



	OR		
12	For what values of μ does the following system of equations possess a nontrivial solution? Obtain the solutions for real values of μ . $3x + y - \mu z = 0; 4x - 2y - 3z = 0; 2\mu x + 4y - \mu z = 0$. [10M]	CO1	L4
13	Verify Cayley – Hamilton theorem for $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ and find A^{-1} and A^4 . [10M]	CO2	L5
	OR		
14	Determine the Eigen values and Eigen vectors of the following matrices $A = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$ [10M]	CO2	L3
15	Prove that if $0 < a < 1, 0 < b < 1$ and $a < b$, then $\frac{b-a}{\sqrt{1-a^2}} < \sin^{-1}b - \sin^{-1}a < \frac{b-a}{\sqrt{1-b^2}}$ and hence, deduce that $\frac{\pi}{6} - \frac{1}{2\sqrt{3}} < \sin^{-1}\frac{1}{4} < \frac{\pi}{6} - \frac{1}{\sqrt{15}}$ [10M]	CO3	L4
	OR		
16	S.T $\beta(m, n) = \frac{\Gamma m \Gamma n}{\Gamma m+n}$; where $m > 0; n > 0$ [10M]	CO3	L3
17	If $x = e^r \sec \theta$, $y = e^r \tan \theta$ then prove that $JJ' = 1$ [10M]	CO4	L3
	OR		
18	Find the extreme values $u(x, y) = x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$. [10M]	CO4	L3
19	Solve $x(y^2 + z)p - y(x^2 + z)q = z(x^2 - y^2)$ [10M]	CO5	L3
	OR		
20	Solve $(x^2 + y^2)(p^2 + q^2) = 1$. [10M]	CO5	L3