

Enrollment No./ Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

MASTER OF ENGINEERING - SEMESTER - 2 EXAMINATION – SUMMER 2026

Subject Code: 3720817

Date: 16-06-2026

Subject Name: Noise and Vibrations Analysis

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Explain the principle of virtual work. **07**
(b) Discuss Duhamel's Integral **07**
- Q.2 (a)** An apparatus of mass m is shipped in a container as shown in Fig.1. In the process of unloading, the container is dropped from a height h to a hard floor. Find the response of the system. **07**

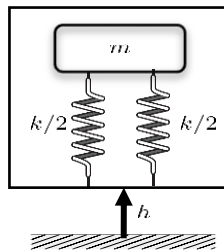


Fig.1

- (b)** Discuss the mechanic of vibration absorber **07**
OR
- (b)** Discuss the mechanic of vibration Isolator **07**
- Q.3 (a)** Derive the flexibility matrix of two DOF system with suitable example. **07**
(b) Derive the Lagrange's equation using suitable example. **07**
OR
- Q.3 (a)** Derive the stiffness matrix of two DOF system with suitable example **07**
(b) Discuss the matrix inversion method with suitable example. **07**
- Q.4 (a)** Derive the wave equation of motion. **07**
(b) Explain phase plane method to solve transient vibration problem **07**
OR
- Q.4 (a)** Give the solution of wave equation and discuss the physical significance. **07**
(b) Explain Hamilton principal of vibration. **07**
- Q.5 (a)** Explain the method for measuring the sound intensity. **07**
(b) Explain time and frequency domain vibration analysis. **07**
OR
- Q.5 (a)** Discuss the design principle for reducing the noise. **07**
(b) Explain: Vibration pickups **07**
