

**I.D. No. 24480**

**B. Tech. 7th Semester F. Scheme (Mechanical Engg.-VII)**

**Examination, May-2014**

**MECHANICAL VIBRATION**

**Paper-ME-409-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100*

*Note : Attempt any five questions in all. Question Number 1 is compulsory and select at least one question from each section. Assume the suitable data and equation wherever required to explain the concept.*

**1. Explain the following short type questions with suitable examples :**

- (a) What do you understand by Vibration ? What are the ways to reduce it ?
- (b) Single Degree of Freedom system
- (c) Vibration Absorber
- (d) Vibrating String.

4×5

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3. A body is subjected to two harmonic motions given below. What harmonic motion should be given to the body to bring it to the equilibrium ?

$$X_1 = 15 \sin (wt + \pi/6)$$

$$X_2 = 8 \cos (wt + \pi/3)$$

**Section-B**

4. Explain the concept Rotor Unbalance, Critical Speeds and Whirling of Rotating Shafts with suitable example and mathematical derivation. 20
5. Explain the various types of Vibration Measuring Instruments. 20

**Section-C**

6. Explain the concept of Vibration Absorber, Centrifugal Vibration Absorber and Vibration Damper with suitable

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**Section-D**

8. Derive the expression for Lateral Vibration of Beam. 20
9. A simply supported beam of length  $l$  is deflected by a force  $P$  applied at a point distance  $c$  from one end. Find the resulting transverse vibrations when the load is suddenly removed. 20