

**B.TECH. SEM -V PRODUCTION 2014 COURSE (CBCS) : WINTER -
2017**

SUBJECT : METAL FORMING

Day : **Thursday**
Date : **11/01/2018**

Time : **02.30 PM TO 05.30 PM**
Max. Marks : **60**

W-2017-2162

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

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- Q.1** a) Explain formability limit diagram for rigid, elastic, plastic, rigid elastic, rigid plastic materials. [05]
- b) Discuss the types of tube drawing machines with its advantages and disadvantages. [05]

OR

- a) Calculate the load required to draw 3 mm diameter wire from 8 mm diameter rod. Given that yield stress is 280 N/mm^2 die angle 12° and coefficient of friction 0.1. [05]
- b) How to select the materials in wire drawing dies? Write steps in design of wire drawing. [05]
- Q.2** a) What is parting line? Explain the different factors to be considered while selecting parting line. [05]
- b) Discuss the design consideration for forging die design. [05]

OR

Write short note on: [10]

i) Isothermal forging	iii) No draft forging
ii) P/M forging	iv) Liquid metal forging

- Q.3** a) Explain the types of rolling mills with neat sketch. [05]
- b) Discuss the effect of roll flatter on the rolling load. [05]

OR

- a) Explain the defects and remedies in rolling process. [05]
- b) A piece of steel 300 mm wide and 20 mm thick is to be reduced to 70% of its original cross-sectional area on a two light reversible mill in one pass. If the 150 N/mm^2 and coefficient of friction is 0.15. Calculate rolling load. [05]

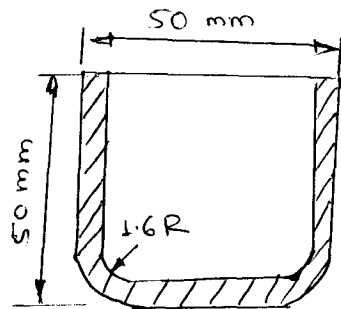
P.T.O.

- Q.4 a)** Give the detailed classification of sheet metal working processes. [05]
- b)** Write short note on reduction of cutting forces in press working. [05]

OR

- a)** Explain the different types of cutting and forming dies. [05]
- b)** Write short note on: [05]
- | | |
|--------------------|----------------------|
| i) Notching | iii) Drawing |
| ii) Lancing | iv) Embossing |

- Q.5** Design a deep drawing die for the component shown in Figure 1. [10]



Thickness - 0.8 mm
 Material - Copper Alloy
 UTS - 325 N/mm²

Figure 1.

OR

A washer with internal diameter 20 mm and outer diameter 25 mm is made from 2 mm thick strip of steel on progressive die. Ultimate shear strength 250 N/mm² strip length – 2500 mm. Draw strip layout and calculate percentage utilization for same. Calculate minimum cutting and press tonnage required. [10]

- Q.6 a)** Explain hydrostatic extrusion with neat sketch. [05]
- b)** Explain with neat sketch seamless tube manufacturing with extrusion process. [05]

OR

- a)** Explain the defects and remedies in extrusion process. [05]
- b)** Explain direct and indirect extrusion with neat sketch. [05]

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