

**M. Tech.-III (Electrical -Power System) (CBCS – 2015 Course) :**

**WINTER - 2018**

**SUBJECT: SELF STUDY PAPER – I CONDITION MONITORING OF ELECTRICAL EQUIPMENT**

Day : Saturday  
Date : 08/12/2018

**W-2018-3283**

Time: 11.00 AM TO 02.00 PM  
Max. Marks: 60.

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**N.B.:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the **RIGHT** indicate full marks.
  - 3) Draw neat labeled diagrams **WHEREVER** necessary.
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**Q.1** Explain vibration analysis of different types of machinery. (10)

**OR**

**Q.1** Explain condition monitoring of (10)  
i) bearing ii) lubricant

**Q.2** Explain (10)  
i) volume resistivity ii) polarization index

**OR**

**Q.2** State significance of tan delta .Explain how tan delta can be measured for the (10)  
insulating materials.

**Q.3** Describe condition monitoring of bushings and on load tap changers in transformer, (10)

**OR**

**Q.3** Describe life cycle assessment of power transformer with case study. (10)

**Q.4** Draw block diagram and describe procedure to detect faults in induction motor (10)  
using MCSA technique.

**OR**

**Q.4** Write down mathematical equation for detecting bearing faults and eccentricity (10)  
faults in induction motor .Draw frequency spectrum and its analysis.

**Q.5** What are the different tests to determine degradation of cables? Describe (10)  
significance of each test.

**OR**

**Q.5** Describe tests required for condition monitoring of batteries. (10)

**Q.6** What is arcing ground and its effect on alternator? What type of protection is (10)  
provided to alternator to prevent this?

**OR**

**Q.6** Describe switching transients and protection provided in alternator against this. (10)