

# DOS2021 : Response spectra

Number of participants: 0

1

The frequency/period axis of a response spectrum corresponds to

The frequency of excitation of the SDOF system

0%

0 votes

✓ The natural frequency of the SDOF system

0%

0 votes

The frequency of the earthquake

0%

0 votes

2

The spectrum  $S_e$  used in Eurocode 8 for parasismic calculations is

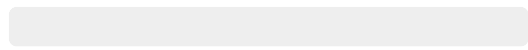
the relative displacement spectrum



0%

0 votes

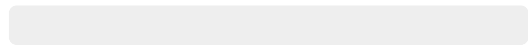
the absolute acceleration spectrum



0%

0 votes

✓ the pseudo acceleration spectrum



0%

0 votes

3

When the damping of the SDOF system is higher, the maximum of the response spectrum

increases



0%

0  
votes

✓ decreases



0%

0  
votes

remains  
constant




0%

0  
votes

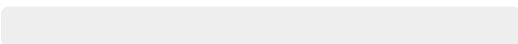
4

The value of  $S_e$  for a specific period  $T$  corresponds to

the RMS value  
of the  
displacement of  
a SDOF system  
of period  $T$   
subjected to  
white noise  
excitation

 0% 0 votes

✓ The max value  
of the  
displacement of  
a SDOF system  
of period  $T$   
subjected to a  
specific  
earthquake

 0% 0 votes

The average  
value of the  
displacement of  
a SDOF system  
when varying

 0% 0 votes

the excitation  
frequency

5

## The analytical expression of $S_e$ given in the Eurocode is

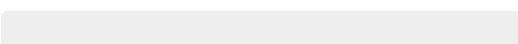
✓ an envelope function representing the average pseudo-acceleration spectra for different earthquakes occurring in the same region

 0% 0 votes

the average frequency response function of a SDOF system subjected to an earthquake

 0% 0 votes

A curve giving the ground acceleration for

 0% 0 votes

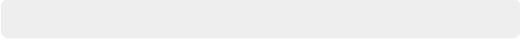
specific  
earthquake  
types



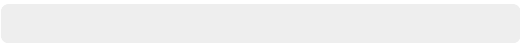
6

## The design spectrum $S_d$ in the eurocode corresponds to


The relative displacement spectrum as a function of the region and type of soil

 0% 0 votes

✓ The elastic spectrum  $S_e$  divided by a behavior factor in order to take into account inelastic behavior of the SDOF system

 0% 0 votes

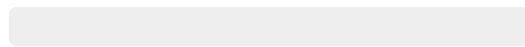
The spectrum used by design offices in a CAD software

 0% 0 votes

7

For the calculation of efforts and displacements on a MDOF system, the methodology consists in :

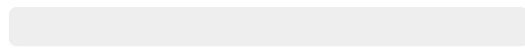
Computing the response of the full model using time-domain simulations



0%

0 votes

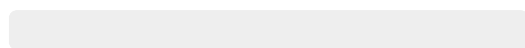
Considering each mode as a SDOF system, using the response spectrum and then summing the contributions of all modes to compute the total efforts and displacements



0%

0 votes

✓ Considering each mode as a



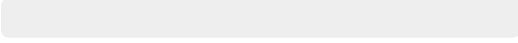
0%

0 votes

SDOF system,  
using the  
response  
spectrum and  
then using SRSS  
method to  
combine the  
modal values  
and approximate  
the total efforts  
and  
displacements

8

The videos are useful to study  
the material of the course

 0% 0 votes

 0% 0 votes

9

The wooclap sessions are  
useful to test our knowledge  
of the course material

 0% 0  
votes

 0% 0  
votes

