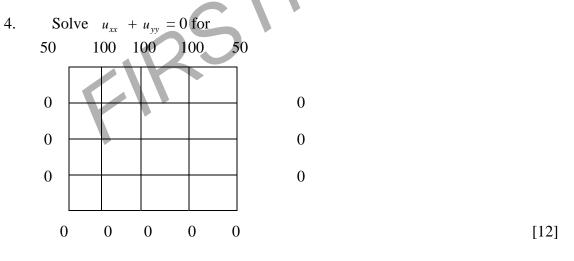
Code No: C0405 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD M.Tech I - Semester Examinations March/April-2011 NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATION (CAD/CAM)

Time: 3hours

Max.Marks:60

Answer any five questions All questions carry equal marks

- 1. Solve the Partial Differential equation by Crank Nicolson method $\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = 0, \quad 0 < x < 1, 0 < t$ Subject to the conditions $u(0,t) = 0, \quad u(x, 0) = x, u(1, t) = 0.$ [12]
- 2. Solve the Partial Differential equation $u_{xx} + u_{yy} = 0$ given that u(x, 0.1) = 50x, u(0, y) = 0, u(x, 0) = 0, u(0.5, y) = 50y. [12]
- 3. Solve the Partial Differential equation $u_{xx} + u_{yy} = 0$ given that $u(x, 0) = x^{2}, 0 \le x \le 1$ $u(0,y) = (y-1)^{2}, u(x, 0) = (x-1)^{2}, u(1, y) = y^{2}, 0 \le y \le 2.$ [12]



5. Solve the Partial Differential equation $16 \frac{\partial^2 u}{\partial x^2} = 0$, 0 < x < 1, 0 < tSubject to the conditions u(0,t) = 0, u(x, 0) = x(2 - x)u(4, t) = 0, taking h = 1. [12]

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6.	Derive five point formula by ADI method.	[12]
7.	Solve the boundary value problem y'' + y + 2x(1 - x) = 0, 0 < x < 1, y(0) = y(1) = 0 by Galerkin method.	[12]
8.	Solve the boundary value problem y + 2 = 0, 0 < x < 1, y(0) = y(1) = 0 by Galerkin method.	[12]
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