Code No: **R164102F** **R16** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Jan/Feb - 2022

ELECTRIC POWER QUALITY

(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
****

PART–A *(14 Marks)*

1. a) Write briefly about the power quality in related with consumer utilization. [3]
   b) Write about the sources of voltage interruptions. [3]
   c) How the end user will gets affected by the voltage regulation? [2]
   d) What is meant by the current distortion? [2]
   e) List out the power quality issues affected by the distributed generation. [2]
   f) Write the role of true R.M.S in the power quality measurement? [2]

PART–B *(4x14 = 56 Marks)*

2. a) Explain in detail about the impact of power frequency variations on the power quality. [7]
   b) Discuss about the inter harmonics and noise waveform distortions with an example. [7]

3. a) Discuss about the operation of transient voltage surge suppressors. [7]
   b) Explain about the sources of voltage sags and voltage swells in power systems. [7]

4. a) What do you understand by power factor penalty? Explain with an example. [7]
   b) A 440V, 50Hz, 3 phase supply delivers 180kW at 0.6 power factor lagging. It is desired to bring the power factor to 0.95 by using shunt capacitors. Find the capacitance if they are connected in star and delta. [7]

5. a) Explain the concept of harmonics versus transients. [7]
   b) Discuss in detail about the impact on capacitors due to harmonics. [7]

6. a) Explain about the reciprocating engine generator set of DG. [7]
   b) Draw and explain the operation of switching inverter. [7]

7. a) What are various objectives of monitoring of power quality. [7]
   b) Explain the role of spectrum analyzers and harmonic analyzers in the power quality measurement. [7]