

Menofiya University Faculty of Engineering Tim Allowed: 3 hours Post- Graduate Exam, 2013-2014 Date of Exam: 4/ 6 /2015		Production Diploma (500 Level) Subject : Forming technology Code: PRE 507 Total Mark: 100 Marks Production Eng. Dep.
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Answer all the following questions

Neat sketches are absolutely necessary.

Be precise and scientific in writing.

QUESTION NO. 1

(60 Mark)

Describe the following forming technologies showing their process capabilities

- 1-Severe plastic deformation
- 2-Honeycomb structure MFG.
- 3-Vibration assisted forming
- 4- Crankshaft MFG for both small and mass production batches of high quality.
- 5- Nanosolar cells MFG.

QUESTION NO. 2

(20 Mark)

In rolling of a flat strip, explain the following:-

- The effect of friction and reduction in thickness of the strip on the pressure distribution in the roll gap.
- The consequences of applying too high back tension.
- The factors contribute to spreading, vibration and chatter in flat rolling.
- The importance of controlling roll diameter, roll speeds, roll gaps and temperatures in rolling operations.

QUESTION NO. 3

(20 Mark)

a) Describe in details the following items:-

- The considerations should be taken into account in die cost, die manufacturing methods and die failures.
- Comparison between a closed-die and precision forging of a round billet.
- The advantage and limitations of using die sorts? Give some examples.

b) A cylindrical specimen made of 1020 steel 50 mm in diameter and 120 mm high. It is upset by open-die forging with flat dies to a high of 60 mm at room temperature. Assume the coefficient of friction is 0.2, calculate the force required at the end of the stroke, if the flow stress of 1020 steel is 1201 MPa.

***** GOOD LUCK*****

Question number	Q1	Q2	Q2	Q3	Q2	Q2	Q3	Q3	Q2	Q3	Q3	Q3
Skills	a-1- 1	a-2- 2	a-3- 1	a-4- 1	b-1- 1	b-2- 4	b-4- 1	b-4- 3	c-1- 1	c-2- 2	c-4- 3	c-4- 4
	Knowledge & understanding skills				Intellectual skills				Professional Skills			

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