

1

- Q.5 (a)** For first order harmonic process consisting of a single complex exponential in white noise given by $x(n) = A_1 e^{jn} + w(n)$ and with 2×2 auto-correlation matrix **07**

$$R_x = \begin{bmatrix} 3 & 2(1-j) \\ 2(1+j) & 3 \end{bmatrix}$$

Compute eigenvalues, eigenvectors, variance of the white noise and power in the complex exponential.

- (b)** Explain about hit rates, false alarms and ROC. **07**
