Code: 13A03504

SS

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 is applications.
(b) Describe impact extrusion process.

OR

7 (a) Explain the mechanics of wiredrawing 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 sterer holography fused deposition modeling.

*****