

**Code: 9D15205****M.Tech II Semester Supplementary Examinations February 2018****THEORY OF PLASTICITY****(Machine Design)**

(For students admitted in 2012, 2013, 2014, 2015 &amp; 2016 only)

Time: 3 hours

Max. Marks: 60

Answer any FIVE questions  
All questions carry equal marks

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- 1 Discuss about Mohr's representation of stress in 2&3 dimensions.
- 2 Explain about strain displacement relationships.
- 3 Explain about incremental stress strain relations.
- 4 A thick cylinder of internal radius 15 cm and external radius 25 cm is subjected to an internal pressure 'p' MPa. If the yield stress for the cylinder material is  $220 \text{ N/mm}^2$ , determine: (i) The pressure at which the cylinder will start yielding just at the inner radius. (ii) The stresses in the cylinder when the cylinder has a plastic front radius of 20 cm. (iii) The stresses when the whole of the cylinder has yielded. Assume Von-Mises yield condition and a state of plane strain.
- 5 Discuss about Drucker Prager material and general isotropic material.
- 6 Explain about deformation theory of plasticity.
- 7 Discuss about numerical algorithms for solving non linear equations.
- 8 Explain about upper and lower bound theorems.

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