

22613

**M. Tech. 1st Sem. (MAE) CBCS Scheme
Examination – February, 2022**

METAL FORMING ANALYSIS

Paper : MTMA21C1

Time : Three hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions. Question No. 1 is *compulsory* and attempt at least *one* question from each Unit. All questions carry equal marks.

1. Explain in brief the following : 4 × 5 – 20
- (a) Stress strain diagram for ductile material theoretical and practical.
 - (b) State difference between hot working and cold working process.
 - (c) Extreme pressure lubricants
 - (d) Importance of Finite Element Method in metal forming analysis.

UNIT – I

- 2. State and explain about Tresca maximum shear-strain energy criterion. 20
- 3. Discuss the importance Slip line field theory in metal forming process. 20

UNIT – II

- 4. What do you mean by Rolling and discuss its various types. 20
- 5. Discuss the Effects of temperature and strain rate in metal working processes. 20

UNIT – III

- 6. Explain the principles and mechanism of lubrications in metal forming processes. 20
- 7. What is the need lubricants used for rolling and cold drawing ? 20

UNIT – IV

- 8. Discuss the Implicit and Explicit formulations. 20
- 9. Explain the Elasto-plastic approximations method. 20