

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016

Subject Code: 160103**Date: 22/10/2016****Subject Name: Vibration and Noise Control****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.

- Q.1** (a) Define Vibration. What are the main reasons of vibration? State the importance of vibration study in engineering. **07**
- (b) Define following terms: **07**
- Resonance
 - Degrees of Freedom
 - Damping
 - Time Period
 - Natural Frequency
 - Periodic Motion
 - Forced Vibrations
- Q.2** (a) What is Damping? Why it is needed? Also prove that in case of Coulomb damping amplitude reduces by $4F/k$ in one complete cycle. **07**
- (b) Explain the types of damping in detail **07**
- OR**
- (b) Describe Beats phenomena along with neat sketches **07**
- Q.3** (a) Discuss and describe Logarithmic Decrement **07**
- (b) A damper offers resistance of 0.05N at constant velocity of 0.04 m/sec. The damper is used with $k= 9$ N/m. Determine the damping and frequency of the system when mass of the system is 0.10 kg. **07**
- OR**
- Q.3** (a) Explain the working principles of an accelerometer along with a neat sketch. **07**
- (b) Write a short note on frequency measuring device **07**
- Q.4** (a) Derive the equations for an under-damped system **07**
- (b) Explain basics of Vibration absorbers with example. What is the difference between vibration absorber and vibration isolator. **07**
- OR**
- Q.4** (a) Explain the working principles of vibrometer along with a neat sketch. **07**
- (b) Derive the equations for an over-damped system. **07**
- Q.5** (a) Describe in detail vibration isolation **07**
- (b) Write a note on Transmissibility. **07**
- OR**
- Q.5** (a) Explain **07**
1. Torsionally equivalent shaft.
 2. Control of Vibrations
- (b) Explain in detail series and parallel connections of Springs. **07**
