

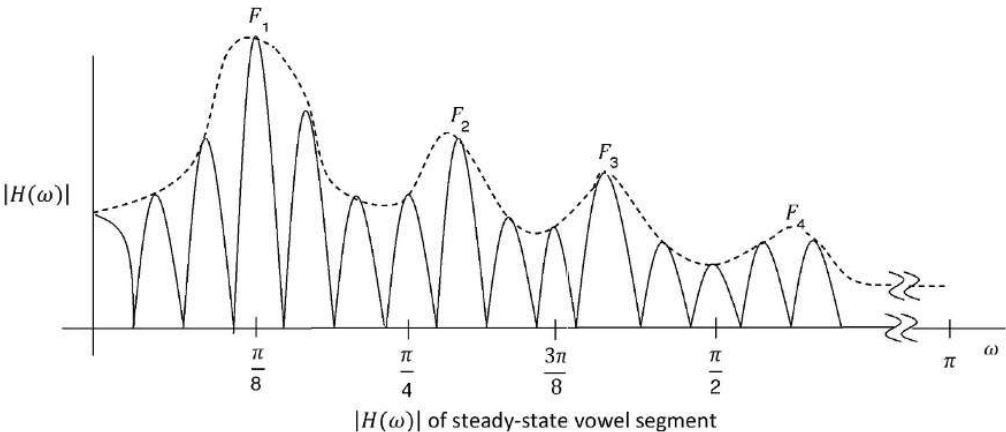
Review Test Submission: Quiz4

User	QIHUA GONG
Course	EN.520.645.01.FA21 Audio Signal Processing
Test	Quiz4
Started	10/14/21 2:30 PM
Submitted	10/14/21 2:43 PM
Due Date	10/14/21 3:00 PM
Status	Completed
Attempt Score	75 out of 100 points
Time Elapsed	12 minutes out of 15 minutes
Instructions	You have 15minutes to complete the quiz.
Results Displayed	All Answers, Submitted Answers, Correct Answers

Question 1

25 out of 25 points

The figure represents the magnitude of the discrete-time Fourier transform of a steady-state vowel which has been extracted using a rectangular window. The envelope of the spectral magnitude $|H(\omega)|$, is sketched with a dashed line. Note that four formants are assumed, and that only the main lobe of the window's Fourier transform is depicted. The sampling rate is 12000 samples/s , set to meet the Nyquist rate.



The table below provides vowel spectral information:

Vowel	F1 amplitude	F2 amplitude	F3 amplitude	F4 amplitude
a	0	-6	-7	-7
e	0	-14	-12	-14
i	0	-15	-18	-20
o	0	-10	-12	-12
u	0	-20	-17	-14

Formant amplitudes for tenor vowels (in dB)

What is the most likely vowel that gave rise to this sampled signal?

Selected Answer: ☒ i

Answers: a

e

☒ i

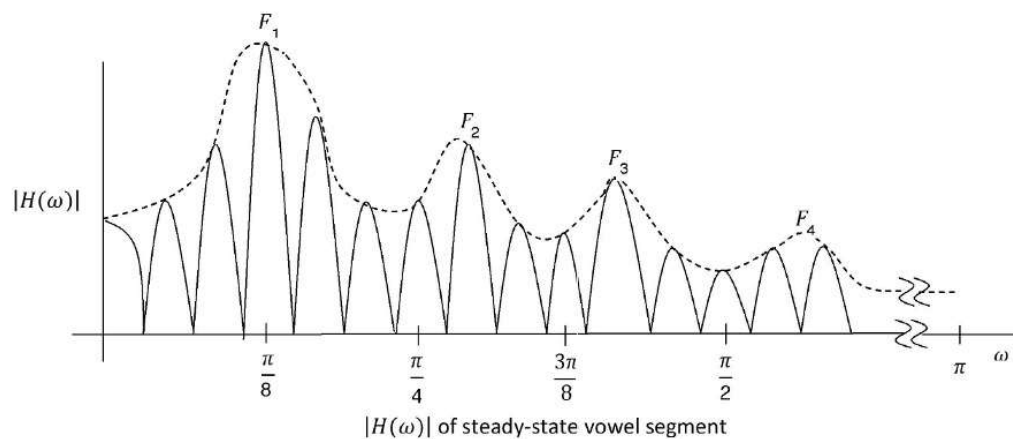
o

u

Question 2

0 out of 25 points

The figure represents the magnitude of the discrete-time Fourier transform of a steady-state vowel which has been extracted using a rectangular window. The envelope of the spectral magnitude $|H(\omega)|$, is sketched with a dashed line. Note that four formants are assumed, and that only the main lobe of the window's Fourier transform is depicted. The sampling rate is 12000 samples/s, set to meet the Nyquist rate. What is the pitch frequency in Hertz?

Selected Answer: ☒ 1200Correct Answer: ☒ 250

Answer range +/- 30 (220 - 280)

Question 3

25 out of 25 points

Which statement is true about formants?

Selected Answer: ☒ D. Formants are the resonance frequencies of the vocal tract

Answers:

A. Formants are the resonance frequencies of the vocal folds


B. Formants are the resonance frequencies of the larynx

C. Formants are the points in the spectrum where there is loss of energy

☒ D. Formants are the resonance frequencies of the vocal tract**Question 4**

25 out of 25 points

A rectangular window has the narrowest main lobe relative to all other window types

Selected Answer:  True

Answers:  True
False

Thursday, April 7, 2022 7:48:33 PM EDT

← **OK**