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10MA755

**Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Metal Forming Technology**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. Explain clearly the two important yield criteria used in metal working process. (10 Marks)  
b. With a neat sketch explain true stress and true strain. (06 Marks)  
c. Write a note on flow curve. (04 Marks)
- 2 a. Discuss with simple sketches, classification of metal forming process based on the nature of forces applied. (10 Marks)  
b. Briefly explain slab method of metal deformation analysis. (05 Marks)  
c. Explain the strain rate effects on metal working. (05 Marks)
- 3 a. Explain the die design parameters in forging with neat sketch. (08 Marks)  
b. Write a note on defects in forged products. (06 Marks)  
c. A flat circular disc of diameter 25mm, thickness 75mm is to be forged to half the height between flat dies – what is the maximum forging load? if  $\mu = 0.4$  and the material yield strength is  $40\text{kN/m}^2$ . If it takes 3 second to produce the forging and the efficiency of working is 40%, what power is needed? (06 Marks)
- 4 a. Explain the planetary and Tandem rolling mill with a neat sketch. (08 Marks)  
b. Discuss briefly the defects in rolled products. (06 Marks)  
c. With a neat sketch explain neutral point, contact area and specific roll pressure. (06 Marks)

**PART – B**

- 5 a. What are the variables associated with extrusion process? (08 Marks)  
b. Explain with sketches  
i) Hydrostatic extrusion ii) Impact extrusion. (08 Marks)  
c. Write a note on defects in extrusion products. (04 Marks)
- 6 a. What are the different methods available for tube drawing? Explain. (08 Marks)  
b. Write a note on estimation of redundant work in drawing. (06 Marks)  
c. Explain optimal cone angle and dead zone formation in drawing. (06 Marks)
- 7 a. With the help of a sketch, describe the working of progressive die and compound die. (10 Marks)  
b. Explain the following operations with neat sketches.  
i) Deep drawing ii) Stretch forming (10 Marks)
- 8 Describe clearly  
a. Explosive forming (08 Marks)  
b. Electromagnetic forming (06 Marks)  
c. Electro hydraulic forming. (06 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.