QPC: RJ20MTECH053 AR 19 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (First Semester – Regular) Examinations, June – 2021

MPEPE1033 – POWER QUALITY

(Power Electronics)

Time: 2 hrs Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A **(2 x 10 = 20 Marks)**

Q1. Answer **ALL** questions

a. Define voltage flicker according to IEEE standard 1159.

b. Write the significance of IEEE – Std 519.

c. Find the total harmonic distortion of a voltage waveform with the following harmonic frequency make up: fundamental = 114V, 3^{rd} harmonic = 4V, 5^{th} harmonic = 2V, 7^{th} harmonic = 1.5V and 9^{th} harmonic = 1V.

d. What is triplex harmonics?

e. Specify the reason for the need of shunt capacitors.

f. List the sources power quality sources.

g. What is the need of power quality improvement?

h. Give the examples for passive and active filters.

i. Write down the examples of Lyapunov function

j. Recall the advantages of Hamilton equation.

PART – B **(6 x 5 = 30 Marks)**

Answer ***ANY FIVE*** questions **Marks**

2. A 14.4 kV three phase system serves a distribution line with an impedance of 2+j6 ohms. If the voltage at the sending end remains 1.4kV. Obtain the sag magnitude for the balanced three phase load of 10+j5 ohm per phase. **(6)**

3. Explain power quality issues occurred due to three phase power converters with suitable circuits and waveforms. **(6)**

4. Discuss the Harmonic distortion due to fluorescent lamps with help of its waveform. **(6)**

5. Demonstrate how transformers aid to improve the power quality. **(6)**

6. With the help of neat schematic diagram explain the function of Power Factor Control based on Bilateral Single Phase. **(6)**

7. Explain in detail control methods for single phase APFC. **(6)**

8. Develop the design procedure for variable structure adaptive model for any one control application. **(6)**

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