Menoufiya University		Department: Mech. Power Eng.
Faculty of Engineering		Year : First
Shebin El- Kom		Subject: Production Engineering
Second Term – Final Exam		Code : PRE 128
Academic Year: 2015-2016		Time Allowed: Three Hours
Date: 15 / 06 / 2016	Menoufia University	Total Marks : 60 Marks

| Allowed Tables and Charts: None	♣ Exam in two pages ♣

Answer all the following questions (with the help of net sketches), (Assume any missing data):

Question Own: {20 Marks}

a- Illustrate by sketches the methods used for turning the tapered parts.   (4 Marks)

b- Find the machining time to finish the job as shown in the figure from 45 mm initial diameter, assuming that:
  - For turning: V = 30 m / min, f = 0.35 mm / rev
  - For chamfering: f = 0.25 mm / rev
  - Depth of cut = 1.25 mm
  - For drilling: V = 30 m / min, f = 0.1 mm / rev
  - For threading: V = 10 m / min
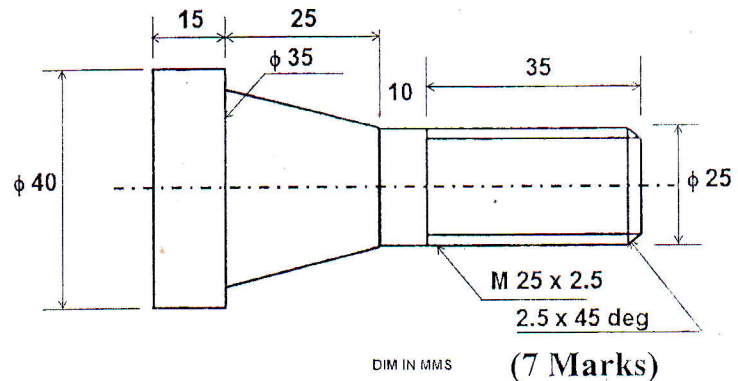
DIM IN MMS   (7 Marks)

c- Calculate suitable gear trains for the following cases:

1- 2.5 mm pitch on a 6 mm lead screw

2- 11 tpi on a 4 tpi lead screw

3- 7 threads in 10 mm on 6 mm lead screw

4- 7/22 in. pitch, 3 starts on a lathe with 2 tpi

5- 2.5 mm pitch on a 4 tpi lead screw

6- 12 tpi on a lathe having 6 mm pitch lead screw   (6 Marks)

d- List the boring machines types.   (1 Mark)

e- Calculate the metal removal rate and machining time when drilling a blind hole of 16 mm diameter hole and 45 mm depth using 20 m/min cutting speed and feed rate of 0.25 mm/rev.   (2 Marks)

Question Two: {15 Marks}

a- For what purposes the slotter machines are more suited?   (1 Mark)

b- Calculate the shaping time for a workpiece length 600 mm and width 150 mm using a feed rate of 0.5 mm/stroke. The height of the part was 60 mm which was reduced to 50 mm at a maximum depth of 2 mm; the cutting speed was 30 m/min and V_c: V_r was 1:2.   (4 Marks)

c- Illustrate by a sketch the standard milling machine arbor instillation.   (2 Marks)

d- In horizontal milling of mild steel workpiece having the following conditions:
  - Cutting speed = 60 m/min, Feed rate = 360 mm/min.
  - Depth of cut = 3.2 mm, D = 144 mm, B = 40 mm

Calculate;
i- Machining time for one travel if the workpiece length = 360 mm.
ii- Metal removal rate.   (3 Marks)

e- Calculate the indexing and change gears required for 57 divisions. The change gears supplied with the dividing head are as follows:

24, 24, 28, 32, 40, 44, 48, 56, 64, 72, 86   (3 Marks)

f- List the factors to be considered in the selection of the proper G.W.   (2 Marks)

Question Three: **{10 Marks}**
a- Discuss the effect of temperature in metal forming.   (1 Mark)

b- What are the advantages of hot working vs. cold working?   (2 Marks)

c- Illustrate with the aid of sketches the different forging operations.   (4 Marks)

d- Illustrate by sketches the defects in forging.   (3 Marks)

Question Four: **{15 Marks}**
a- Illustrate by sketches the arrangement of rollers for rolling mills.   (5 Marks)

b- Describe the tube rolling process.   (4 Marks)

c- What are the classifications of extrusion processes?   (2 Marks)

d- Illustrate by sketches only the various methods for tube bending.   (3 Marks)

e- Why in most metal forming processes, friction is undesirable?   (1 Mark)

With our best wishes
Dr. Ali Elmasry

This exam contributes by measuring in achieving Program me Academic Standards according to NARS						
Question Number	Q1-(a-b), Q3-b, Q4-c	Q1-e,Q2-(a-f), Q3-a,Q4-e	Q1-c,Q2-c,Q3-(c-d), Q4(a-d)	Q4-b		Q1-d, Q2-(b-d)	Q2-e
	a3-1	a8-1	a19-1	b14-1		c5-1	c8-1
Skills	Knowledge & Understanding Skills			Intellectual Skills		Professional Skills	