

Total No. of Questions : 10]

SEAT No. :

[Total No. of Pages : 2

**P3318**

**[5461]-575**

**B.E. (Electrical)**

**POWER QUALITY**

**(2015 Course) (Semester - I) (End Sem.) (Elective - I) (403143B)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicates full marks.*
- 4) *Use of calculator is allowed.*
- 5) *Assume suitable data, if necessary.*

**Q1) a)** Why power quality is gaining importance now a days? **[5]**

b) Classify power quality events in long duration events and short duration events. **[5]**

OR

**Q2) a)** Discuss how power quality is affected due to grounding problems. **[5]**

b) Differentiate between transients and harmonics. **[5]**

**Q3) a)** Explain economic impact of voltage sag. **[5]**

b) Discuss in brief flicker mitigation techniques. **[5]**

OR

**Q4) a)** List techniques are used for voltage sag mitigation and explain any one in brief. **[5]**

b) Explain the following terms with reference to transient overvoltage **[5]**

i) Capacitor switching

ii) Ferro resonance

**Q5) a)** Explain harmonic indices used in analyzing harmonic distortion. **[6]**

b) Explain the waveform distortion due to different nonlinear loads. **[10]**

OR

**P.T.O.**

**Q6) a)** Explain impact of harmonics on various power system quantities. (Voltage, Current, Power). [8]

b) Write a short note on triplen harmonics. [8]

**Q7) a)** What are the harmonic resonances? Explain consequences of harmonic resonances. [8]

b) What are the harmonic mitigation techniques? Explain any one. [8]

OR

**Q8) a)** Write a short note on IEEE 519 standard for harmonic distortion. [8]

b) What is the need of locating harmonic sources? How capacitors affect the power system characteristics? [8]

**Q9) a)** Discuss in detail about the instruments used for analyzing non sinusoidal voltage and currents. [10]

b) What computer tools are used for effective power quality analysis? Explain. [8]

OR

**Q10)a)** Bring out the significance of Power quality monitoring. What is the important power quality monitoring objectives? [10]

b) Explain the harmonic analyzer and disturbance analyzer. [8]

