MANSOURA UNVERSITY	Machining Processes and Equipment [5123]
Faculty Of Engineering	Time Allowed : 3 Hours
Dept. of Production Eng. & M/Cs Des	Final Exam : 02-06-2013
1st Year Production Engineering	Max. Mark [90 Marks]

Please, answer the following questions:,

Q1 [20]Marks

-a) Draw carefully sketches and explain the following methods to change revolutions of main spindle of the headstock :-*[10 Marks]*

* **Stepped pulley drives without back gearing,**
* **Stepped pulley drives with back gearing.**

-b) What are various shapes of **turning tools**? *[5 Marks]*

-c) Explain precisely the **clamping methods** of turning tools using neat sketches. *[5 marks]*

Q2 [20] Marks

-a) Compare between **Countersinking** and **Counterboring** operations of drilling machine.

-b) In detail, compare between shaper, planer, and slotted machines. *[5 Marks]*

-c) What are types and performance of **reamers**? *[10 Marks]*

Q3 [20]Marks

-a) Compare between **Vertical** and **Horizontal milling** operations using neat sketch.*[5Marks]*

-b) What is **Gang milling cutters (straddle mills)** using neat sketch. *[5 Marks]*

-c) In mass production internal and external surfaces on small and medium sized metal parts are frequently machined by **Broaching**. Explain that using neat sketches. *[10 Marks]*

Q4 [10] Marks

-a) What are shapes of **Grinding wheels**? *[5 Marks]*

-b) Define the various types of **grinding machines**. *[5 Marks]*

Q5 [20 Marks]

- For the part as shown in the figure , prepare a complete process sheet and calculate the machining time from a stock made of **st. 42.11** raw material dimensions **D 35* 305 mms.** For roughing **n=1000r.p.m**. depth of cut **a=1.5 mm**, and feed **s=0.5 mm/rev**. For finishing **n=1400 r.p.m**, depth of cut **a= 0.8mm**, and feed **s=0.2 mm/rev.**
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GOOD LUCK "Prof Dr Eng." magdy Samuel & Tawfik T. Elmedany