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: • Resonance • Degrees of Freedom • Damping • Time Period • Natural Frequency • Periodic Motion • Forced Vibrations	**07**
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 1. Torsionally equivalent shaft. 2. Control of Vibrations	**07**
	(b)	Explain in detail series and parallel connections of Springs.	**07**

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