SNS COLLEGE OF ENGINEERING
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## AN AUTONOMOUS INSTITUTION

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## Topic: 1 - TUTORIAL II

## Cayley-Hamilton theorem

1. Using Cayley-Hamilton theorem find the inverse of $A=\left(\begin{array}{lll}1 & 3 & 7 \\ 4 & 2 & 3 \\ 1 & 2 & 1\end{array}\right)$
2. Verify Cayley-Hamilton theorem for the matrix $A=\left(\begin{array}{ccc}2 & 0 & -1 \\ 0 & 2 & 0 \\ -1 & 0 & 2\end{array}\right)$ and hence find $A^{-1}$ and $\mathrm{A}^{4}$
3. Find $\mathrm{A}^{\mathrm{n}}$ using Cayley-Hamilton theorem, taking $A=\left[\begin{array}{ll}1 & 4 \\ 2 & 3\end{array}\right]$. Hence find $\mathrm{A}^{3}$.
4. Using Cayley-Hamilton theorem find the value of the matrix given by
$A^{8}-5 A^{7}+7 A^{6}-3 A^{5}+A^{4}-5 A^{3}+8 A^{2}-2 A+I$, if the matrix $A=\left(\begin{array}{lll}2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2\end{array}\right)$.
5. Verify Cayley-Hamilton theorem for the matrix $A=\left(\begin{array}{ccc}1 & 0 & 3 \\ 2 & 1 & -1 \\ 1 & -1 & 1\end{array}\right)$, find its $\mathrm{A}^{-1}$.
