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18MA53

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022

Metal Forming

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With neat sketch, explain the classification of metal working processes based on force applied. (10 Marks)
- b. Explain hot working and cold working. Mention the advantages, disadvantages and effect of hot working. (10 Marks)

OR

- 2 a. Explain Tresca's and Von Mises's yield criterions. (10 Marks)
- b. Write a short note on:
 - i) Deformation zone geometry
 - ii) Residual stresses in wrought products. (10 Marks)

Module-2

- 3 a. With neat sketch explain:
 - i) Board drop hammer
 - ii) Power drop hammer. (10 Marks)
- b. With neat sketch explain:
 - i) Screw press
 - ii) Hydraulic press. (10 Marks)

OR

- 4 a. With neat sketch explain:
 - i) Tandem Mill
 - ii) Cluster Mill. (10 Marks)
- b. Explain the defects in rolled products with neat sketches. (10 Marks)

Module-3

- 5 a. Explain with sketch:
 - i) Tube drawing with fixed mandrel.
 - ii) Tube drawing without mandrel. (10 Marks)
- b. Explain the variables that affect the drawing force in wire drawing process. (10 Marks)

OR

- 6 a. Explain with sketch:
 - i) Hydrostatic Extrusion
 - ii) Impact Extrusion. (10 Marks)
- b. Explain the variables influencing extrusion process. (10 Marks)

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.

Module-4

- 7 a. Explain with neat sketch: i) Blanking ii) Embossing (10 Marks)
b. Briefly explain the working principle of compound die. (10 Marks)

OR

- 8 a. Write a short note on:
i) Limiting drawing ratio
ii) Effect of anisotropy on LDR. (10 Marks)
b. With neat sketch explain the various forms of punching. (10 Marks)

Module-5

- 9 a. With neat sketch explain any two methods of production of metal powders. (10 Marks)
b. Explain with neat sketch the steps involved in the process of powder metallurgy. (10 Marks)

OR

- 10 a. Briefly explain explosive forming using stand-off technique. Mention its advantages and applications. (10 Marks)
b. Briefly explain Electro magnetic forming and mention its advantages and limitations. (10 Marks)

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