

# DOS: Vibration Isolation

Number of participants: 9



## 1. The problem of direct vibration isolation consists in

**2 correct answers**  
out of 7 respondents

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



1 vote



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



2 votes

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



4 votes



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

0 correct answer  
out of 8 respondents

Isolation table to reduce the vibration of an object on the table

Tapis de course

suspensions

Washing machine

Treadmills and washing machines

in motors

Washing machine

washing machine

### Correct answer

**Isolating passengers from engine vibrations in a car**



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

**4 correct answers**  
out of 5 respondents

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



1 vote

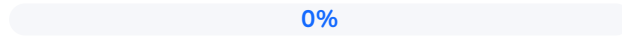


a mass representing the object, assumed to be rigid, a spring and a dashpot representing the isolation system



4 votes

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



0 votes



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

5 correct answers  
out of 5 respondents



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



5 votes

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



0 votes

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



0 votes



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

6 correct answers  
out of 6 respondents

the natural frequency of the mass-spring system



0 votes



$\sqrt{2}$  times the natural frequency of the mass-spring system



6 votes

2 times the natural frequency of the mass-spring system



0 votes



### 6. In an isolation system, damping is

6 correct answers  
out of 6 respondents

a good thing



0 votes

a negative thing



0 votes



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



6 votes



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

4 correct answers  
out of 5 respondents



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



4 votes

The domain in the system where the vibration is reduced



0 votes

The domain for which thermal insulation is not necessary




0 votes

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



1 vote


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

**0 correct answer**  
out of 4 respondents


- Art
- Microscope Art pieces Surgical equipment
- Isolation table
- car suspensions

**Correct answer**

**isolating a microscope from room vibrations**

 **9. To achieve isolation, the natural frequency of the mass-spring system should**

**3 correct answers**  
out of 3 respondents

correspond to the frequency range of excitation	<div style="width: 0%;"><div style="width: 0%;"></div></div> 0%	0 votes
be much higher than the frequency of excitation	<div style="width: 0%;"><div style="width: 0%;"></div></div> 0%	0 votes
 be much lower than the frequency of excitation	<div style="width: 100%;"><div style="width: 100%;"></div></div> 100%	3 votes



## 10. In order to increase the isolation domain, one can

**3 correct answers**  
out of 4 respondents



decrease the stiffness of the spring in the isolation system



3 votes



increase the mass of the system to isolate



4 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

**5 correct answers**  
out of 5 respondents



a direct vibration isolation problem



5 votes

an inverse vibration isolation problem



0 votes





## 12. The problem of transmission of vibrations from a space launcher to a payload should be treated as

**3 correct answers**  
out of 5 respondents

a direct vibration  
isolation problem



2 votes



an inverse vibration  
isolation problem



3 votes