

Code: 13A03504

B.Tech III Year II Semester (R13) Regular & Supplementary Examinations May/June 2017

METAL FORMING PROCESS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) State the relationship between true strain and energy stresses.
 - (b) Give the classification of bulk metal deformation process.
 - (c) Define degree of drawing in wire drawing operators.
 - (d) State the applications of sheet metal working.
 - (e) Distinguish between thermoplastics and thermosetting plastics.
 - (f) How is the size of forging machine specified?
 - (g) Why a shear is provided on a punch or die?
 - (h) Differentiate between a cutting die and forming die.
 - (i) Write any four rolling defects.
 - (j) Define recrystallization.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Discuss yield criteria in metal forming processes.
(b) Distinguish between hot working and cold working.

OR

- 3 (a) Describe the properties of hot working metals.
(b) Write short notes on: (i) Strain hardening. (ii) Recovery.

UNIT – II

- 4 (a) Explain the principle and operation of rolling.
(b) Derive an expression for power requirement in rolling operation.

OR

- 5 (a) Sketch and explain Smith and Drop forging process.
(b) Describe various forging defects.

UNIT – III

- 6 (a) Sketch and explain Hydrostatic extrusion process and state its applications.
(b) Describe impact extrusion process.

OR

- 7 (a) Explain the mechanics of wire drawing operation.
(b) State the characteristics of extruded parts.

UNIT – IV

- 8 (a) Distinguish between piercing and blanking.
(b) Sketch and explain spinning process.

OR

- 9 (a) Derive the expression for calculating the forces and power in press operation.
(b) Explain cup drawing process.

UNIT – V

- 10 (a) Describe injection moulding process.
(b) State the applications of rapid prototyping process.

OR

- 11 (a) Describe HERF process.
(b) Explain stereolithography fused deposition modeling.
