Lukhdhirji Engineering College, Morbi

Department of Mechanical Engineering

Assignment 6- Forced damped vibrations (CO4)

Subject: DYNAMICS OF MACHINERY (3151911) **Semester : 5th**

Year : 2022-23

1. Define the following terms: (i) Magnification factor (ii) Frequency ratio (iii) displacement transmissibility
2. Define force transmissibility. Explain with neat sketch transmissibility curves.
3. What is damping coefficient? Explain with neat sketch experimental method of Determination of damping coefficient of particular oil.
4. A mass of 50 kg suspended from a spring produces a statical deflection of 17 mm and when in motion it experiences a viscous damping force of value 250 N at a velocity of 0.3 m/s. Calculate the periodic time of damped vibration. If the mass is then subjected to a periodic disturbing force having a maximum value of 200 N and making 2 Cycles/s, find the amplitude of ultimate motion.
5. A machine of mass 100 kg is supported on openings of total stiffness 800 kN/m and has a rotating unbalanced element which results in a disturbing force of 400 N at a speed of 3000 r.p.m. Assuming the damping ratio as 0.25, determine: 1. the amplitude of vibrations due to unbalance ; and 2. the transmitted force.

Vision of the Department:

To deliver quality engineering education for Mechanical Engineers with Professional competency, Human values and Acceptability in the society.

Mission of the Department:

- To nurture engineers with basic and advance mechanical engineering concepts
- To impart Techno-Managerial skill in students to meet global engineering challenges
- To create ethical engineers who can contribute for sustainable development of society