

Faculty of Engineering  
Menoufiya University  
Shebin El-Kom  
Year: Third year  
Academic Year: 2012-2013



Department: Mech.Design&prod. Engg  
Subject: equipments of forming  
Time Allowed: 3 hours  
Code NO. 321  
Date : 8/6/2013

**Allowed Tables and Charts: (None)**

**Answer all the following Questions [ 90 Marks]**

1) A- explains in detail the role of air and hydro pneumatic die cushions? Expalian why is hydro pneumatic die cushions preferred as a pressure Pad?

b- with neat sketches show:

- the methods of controlling spring back in springy and had ended materials in channel dies.
- the difference between the single action and double action draw dies.

C-why is it necessary to anneal the work piece between each draws an extreme draw situation?

d- what type of lubricant is used when extreme pressure applied? Discuss the effect of improper lubricant?

e-why are the surface of the coining dies must be highly polished and free from scratches?

[20 marks]

2)a- A symmetric-cup work piece with a height of (40)mm and diameter of (72) mm. the corner radius is (3) mm .the work piece material is 1020 cold-rolled steel (2)mm thick make the necessary calculation for designing the die for this drawing operation ?

b- Put true or false and discuss your answer:

- the harder and less ductile the metal, the higher the drawing speed must be.
- The lower-hardness urethane is the best selection when smooth shaped are formed
- Material that are handed may be corner-set to aid in preventing springback
- drawing force depending on the shape of work piece, thickness and types of metal
- for channel bending, die opening is 8 times metal thickness

c- What are the three principal classes for available low-carbon steel sheet for drawing operations?

[20 Marks]

3) a) what are the advenges of screw presses compared to hammers?

b) What are the major difference between a fine blanking tool and conventional die?

Put (true) or (false) then discuss your answer:-

- Soft metal need smallest clearance than hard metal.
- Springing back depends upon the hardness or bend radius.
- Yoked section is preferred to give extra stability to weak section.
- Angular clearance depends on stock thickness and sharpening.
- The wider the cut band, the softer the material.
- Stripper plate is neccrary where very accurate blank
- The wider the cut band, the softer the material
- The punch dimensions should be checked for bending

[15 Marks]

4) a part show in fig. is to be made from a mild steel sheet 3 mm thick , and 2 mm long, determine

- Strip lay out
- number of part that can be punched from strip
- Percentages of stock used
- Weight of material needed to produced one blank for steal and, calculate punch and die sizes

[20Marks]

5-(a) Identify and explain the function of the three major types of presses.

(b) How can the accuracy of a standard die set be checked? Explain the different types of die sets commonly available in the market.

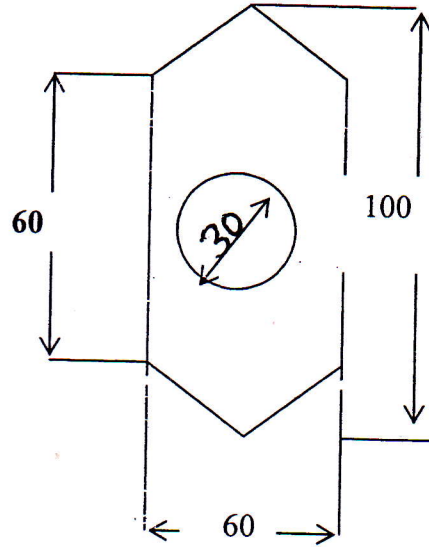
(c) Classify punches and explain them briefly.

(d) Write short notes on:

Strippers – Guide posts – Guide bushings

[15 marks]

Dimensions by mm



*Good luck*

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