


Take Test: Test 3 (2018-19)

Test Information

Description	
Instructions	
Timed Test	This test has a time limit of 1 hour.This test will save and be submitted automatically when the time expires. Warnings appear when half the time, 5 minutes, 1 minute, and 30 seconds remain.
Multiple Attempts	This Test allows 3 attempts. This is attempt number 1.
Force Completion	This Test can be saved and resumed at any point until time has expired. The timer will continue to run if you leave the test. This test does not allow backtracking. Changes to the answer after submission are prohibited.

Save and Submit

 Click **Submit** to complete this assessment.

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Question 12

8 points Save Answer

Consider that one of the paths from the transmitter of a CDMA user arrives at the reference point of an antenna array CDMA receiver from direction (azimuth, elevation) = $(30^\circ, 0^\circ)$. The corresponding PN-sequence, of period N_c , is generated by the polynomial $D^2 + D + 1$ in $GF(2)$ while the discrete path delay (mod- N_c) is equal to two. If the Cartesian coordinates of the antenna array elements are given by the columns of the following matrix

$$[r_1, r_2, r_3] = \begin{bmatrix} -2, & 0, & +2 \\ 0, & 0, & 0 \\ 0, & 0, & 0 \end{bmatrix} \text{ in units of half-wavelength.}$$

then the spatio-temporal array manifold vector of the path is

- (a) 1st column of \mathbb{H} ;
- (b) 2nd column of \mathbb{H} ;
- (c) 3rd column of \mathbb{H} ;
- (d) 4th column of \mathbb{H} ;
- (e) none of the above.

where

$$\mathbb{H} = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & -0.6661 + 0.7458i & 0 & 0 \\ -0.6661 + 0.7458i & 0.6661 + 0.7458i & 0 & -0.6661 + 0.7458i \\ -0.6661 + 0.7458i & 0.6661 - 0.7458i & 0 & -1 \\ 0.6661 - 0.7458i & 0 & 0 & -0.6661 - 0.7458i \\ 0 & 0 & 0 & 0 \\ 0 & 0 & -0.6661 + 0.7458i & 0 \\ 0 & 0 & -1 & 0 \\ -1 & -1 & -0.6661 - 0.7458i & -0.6661 + 0.7458i \\ -1 & -1 & -0.6661 + 0.7458i & -1 \\ 1 & 1 & -1 & -0.6661 - 0.7458i \\ 0 & 0 & -0.6661 - 0.7458i & 0 \\ 0 & 0 & 0.6661 - 0.7458i & 0 \\ 0 & -0.6661 - 0.7458i & 1 & 0 \\ -0.6661 - 0.7458i & -0.6661 - 0.7458i & 0.6661 + 0.7458i & 0.6661 - 0.7458i \\ -0.6661 - 0.7458i & 0.6661 + 0.7458i & 0 & 1 \\ 0.6661 + 0.7458i & 0 & 0 & 0.6661 + 0.7458i \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

- ☐ a
- ☐ b
- ☐ c
- ☐ d
- ☐ e



Click **Submit** to complete this assessment.

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Save and Submit