JSEC

Thadomal Shahni Engineering College
FE Periodic Test-I
Applied Mathematics-I
Division (B to G)

Time: MaxMarks:20

1) Attempt any Four question
2) Each question carry equal marks

Q.1 *Find* $\sin^5\theta$ *in terms of* $\sin\theta$ *and* $\cos\theta$

Q.2 *Find Continued product of all roots of* $(1-i)^{2/3}$

Q.3 *if* $\alpha, \alpha^2, \alpha^3, \alpha^4$ *are roots of equation* $x^5-1=0$ *show that*

$$(1-\alpha)(1-\alpha^2)(1-\alpha^3)(1-\alpha^4)=5$$

Q.4 *if* $z=\sin^{-1}(x-y)$, $x=3t$, $y=4t^3$, *prove that*

$$\frac{dz}{dt}=\frac{3}{\sqrt{1-t^2}}$$

Q.5 *if* $u=f(2x-3y, 3y-4z, 4z-2x)$ *prove that*

$$6\frac{\partial u}{\partial x}+4\frac{\partial u}{\partial y}+3\frac{\partial u}{\partial z}=0$$

Q.6 *if* $u=\log r$, $r^2=x^2+y^2$, *prove that*

$$\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=0$$