one part of the following:** **10 x 1 = 10**
 (a) Explain Unified Power Quality Conditioner (UPQC)
 (b) Explain in detail about Flicker Meter with suitable diagram.