School of Basic and Applied Sciences

Mathematics

ETE - May 2023

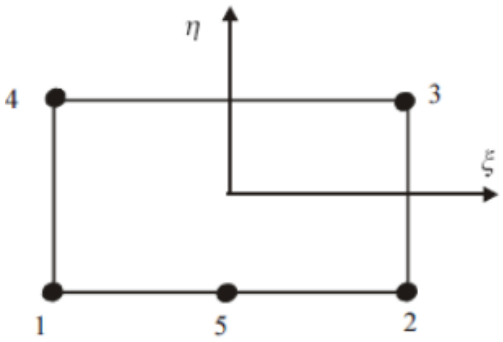
Time : 3 Hours **Marks : 50**

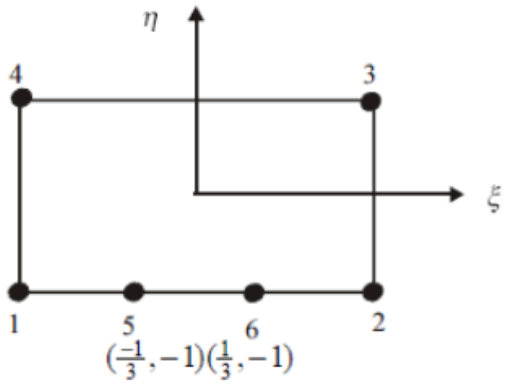
Sem IV - MSCM425 - Finite Element Method

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

1.	Write stiffness matrix for 1D quadratic element.	K2 CO1	(2)
2.	Define shape function.	K2 CO2	(2)
3.	Define natural boundary condition for a given example.	K3 CO3	(2)
4.	Discuss about Rayleigh-Ritz method.	K3 CO4	(2)
5.	Write down the shape functions for 4 noded rectangular isoparametric element.	K4 CO5	(2)
6.	For a given example, write the solving procedure of weighted residual technique.	K3 CO1	(5)
7.	Distinguish between system level equations and element level equations.	K4 CO2	(5)
8.	Evaluate $\int_{-1}^{1} e^x \sin x dx$ by using Gauss quadrature formula.	K6 CO6	(6)
9.	Find $I = \int_2^3 \int_2^3 \frac{2+x}{3+xy} dxdy$ by using 2×2 Gauss quadrature rule. .	K4 CO3	(8)
10.	Discuss shape functions for the given figures	K4 CO4	(8)





11.	Discuss the Jacobian matrix for four-noded quadrilateral element.	K5 CO5	(8)