

DOS2020_Response_spectra

Number of participants: 11

1



The frequency/period axis of a response spectrum corresponds to

The frequency of excitation of the SDOF system



25%

2 votes

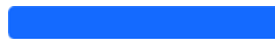
✓ The natural frequency of the SDOF system



25%

2 votes

The frequency of the earthquake

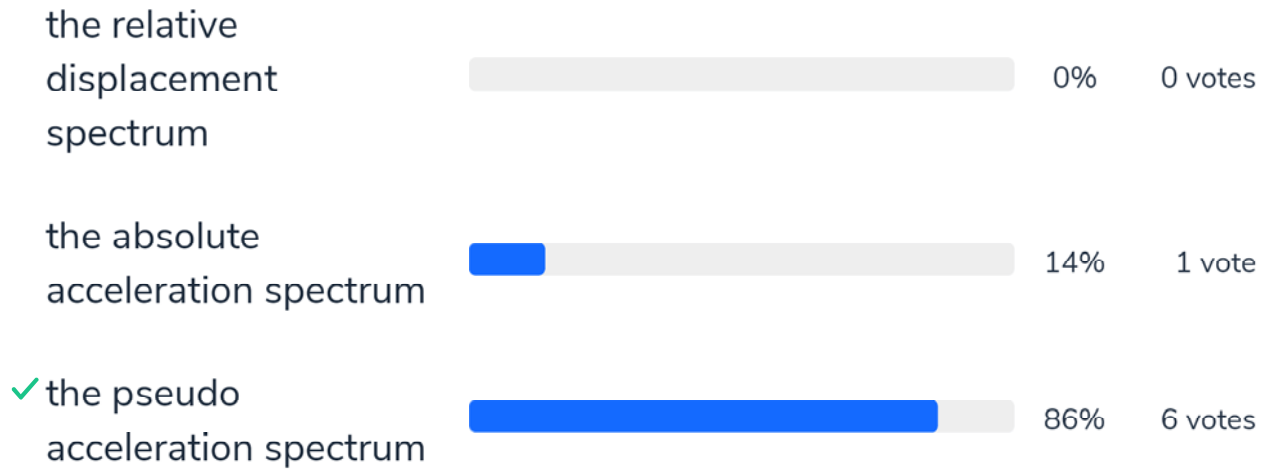


50%

4 votes

2

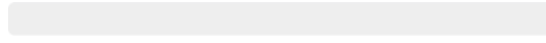
The spectrum S_e used in Eurocode 8 for paraseismic calculations is



3

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

increases



0%

0 votes

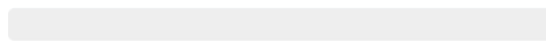
✓ decreases



100%

8 votes

remains constant



0%

0 votes

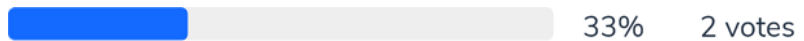
4

The value of S_e for a specific period T corresponds to

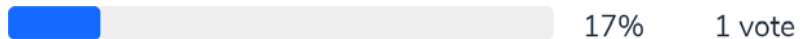
the RMS value of the displacement of a SDOF system of period T subjected to white noise excitation



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



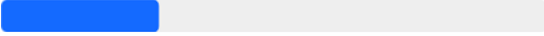

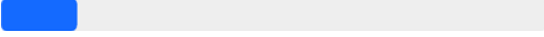
The average value of the displacement of a SDOF system when varying the excitation frequency



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  29% 2 votes
- the average frequency response function of a SDOF system subjected to an earthquake  57% 4 votes
- A curve giving the ground acceleration for specific earthquake types  14% 1 vote

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



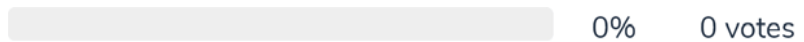
20% 1 vote

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



80% 4 votes

The spectrum used by design offices in a CAD software

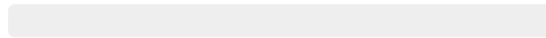


0% 0 votes

7

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

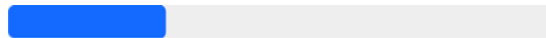
Computing the response of the full model using time-domain simulations



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



29%

2 votes

✓ Considering each mode as a SDOF system, using the response spectrum and then using SRSS method to combine the modal values and approximate the total efforts and displacements

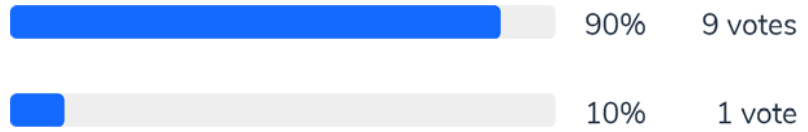


71%

5 votes

8

The videos are useful to study the material of the course



9

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

