VIB : Vibration sources and Fourier Analysis

Number of participants: 0

1. I have watched the video on vibration sources before coming to the class

0 respondent

Yes	0%	0 votes
No	0%	0 votes
Partly (I fell asleep)	0%	0 votes

2. After watching the video I think that

0 correct answer
out of 0 respondent

I understood most of the content	0%	0 votes
I understood the general concepts but did not grasp the mathematics	0%	0 votes
I did not understand the concepts nor the mathematics	0%	0 votes

3. The following are examples of free mechanical vibrations

0 correct answer
out of 0 respondent

A bell ringing	0%	0 votes
A worker using a jack hammer	0%	0 votes
The bar of a football goal vibrating after being hit by a ball	0%	0 votes
Vibrations due to a spinning washing machine	0%	0 votes

4. Which of the following statements are true ?

0 correct answer
out of 0 respondent

✓	A harmonic excitation is a special case of a periodic excitation	0%	0 votes
	A periodic excitation is a special case of a harmonic excitation	0%	0 votes
	The period of a random signal is much smaller than for an harmonic one	0%	0 votes
✓	A random force signal has an infinite period	0%	0 votes

5. A rigid rotating machine induces a force that is

0 correct answer
out of 0 respondent

✓	periodic	0%	0 votes
✓	harmonic	0%	0 votes
	random	0%	0 votes

6. Any rotating machine produces a

0 correct answer
out of 0 respondent

	harmonic force	0%	0 votes
✓	periodic force	0%	0 votes
	random force	0%	0 votes

7. When the rotational speed of a machine increases, the frequency of the forces produced

0 correct answer
out of 0 respondent

✓	Increases proportionally	0%	0 votes
	Decreases proportionally	0%	0 votes
	Increases with the square of the rotational speed	0%	0 votes
	Decreases with the square root of the rotational speed	0%	0 votes

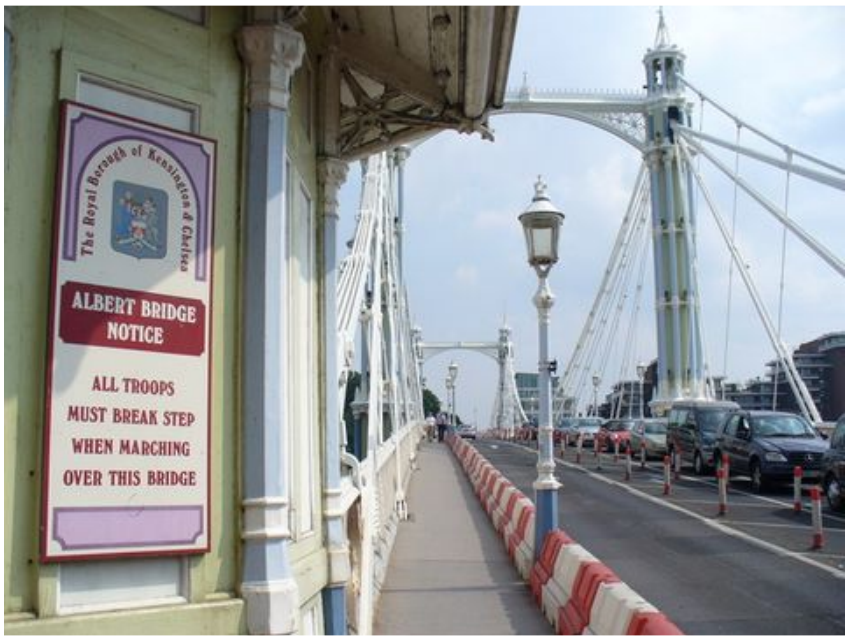
8. The force applied by a pedestrian walking or running at constant speed on a bridge is

0 correct answer
out of 0 respondent

	harmonic	0%	0 votes
✓	periodic	0%	0 votes
	random	0%	0 votes

9. The main frequency of excitation for walking pedestrians is around

0 correct answer
out of 0 respondent



No answers in this question

Correct answer

Between 1 and 3

10. The discrete Fourier transform applies to

0 correct answer
out of 0 respondent

	any type of signal	0%	0 votes
	only random signals	0%	0 votes
✓	only periodic signals	0%	0 votes

11. The discrete Fourier transform computes amplitudes of sine and cosine functions at frequencies which are

0 correct answer
out of 0 respondent

✓	multiples of the fundamental angular frequency = 2pi/T	0%	0 votes
	odd multiples of the fundamental frequency = 2pi/T	0%	0 votes
✓	multiples of the fundamental frequency = 1/T	0%	0 votes

12. It is interesting to transform an excitation signal from the time domain to the frequency domain because

0 correct answer
out of 0 respondent

✓	It provides information about the main frequencies of excitation which could cause structural resonance	0%	0 votes
	The signal is more compact in the frequency domain	0%	0 votes
	It is easier to add signals in the frequency domain	0%	0 votes

13. The continuous Fourier transform applies to

0 correct answer
out of 0 respondent

✓	any type of signal	0%	0 votes
	periodic signals only	0%	0 votes
	harmonic signals only	0%	0 votes
	it depends on the type of excitation of the system	0%	0 votes

14. The continuous Fourier transform of a rectangle (pulse) is

0 correct answer
out of 0 respondent

	a cosine function	0%	0 votes
	a sine function	0%	0 votes
✓	a sinc function	0%	0 votes
	a complex function which cannot be computed analytically	0%	0 votes

15. For a SDOF system (and MDOF), the Fourier transform of the impulse response h(t)

0 correct answer
out of 0 respondent

✓	allows to extract the information about the natural frequency	0%	0 votes
	cannot be computed analytically	0%	0 votes
✓	is the transfer function X(w)/F(w)	0%	0 votes

16. When using Fast Fourier Transform on sampled signals, you can increase the frequency resolution by

0 correct answer
out of 0 respondent

	decreasing the time step of the sampling signal, keeping the total measurement time constant	0%	0 votes
	increasing the time step of the sampling signal, keeping the total measurement time constant	0%	0 votes
✓	increasing the measurement time, whatever the time step of the sampling signal	0%	0 votes

17. When using DFT, the time step of the sample signal has an influence on

0 correct answer
out of 0 respondent

	The frequency resolution of the DFT	0%	0 votes
✓	The maximum frequency of the DFT	0%	0 votes
	It has no influence on the DFT	0%	0 votes