IT 702 Diagnostic Maintenance & Monitoring

Major Test

Time: 2 Hours Max Marks: 35
Attempt All Questions

1. Answer the following very briefly. (5)
   i) Write two performance monitoring parameters for I.C. engines.
   ii) What is the main advantage of vibration waterfall plots?
   iii) List two methods of monitoring furnace temperature.
   iv) What is the particle size range in which wear debris can be detected by a) Ferrography b) Spectrographic oil analysis?
   v) Write two indicators of degradation of transformer insulation.

2. i) What are the benefits of predictive maintenance? (3)
   ii) What are TEDS vibration transducers? (3)

3.
   i) What is the difference between linear and exponential averaging in FFT analyser? What is overlap in averaging process? (4)
   ii) At what frequencies do you expect high vibration levels due to a) Damaged gear b) Eccentricity in induction motor c) Defect in ball of rolling element bearing? (3)

4.
   i) Two closely kept machines individually produce noise levels of 87 and 92 dB at 2 meter distance in open space. What will be their combined level at 4 meter distance when both are operating? (2)
   ii) Which frequencies will appear in the vibration spectrum of an induction motor due to broken rotor bar when the rotational speed is 1440 rpm, slip is 10% and supply frequency is 49 Hz? (3)

5.
   i) Explain Emission Spectrometry for oil analysis (3)
   ii) Explain with figures the difference between resonant and broadband type transducers used in acoustic emission monitoring. Which of these is recommended to be used for frequency analysis of AE signal? (3)

6.
   i) How can we measure the change in wall thickness of a pipe using Ultrasonic testing? (3)
   ii) Write a short note on Thermography. (3)