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Sub Code: NEE042

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

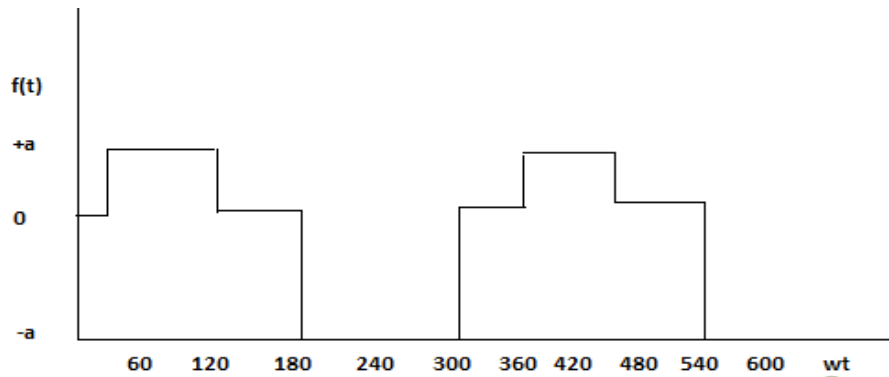
*Time: 3 Hours**Total Marks: 100***Note:** Attempt all Sections. If require any missing data; then choose suitably.

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