

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2180912****Date:09/05/2019****Subject Name:Condition Monitoring****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.

**MARKS**

- Q.1** (a) Explain polarization index of transformer. **03**  
 (b) What is insulation resistance? Explain detail Insulation resistance of Transformer and induction motor. **04**  
 (c) Explain modern tools and techniques used in condition monitoring. **07**

- Q.2** (a) Explain Gas ratio method. **03**  
 (b) Explain Aging of electrical Power infrastructure. **04**  
 (c) Explain Frequency Response Analysis method for power transformer. **07**

**OR**

- (c) Explain Transformer oil paper insulation system. **07**  
**Q.3** (a) Explain signature analysis of condition monitoring. **03**  
 (b) Explain Partial Discharge measurements. **04**  
 (c) What is necessity of Frequency response analysis? Explain various test of FRA. **07**

**OR**

- Q.3** (a) Explain OLTC and Bushing diagnostics of transformer. **03**  
 (b) Write insulation failure modes. **04**  
 (c) Explain modern approach for condition monitoring of power transformers. **07**

- Q.4** (a) Write factor affecting degradation of insulation. **03**  
 (b) Write any one rotating machine full specification as per standard and Briefly describe insulation failure modes. **04**  
 (c) Explain in brief Construction, operation and failure modes of electrical machines. **07**

**OR**

- Q.4** (a) Classify types of insulation used in rotating machine. **03**  
 (b) Explain Instrumentation requirement for Temperature measurement. **04**  
 (c) Explain structure of electrical machines and their types. **07**

- Q.5** (a) Explain Air-Gap Eccentricity. **03**  
 (b) Explain Vibration terminology. **04**  
 (c) Explain identifying methods of mechanical faults with motor current signature analysis. **07**

**OR**

- Q.5** (a) Explain shorted turns in stator windings. **03**  
 (b) Explain lubrication oil and bearing degradation. **04**  
 (c) Explain condition monitoring of rotating elements. **07**

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