Roll No. ....

24480

B. Tech. 7th Semester (ME)

Examination – May, 2019

MECHANICAL VIBRATION

Paper : ME-409-F

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

Before answering the questions, 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 in all, selecting *one* question from each Section. Question No. **1** is **compulsory**. All questions carry equal marks.

1. Explain the following :

   (a) Whirling of shafts.   5

   (b) Vibration Isolation.   5

   (c) Critical damping co-efficient.   5

   (d) Vibration damper.   5

24480-1,750-(P-3)(Q-9)(19)   P. T. O.

SECTION – A

2. Split **the** harmonic motion $x = 10 \sin (wt + D/6)$ into two harmonic motions one having a phase angle of zero and other of $45°$, by using graphical and analytical method.   20

3. Explain the following terms with suitable examples :

   (a) Damping factor.   5

   (b) Under damping.   5

   (c) Critical damping.   5

   (d) Over damping.   5

SECTION – B

4. What are various types of vibration measuring instruments ? Explain them in detail.   20

5. Define the term transient vibration. Explain the system response to impulse input.   20

SECTION – C

6. What is co-ordinate coupling ? Explain it with detailed diagram.   20

24480-1,750-(P-3)(Q-9)(19)   (2)

7. What are vibration absorbers ? Explain in detail with its types. 20

SECTION – D

8. Derive the expression for lateral vibration of beam. 20

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