Roll No. ....

24480

B. Tech. 7th Semester (ME)

Examination – December, 2016

MECHANICAL VIBRATION

Paper : ME-409-F

Time : Three Hours]	*[Maximum Marks : 100*

Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions. Question No. 1 is *compulsory* and attempt at least *one* question from each Section.

1. Explain following :   4 × 5 = 20

   (a)   Natural Frequency

   (b)   Aperiodic Motion

   (c)   Continuous System

   (d)   Damping Ratio

SECTION – A

2. Derive an expression which explains the response of a classical spring Mass System to Underdamping. 20

3. A Simple U-Tube manometer having cross-section area 'A' is filled with liquid of density ρ. Find out the natural frequency of the resulting motion from the small displacement of liquid. 20

SECTION – B

4. What is damping ? Derive an expression for energy dissipated by damping in case of forced damped harmonic vibration of a single degree of freedom system. 20

5. What do you understand by Transient Vibrations ? Explain the system response to Step Input. 20

SECTION – C

6. What do you understand by Coordinate Coupling ? Explain with a labelled diagram in detail. 20

7. What is a Vibration Absorber ? Explain the Centrifugal Vibration Absorber in detail. 20

SECTION – D

8. Derive an expression explaining Lateral Vibration in a String fixed at one end. 20

9. What is Torsional Vibration ? Derive an expression for Torsional vibration in case of a shaft having torque 'T' acting at both ends. 20