04-02-18
Wednesday

Chapter 3

Matrix Displacement Formulation

$$\underline{F} = \underline{K} \cdot \underline{\Delta}$$

↳ { From Shape Function }

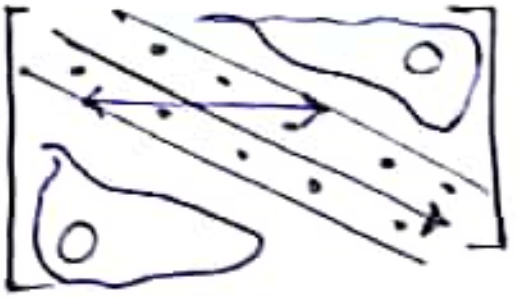
Bar element → Truss element
Beam element

eqn 3.8 → derivation → last class

Solution

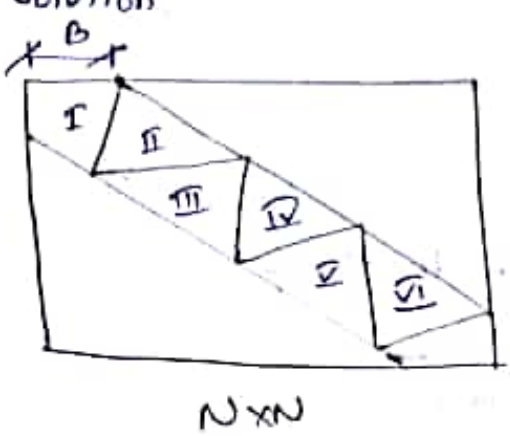
$$[F] = [k]\ [\Delta]$$

element stiffness → Global stiffness



Matrix is bonded

Band Solution



B = Band width

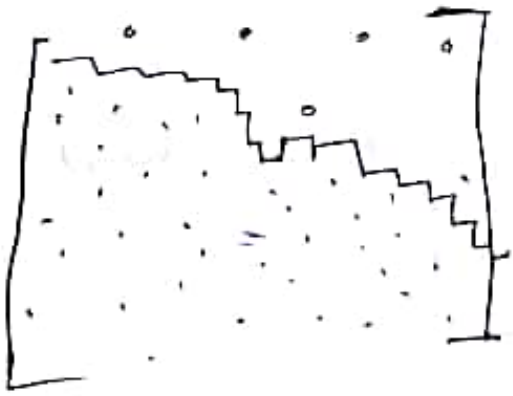
$N \times N \geq N \times B$

Article : 3.4

i) Use of symmetry & banded nature

ii) Partitioning of matrix

iii) Skyline storage:



Next class:

"Frontal Method"

Mandatory

- Lecture Note (Up to Date)
- Book
- Note sheets

Healthcare

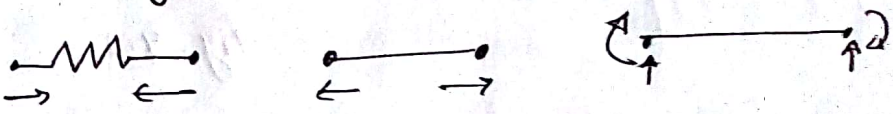
Neope

Lec-13

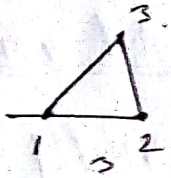
Date - 11.07.18

Chapter - 4

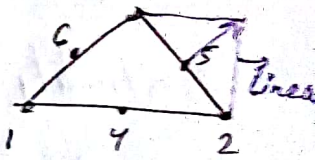
* 1D element: spring bar beam



* 2D element: i) CST → Constant strain triangle

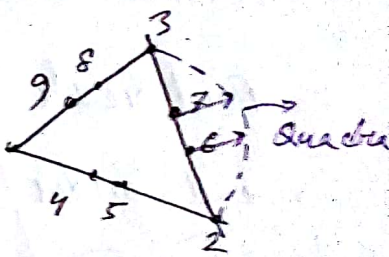


ii) LST → Linear " "

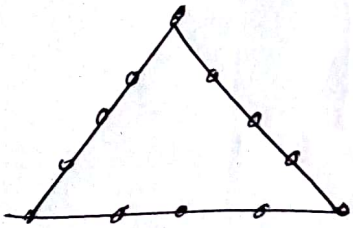


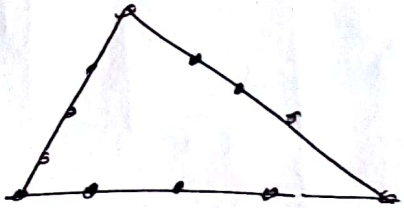
iii) QST → Quadratic " "

