

- 4x 3y + 2z = 4
- 17. State and prove Cayley-Hamilton Theorem.

2

 $\begin{bmatrix} 0 & 1 & 2 \\ 0 & -3 & 0 \\ 1 & 1 & -1 \end{bmatrix}$

(b) Verify whether the following three vectors are linearly independent:

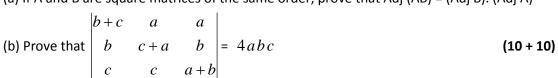
	4 10 16	2	6	-1	(12 + 8)
	10	3	9	7	(12 + 8)
	16	4	12	15	
22. (a) Find the characteristic equation of the following matrix and hence find its inverse using					
Cayley-Hamilton Theorem:					

21. (a) Find the inverse of the matrix 1 - 1 0 2

0 1 1 -1 2 1 2 1 3 2 1 4 (b) Find the rank of the matrix 6 1 3 8

 $\begin{bmatrix} 0\\3\\-2 \end{bmatrix}, \begin{bmatrix} 0\\1\\1 \end{bmatrix}, \begin{bmatrix} 1\\0\\4 \end{bmatrix}$

(b) If A is a Hermitian matrix, show that iA is a skew-Hermitian matrix. 20. (a) If A and B are square matrices of the same order, prove that Adj (AB) = (Adj B). (Adj A)



PART – C

 $\begin{vmatrix} b & a & -b & -a \\ c & -d & c & -d \\ d & c & d & c \end{vmatrix} = 4.(a^2 + b^2).(c^2 + d^2)$

19. (a) If A and B commute, obtain $(A + B)^n$

Answer any TWO questions:

 $(2 \times 20 = 40 \text{ marks})$

(10 + 10)

(12 + 8)