N O T A T I O N S

U = Potential energy ,

u = In-plane displacement along X - axis,

v = In-plane displacement along Y - axis,

w = Displacement normal to the middle surface of the structure,

h = Thickness of the plate or shell surface,

C_{ij} = Elastic constants for orthotropic material,

σ_x = Normal component of stress parallel to X-axis,

σ_y = Normal component of stress parallel to Y-axis,

σ_{xy} = Normal component of stress along XY- direction,

ϵ_x = Strain component along X- axis,

ϵ_y = Strain component along Y-axis,

ϵ_{xy} = Shearing strain component in cartesian co ordinates,

G = Shear modulus of elasticity,

D = Flexural rigidity = $Eh^3/12(1-\nu^2)$,

D_x = Flexural rigidity in the X- direction,

D_y = Flexural rigidity in the Y- direction,

D_{xy} = Torsional rigidity,

E = Young's modulus of elasticity,

E_x = Young's modulus along X- direction,

E_y = Young's modulus along Y- direction,

M_x = Bending moment per unit length of the section of the structure perpendicular to X- axis,

M_y = Bending moment per unit length of the section of the structure perpendicular to Y- axis,

M_{xy} = Twisting moment per unit length,

ν = Poisson's ratio,

T = Temperature, Kinetic energy, Time period,

K_x = Curvature along X-axis,

K_y = Curvature along Y-axis,

α, β = Temperature parameter, Co-efficient of linear expansion,

q = Normal load intensity,

Q = Load function,

N_x, N_y = Normal force resultants perpendicular to X- and Y- axes,

ϕ = Stress function,

e_1 = First strain invariant in the middle surface of the plate,

e_2 = Second strain invariant of the middle surface of the plate,

P = Concentrated load,

K = Constant related to elastic foundation,

ρ = Density of the material of the structure,

I_0, K_0 = Modified Bessel's functions of the first and second kind of order zero,

$\xi, A,$ = Amplitudes of vibrations,