

VIB: Vibration Isolation

Number of participants: 19



1. The problem of direct vibration isolation consists in

6 correct answers
out of 16 respondents

Reducing the force transmitted to an object using a spring, mass and dashpot system



7 votes



Reducing the force transmitted to an object by using a spring and dashpot



6 votes

Reducing the motion of an object using a spring and a dashpot



3 votes



2. Cite a few examples of direct isolation problems in everyday life

15 respondents

Cars

Springs of cars, in tall buildings

Powerplant machinery

Washing machine, cardio machine

Table Pads

Treadmill

Washing machine, engine vibration isolation

Engine of car

Washing machine

Washing machine, car engine

Camera stabilization

Microscope

Washing machine vibration

Car engine

Washing machine



3. A simplified SDOF system can be considered to design an isolation system, it consists in

8 correct answers
out of 12 respondents

a mass, spring, dashpot system representing one of the modes of the object to be isolated



2 votes



a mass representing the object, assumed to be rigid, a spring and a dashpot representing the isolation system



8 votes

a mass-spring system which is a reduced model of the object, and a damper representing the isolation system



2 votes



4. For the direct isolation problem, the isolation domain is the range of frequencies for which

9 correct answers
out of 14 respondents



the force transmitted by the object vibration is lower than the force applied to it



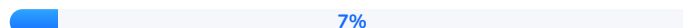
9 votes

the force transmitted by the object vibration is higher than the force applied to it



4 votes

the force transmitted by the object vibration is equal to the force applied to it



1 vote



5. The frequency limit between the isolation domain and the amplification domain is

12 correct answers
out of 13 respondents

the natural frequency of the mass-spring system

0%

0 votes



sqrt(2) times the natural frequency of the mass-spring system

92%

12 votes

2 times the natural frequency of the mass-spring system

8%

1 vote



6. In an isolation system, damping is

13 correct answers
out of 13 respondents

a good thing

0%

0 votes

a negative thing

0%

0 votes



it depends on the frequency of excitation and the natural frequency of the isolation system

100%

13 votes



7. For the inverse vibration isolation problem, the isolation domain corresponds to

7 correct answers
out of 12 respondents



A frequency band in which the sensitive equipment vibrates less than the structure to which it is attached



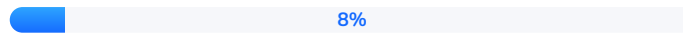
7 votes

The domain in the system where the vibration is reduced



2 votes

The domain for which thermal insulation is not necessary



1 vote

A frequency band in which the the force transmitted to the environment is reduced



2 votes



8. Cite a few examples of inverse vibration isolation problems in everyday life

13 respondents

Microscope,

Protect art

Microscope, suspension car

Cameras in drones

Drone camera

Microscope

Camera in drone, suspension system of cars, microscope table

Microscope

Microscope

Earthquake

Camera stabilization

Cars

Microscope

9. To achieve isolation, the natural frequency of the mass-spring system should **0 correct answer**
out of 0 respondent

- correspond to the frequency range of excitation 0 votes
- be much higher than the frequency of excitation 0 votes
- ✓
 be much lower than the frequency of excitation 0 votes

10. In order to increase the isolation domain, one can **0 correct answer**
out of 6 respondents

- ✓
 decrease the stiffness of the spring in the isolation system 6 votes
- ✓
 increase the mass of the system to isolate 0 votes
- increase the damping in the isolation system 0 votes

11. The problem of transmission of vibrations from a tram to the surroundings should be treated as **14 correct answers**
out of 17 respondents

- ✓
 a direct vibration isolation problem 14 votes
- an inverse vibration isolation problem 3 votes

12. The problem of transmission of vibrations from a space launcher to a payload should be treated as **12 correct answers**
out of 13 respondents

- a direct vibration isolation problem 1 vote
- ✓
 an inverse vibration isolation problem 12 votes

