

## SNS COLLEGE OF ENGINEERING Kurumbapalayam (Po), Coimbatore - 641 107



## AN AUTONOMOUS INSTITUTION

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## Topic: 1 – TUTORIAL II

## **Cayley-Hamilton theorem**

- 1. Using Cayley-Hamilton theorem find the inverse of  $A = \begin{pmatrix} 1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1 \end{pmatrix}$
- 2. Verify Cayley-Hamilton theorem for the matrix  $A = \begin{pmatrix} 2 & 0 & -1 \\ 0 & 2 & 0 \\ -1 & 0 & 2 \end{pmatrix}$  and hence find  $A^{-1}$ and A4
- 3. Find A<sup>n</sup> using Cayley-Hamilton theorem, taking A = 
   \[ \begin{align\*} 1 & 4 \\ 2 & 3 \end{align\*} \]. Hence find A<sup>3</sup>.
  4. Using Cayley-Hamilton theorem find the value of the matrix given by
- $A^{8}-5A^{7}+7A^{6}-3A^{5}+A^{4}-5A^{3}+8A^{2}-2A+I, \text{ if the matrix } A = \begin{pmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{pmatrix}.$ 5. Verify Cayley-Hamilton theorem for the matrix  $A = \begin{pmatrix} 1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1 \end{pmatrix}$ , find its  $A^{-1}$ .