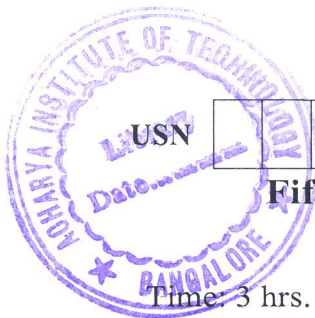


CBCS SCHEME



USN

Date: / /

Time: 3 hrs.

17MA53

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Metal Forming

Max. Marks: 100

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

Module-1

- 1 a. With neat sketches, explain the classification of Metal Working Process. (10 Marks)
- b. List the characteristics of wrought products. (04 Marks)
- c. What are the advantages and limitations of Metal Working Process? (06 Marks)

OR

- 2 a. Derive an expression for shear yield stress in terms of tensile yield stress. (10 Marks)
- b. Explain the effects of Temperature and hydrostatic pressure in metal working. (10 Marks)

Module-2

- 3 a. Explain the die design parameters in forging die, with neat sketch. (10 Marks)
- b. Derive an expression for the maximum forging load in plane forging.

$$P_{\max} = \sigma_0^l e^{\mu b/h}$$

(10 Marks)

OR

- 4 a. With the neat sketches, explain the different types of rolling mills. (10 Marks)
- b. Explain the effects of front and back tensions in rolling. (06 Marks)
- c. What are the defects in rolled products? (04 Marks)

Module-3

- 5 a. With a flow chart, briefly explain wire drawing process. (10 Marks)
- b. Derive the expression for drawing loads by Slab Analysis Method. (10 Marks)

OR

- 6 a. Explain the principle, application, metal that can be extruded in :
i) Hydrostatic Extrusion ii) Powder Extrusion. (10 Marks)
- b. Explain with neat sketches how seamless tubes/pipes are produced by Extrusion process. (10 Marks)

Module-4

- 7 a. With a simple sketch of a die – punch assembly, explain its operation. (10 Marks)
- b. Explain the working of piercing and stretch forming and blanking operation. (06 Marks)
- c. Mention the different parameters used to specify and selection in a press. (04 Marks)

OR

- 8 a. Discuss the defects in deep drawn products with their causes and remedies. (10 Marks)
- b. Explain with a neat sketch, the principle of working of progressive die. (10 Marks)

Module-5

- 9 a. Draw a flow chart showing the various steps in Powder Metallurgy techniques. (10 Marks)
- b. Explain with neat sketch, the methods of compaction in powder metallurgy. (10 Marks)

OR

- 10 a. With neat sketch, explain the construction and working of Electromagnetic forming. (10 Marks)
- b. Write short note on :
i) Explosive forming ii) Electro hydraulic forming. (10 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.