



**DEPARTMENT OF MECHANICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR
Hazratbal, Kashmir (J&K)-190006**

THEORY OF ELASTICITY (MEC 803)

Assignment No. 1 (Due Date of Submission: 1st May 2020)

Note:

- Students are advised to submit the assignment online by scanning the handwritten assignment on or before the date of submission at mohsinkhan@nitsri.ac.in
- Please ensure that the Roll No along with name should be written in the front page of Assignment

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|-------------|---|------------|
| Q.1 | Derive expressions for compatibility for a two dimensional problems. | CO2 |
| Q.2 | Derive expressions for strain at a point in terms of stress components. | CO1 |
| Q.3 | Explain Saint-Venant's principle. | CO2 |
| Q.4 | What is the value of the theoretical stress concentration factor, K_t for the following situations: | CO4 |
| | (i) A circular hole in an infinite plate subjected to uniaxial tensile loading | |
| | (ii) A circular hole at the centre of a rotating disk. | |
| Q.5 | Explain the procedure for determination of stresses on any plane inclined to regular set of axes. The inclination of the plane is defined by direction cosines. | CO1 |
| Q.6 | Explain how about Fourier series can be applied for two dimensional problem under gravity loading. | CO2 |
| Q.7 | Discuss various applications of polar coordinates and advantages of considering problem using polar coordinates. | CO2 |
| Q.8 | Explain with an example Solution of torsional problems by energy method. | CO3 |
| Q.9 | Explain the concept and assumptions involved in theory of elasticity? | CO1 |
| Q.10 | Discuss about Principle of superposition. Derive expression for Equations of equilibrium in three dimensions? | CO2 |