

22613

M.Tech 1st Semester (MAE) CBCS Scheme

Examination, December-2017

METAL FORMING ANALYSIS

Paper-MTMA21 C1

*Time allowed : 3 hours]*

*[Maximum marks : 100*

*Note : Attempt five questions in all, selecting one question from each section. Question No. 1 is compulsory. All questions carry equal marks.*

1. Explain the following :
  - (i) True stress-strain curve. 5
  - (ii) Extrusion 5
  - (iii) Hydrodynamic lubrication. 5
  - (iv) Shape function. 5

**Section-A**

2. Explain Tresca maximum shear strain energy criteria. 20
3. Explain Poisson's ratio for plastic deformation flow rule. 20

**Section-B**

4. Explain friction and lubrication in hot and cold working. 20

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5. Explain the defects in various metal forming processes. 20

**Section-C**

6. Explain lubricants used for rolling and forging. 20
7. Explain principle and mechanism of lubrication. 20

**Section-D**

8. Explain the following : 20
- (i) Implicit and explicit formulations.
  - (ii) Elasto-plastic approximations.
9. Explain the following : 20
- (i) Special Discretization.
  - (ii) Application of Finite element methods to metal forming processes.