Exam Date & Time: 09-Dec-2023 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

VII SEMESTER B.TECH END SEMESTER EXAMINATIONS, NOV-DEC 2023

THEORY OF METAL FORMING [MME 4094]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions. Section Duration: 180 mins

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

1) A band of tin 55mm x 55mm x 175mm is forged between two flat dies to a size of 7.25mm x 100mm x 150mm. If the coefficient of sliding friction between the dies and the work is 0.30, Average yield stress of tin in tension is 10 N/mm^2, calculate maximum forging pressure at an interval of 7.25mm and maximum forging pressure assuming a sticking friction. (4)

B) Explain lubrication in Drawing? Derive an Expression for Drawing Force and Power (4)

C) Sketch and Explain extrusion process for extruding High Speed Steel and Cast Iron (2)

2) Explain with sketch forming process applicable in Nuclear Industry (4)

A)

B) Explain with Sketch Metal Spinning and Plastic Forming. (4)

C) Differentiate Between Conventional Forming and High Energy Rate Forming (2)

3) Explain with Sketch Explosive Forming and Electro Hydraulic Forming. (4)

A)

B) Explain with Sketch Rod Drawing and Wire Drawing. (4)

C) What are the defects in Forging? (2)

4) Explain the role of temperature in Metal Forming with advantages and disadvantages (4)

A)

B) Explain different types of Metal Forming Process (4)

C) Explain Workability and Crack Formation (2)

5) Explain characteristics, advantages and disadvantages of Cold Rolling (4)

A)

B) What are the different types of Rolling Mills? Explain any two (4)

C) What are the different types of Stresses and Experiments in metal working process (2)

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