Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VIII(NEW) EXAMINATION – SUMMER 2019**

**Subject Code:2180911 Date:09/05/2019**

**Subject Name:Power Quality And Management**

**Time:10:30 AM TO 01:00 PM Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | What is Power Quality? Discuss the examples of poor power quality issues in brief. | **03** |
| | **(b)** | Define the following terms: 1. Displacement Power Factor 2. Nonlinear load 3. Flicker | **04** |
| | **(c)** | Discuss significance of power factor correction with power quality point of view. | **07** |
| **Q.2** | **(a)** | Explain Responsibilities of the Suppliers and Users of Electrical Power. | **03** |
| | **(b)** | Define: 1.Linear Loads 2.Inrush Current 3.Voltage Sag 4.Voltage Swell | **04** |
| | **(c)** | Explain causes of voltage and current harmonics. | **07** |
| | | **OR** | |
| | **(c)** | List cures for low frequency disturbances. Explain any two. | **07** |
| **Q.3** | **(a)** | Explain application of synchronous condensers. | **03** |
| | **(b)** | Discuss the effect of harmonics on AC Motors | **04** |
| | **(c)** | Explain power factor improvement using static VAR compensators. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain following terms related to EMI. (1) Common Mode Noise (2) Common Mode Rejection Ratio (3) Conducted Emission. | **03** |
| | **(b)** | What is a transient? Discuss the causes of transients in power system. | **04** |
| | **(c)** | Discuss the effects of harmonics on AC motor performance. | **07** |
| **Q.4** | **(a)** | Define the term harmonics? List the sources of harmonics in power system. | **03** |
| | **(b)** | Explain different schemes of grounding and bonding in power system in detail. | **04** |
| | **(c)** | List and explain types of harmonics based on the sequence of rotation. Also discuss the effect of each | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | What is Electromagnetic Interference (EMI)? Describe main sources of EMI. | **03** |
| | **(b)** | Explain power quality issues with a system containing DG. | **04** |
| | **(c)** | What is the importance of the value of earth's resistance? Describe the fall of potential methods for measurement of earth's resistance. | **07** |
| **Q.5** | **(a)** | Differentiate grounding and bonding. | **03** |
| | **(b)** | Describe effect of EMI on power quality. | **04** |
| | **(c)** | What is distributed generation? Elaborate its effect on the power quality issues. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | What are susceptibility criteria for power quality? | **03** |
| | **(b)** | Discuss the Capacitor switching transient. | **04** |
| | **(c)** | Explain number of test locations & test duration for power quality measurement. | **07** |

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