

24480

B. Tech. 7th Semester (M.E.) F. Scheme Examination,  
May-2017

**MECHANICAL VIBRATION**

**Paper-ME-409-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100*

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

1. Explain the following : 4×5
- (a) Forced Vibration.
  - (b) Single Degree of Freedom system
  - (c) Vibration Damper
  - (d) Vibrating String.

**Section-A**

2. 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 ? 20
- $X_1 = 15 \sin (wt + \pi/6)$
- $X_2 = 8 \cos (wt + \pi/3)$
3. Explain under damping, critical damping and over damping with suitable examples. 20

**Section-B**

4. Explain the various Vibration Measuring Instruments. 20

24480-P-2-Q-9(17)

[P.T.O.]

( 2 )

**24480**

5. What do you mean by Impulse Excitation ? Explain the system response to an Impulsive Input. 20

**Section-C**

6. Explain any Multi-Degree of Freedom System of your choice after assuming the suitable data. 20
7. Derive the expression for displacement in case of forced vibration having harmonic excitation. 20

**Section-D**

8. Derive the expression for Lateral Vibration of Beam. 20
9. Explain the Longitudinal Vibrations of Rod by assuming the suitable data. 20

**24480**