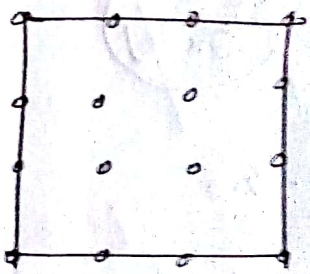
(fig- 4.4)



serendipity family. 'Serendip'







* 3D elements:

Tetrahedra

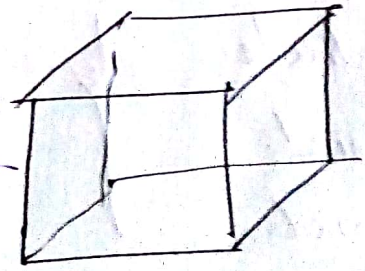
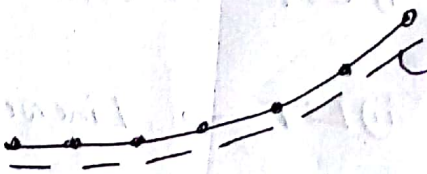


fig-4.2

Art 4.4

* Nodal unknown → straight line

continuity.



→ Zeroth continuity. c^0-continuity

→ first-order " c^1-continuity

→ 2nd-order " c^2-continuity.

$\frac{\partial^2 \omega}{\partial x \partial y}$.

Art-4.5.

* coordinate system :

→ Local co-ordinate
→ Global co-ord
→ Natural co-ord

} বাইরে তেমন কিছু নাই.

Chapter-5

SHAPE FUNCTION

* Polynomial shape function আসবে না
* Math সহজ হবে

[Ex-5.4 ., 5.5, 5.7 . — [Page-63]
Next class - Example 5.10

CT-3.

* [Lec-12, 13, 14.] ⇒ এর উপর - next week এর মাঝে - week wednesday. [25.07.18] ✗

[22.07.18]

⇓

sunday

Lec-14

Chapter-5

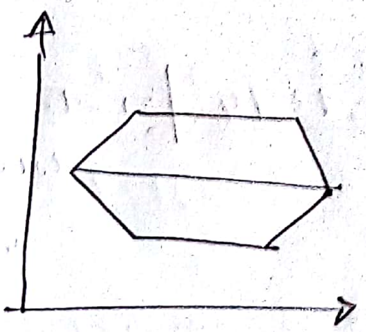
Example-5.10

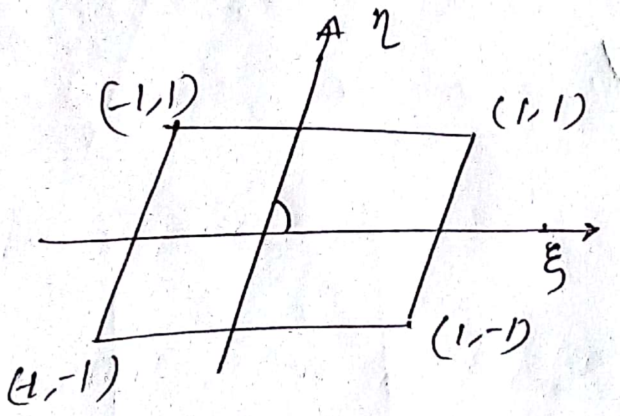
→ Isoparametric Element.

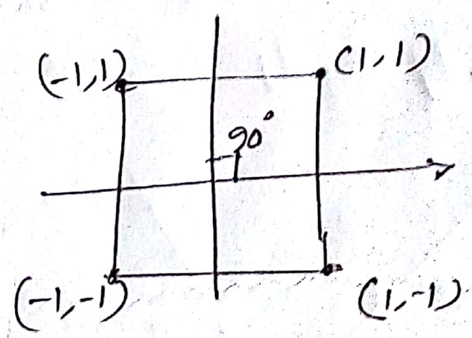
→ "Iraig's Quadrilateral"

→ "Triangular Element"

→ Natural co-ordinate







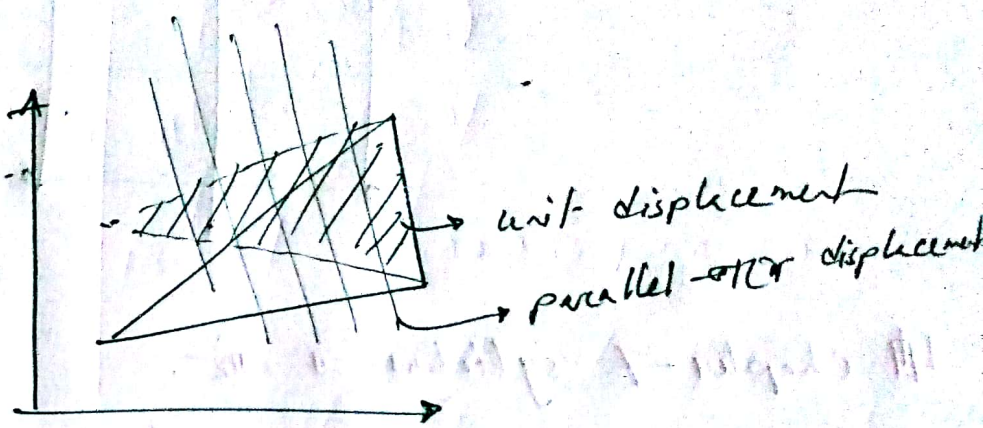
iso-parameter (কার্তেসীয়ান এর সাথে এর angle same হতে পারে আবার নাও পারে)

