Terna Engineering College, Nerul.

Dept: -General Engineering.

Sub: Applied Mathematics I

Unit test I (A,B,C,D,E,F,H)

Date:-

Time: 1 hr. Marks: - 20

Q1. Attempt any five. **Marks 10**

1) Show that$(1+i)^{100}+(1-i)^{100}=-2^{51}$.
2) If $tanhx=\frac{2}{3}$ findcosh2x.
3) Prove that $(coshx+sinhx)^n=coshnx+sinhnx$.
4) Prove thatcosh$^{-1}\left(\sqrt{1+x^2}\right)=\tanh^{-1}\left(\frac{x}{\sqrt{1+x^2}}\right)$.
5) Find the value of log [sin $(x+iy)$].
6) If A is a Hermitian matrix then iA is a skew –Hermitian.
7) Find the value of i^i.

Q2. Attempt any one. **Marks 05**

1) Separate into real and imaginary part $\tan^{-1}(cos\theta+isin\theta)$.
2) Solve $x^6-i=0$.

Q3. Attempt any one. **Marks 05**

1) Solve $x^6-x^5+x^4-x^3+x^2-x+1=0$.
2) Show that every square matrix can be uniquely expressed as P+iQ, where P&Q are Hermitian matrices.

----------Best of luck----------