

CBCS Scheme

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15MA53

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018

Metal Forming

Time: 3 hrs.

Max. Marks: 80

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

- 1 a. With neat sketches, explain the classification of metal working processes. (10 Marks)
b. List the characteristics of wrought products and limitations of metal working processes. (06 Marks)

OR

- 2 a. Explain Biaxial and Triaxial stresses. (08 Marks)
b. Explain the effects of Temperature and Hydrostatic pressure in metal working. (08 Marks)

Module-2

- 3 a. Derive the expressions for forging pressure and load in open die forging by slab analysis method. (10 Marks)
b. Explain with a neat sketch the major components of the forging equipment. (06 Marks)

OR

- 4 a. Give the classification of rolling processes. Explain the working operation of any two types with neat sketches. (10 Marks)
b. Explain the effects of front and back tensions and friction in rolling. (06 Marks)

Module-3

- 5 a. Derive the expression for drawing loads by slab analysis method. (08 Marks)
b. Explain the concepts of optimal cone angle and dead zone formation. (08 Marks)

OR

- 6 a. With neat sketch, explain the working operation of Extrusion equipment and dies. (08 Marks)
b. Explain the working operation of extrusion of seamless pipes and tube with neat sketches. (08 Marks)

Module-4

- 7 a. Explain with a neat sketch, the principle of working of progressive die. (08 Marks)
b. Explain working of piercing and blanking and roll bending operation. (08 Marks)

OR

- 8 a. Explain the process of rubber forming and stretch forming. (08 Marks)
b. Explain the effect of anisotropy on LDR. (04 Marks)
c. Discuss the defects in deep drawn products with their causes and remedies. (04 Marks)

Module-5

- 9 a. Explain the basic steps involved in powder metallurgy process. (08 Marks)
b. With neat sketches, describe any two methods of production of metal powders. (08 Marks)

OR

- 10 a. With neat sketch, explain Operation and Working of Explosive forming. (06 Marks)
b. Explain the working of Electro – hydraulic forming process. (06 Marks)
c. List the advantages and applications of High Energy rate forming methods. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.