$$J = \frac{d\xi}{dx} \times \frac{d\eta}{dy}$$ --- [দুটো parameter হতে 1টা parameter এ নিয়ে আসি → J. তাই এর নাম iso parameter]

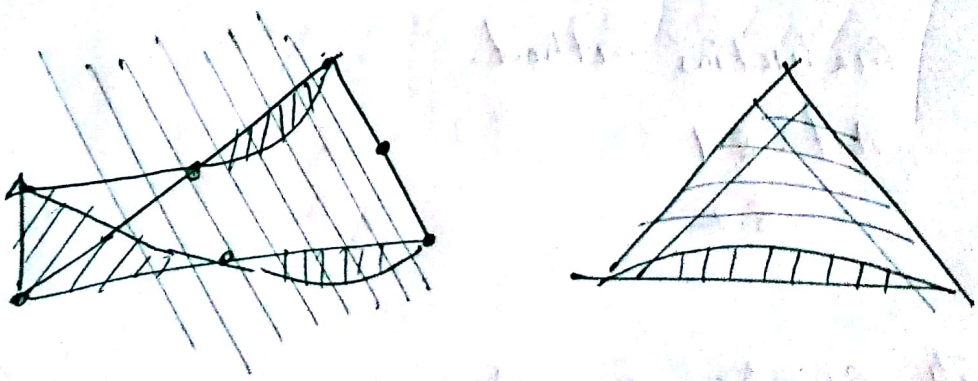
Jacobian

+ super-parametric (এটা imp. না)

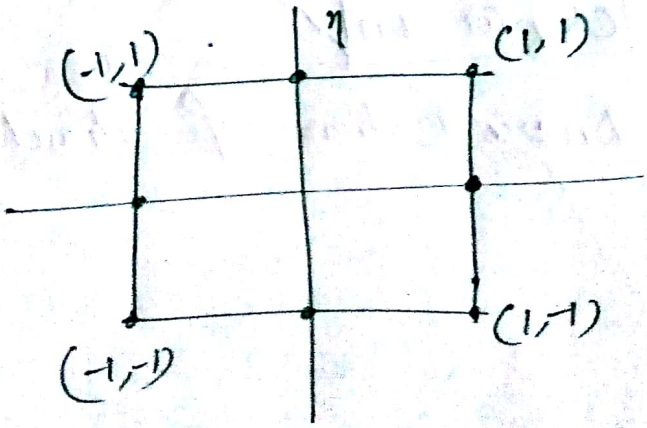
Ex- 5.10 :



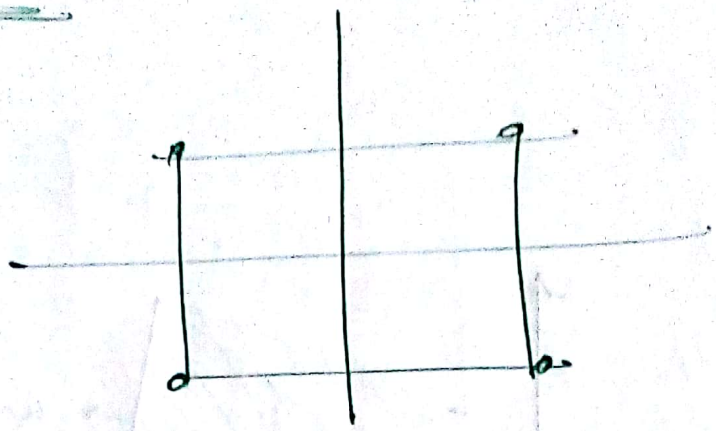
Ex-5.11 :



Ex-5.12 :



Ex – 5.13 :



⊞ Chapter – 7 syllabus – এ নাই.

⊞ Chapter – 8 :

Galerkin's method

Art. 8.1

8.2

⊞ Chapter – 9 নাই.

⊞ Next class ⇒ Chapter – 10

Discretizations of structures

Chapter 11
12

Chapter 13
14