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B.Tech. 7th Semester (ME)
Examination, December-2015

MECHANICAL VIBRATION

Paper-ME-409-F

Time allowed : 3 hours [Maximum marks : 100]

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

1. Explain the following : 4×5=20
- (a) Resonance
 - (b) Aperiodic Motion
 - (c) Continuous System
 - (d) Critical Damping Coefficient.

Section-A

2. For a Classical Spring Mass System derive an expression which explains the system response 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

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24480

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5. What do you understand by Transient Vibrations ?
Explain the system response to Impulse 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 Longitudinal Vibration
in case of a Bar 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

24480

