

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER VI (OLD) – • EXAMINATION – WINTER 2017

Subject Code: 160103
Date: 03-11-2017
Subject Name: Vibration and Noise Control
Time: 02:30 pm to 05 :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**
