D Y PATIL RAMRAO ADIK INSTITUTE OF TECHNOLOGY NAVI MUMBAI

Ramrao Adik Institute Of Technology, Nerul, Navi

Department of Engineering Sciences

Term Test II SET- B

Subject: AM-I

Class / Sem : F.E./I

Div :

Academic Year 2015-16

Time: 1hr

Marks: 30

Note : All questions are compulsory.

Q. No.	1a	1b	2	3
COs	CO3	CO4	CO3	CO5

1.A) Examine whether the following vectors are linearly dependent or independent [2,1,1], [1,3,1], [1;2,-1] [5]

OR

1.A) Test the following equations for consistency x-3y-3z=-10; 3x+y-4z=0; 2x+5y+6z=13 [5]

1.B) Find modulus and amplitude of $\frac{i^9 - i^6 + 2}{3 - i^{20} - i^5}$ [5]

OR

1.B) Express $\cos^5\theta$ in term of multiple of θ [5]

2. Find the non-singular matrices P and Q such that PAQ is in normal form $A=\begin{bmatrix} 1 & 3 & 5 & 7 \\ 4 & 6 & 8 & 10 \\ 15 & 27 & 39 & 51 \\ 6 & 12 & 18 & 24 \end{bmatrix}$ [10]

OR

2.Find the values of λ for which the system of equations x+y+z=1; X+2y+4z=λ; x+4y+10z=λ^2 have unique solution,infinitelymany solutions and no solutions [10]

3.If $i^{i^{i\ldots\infty}} = \alpha + i\beta$ Then S.T $(\alpha^2+\beta^2) = e^{-(4m+1)\Pi\beta}$ and $\tan(\frac{\Pi}{2}\alpha) = \frac{\beta}{\alpha}$

m is a positive integer [10]

OR

3. P.T i) $\cos^{-1} z = -i\log[z \pm \sqrt{z^2-1}]$ ii) $\sinh^{-1}(\tan x) = \log\tan[\frac{\Pi}{4} + \frac{x}{2}]$ [10]