Time: 3 Hours **Max Marks:80**

Note: 1. Q1 is compulsory
2. Solve any three from remaining

Q1 **Solve any Four out of Six** **20**

A. Explain the benefits of Vibration based condition monitoring?
B. Describe the different applications of Laser Doppler vibrometry (LDV).
C. Explain the essential settings in Data Acquisition System (DAS).
D. Discuss the importance of continuous pump vibration monitoring.
E. Describe the characteristic of cavitation experienced in Centrifugal pump.
F. Explain the Unique reasons for mechanical looseness.

Q2

A. Illustrate the concept prognosis and diagnosis in vibration-based condition monitoring with example. **10**
B. Explain the methods to diagnose the vibrations due to bearing faults? Also explain the vibration generated by defective rolling bearings. **10**

Q3

A. Explain the main methods are used for attaching sensors to monitoring locations in predictive maintenance. **10**
B. What are the methods for shaft alignment and how do you diagnose a misalignment situation? **10**

Q4

A. What is the effect of bent shaft on machine vibration? Also explain the monitoring frequency for bent shaft? **10**
B. Describe the methods to reduce the gearbox problems using condition monitoring. **10**

Q5

A. What are the challenges that needed to be addressed by the vibration monitoring system in sugar mills. **10**
B. Explain the four classes of Fourier transform with graph. **10**

Q6

A. Explain vibration-based condition monitoring and fault diagnosis in rotating machine. **10**
B. What Is Windowing? Describe Windowing functions with diagram. **10**