

## PROJECT 3

### CURVE FITTING ( 200 points)

#### GIVEN:

Brass and Steel Nozzle wear rate data (%) at different usage time (hour) at a selected nozzle operation pressure of 40 psi is shown below.

Time (hour)	Nozzle Wear Rate (%)	
	Brass	Steel
0.333	2.45	1.23
1	2.84	1.83
2	4.42	2.53
3	5.16	2.49
4.5	7.13	3.51
6	8.55	3.77
8	9.39	4.89
10	10.95	6.07
13	12.29	6.96
16	13.76	7.30
20	15.64	9.25
24	17.01	9.47
28	18.83	9.98
33	19.32	10.55
38	21.69	11.12
43	22.69	11.45
48	23.98	12.21
53	25.48	12.38
58	26.07	12.72
65	27.28	13.27
72	29.99	14.65
80	31.15	14.93
88	31.59	15.21
96	33.18	16.85
100	34.00	18.19

#### REQUIRED:

- 1). What are the independent and dependent variables.
- 2). Find the best trend line and the trend line eq. for each nozzle material.
- 3) Calculate each  $R^2$  - value and explain your answer.

**Include a cover page with your name and date. Give your cover page a professional look. Your report should contain a cover page, excel sheet, chart on a separate sheet plotting both the curves on one chart, and the answers to the above questions under the heading DISCUSSION. Also, I would like you to browse the web and find information about nozzle wear. List the web sites and the key papers. ( Total points 200; late penalty - 10 points per day after due date).**

**P.S. Each Excel worksheet should have your name, date and time in the header statement**

**Information about grading: (Total 200 points)**

1. Trend line charts (linear, polynomial, and power) including  $R^2$  values for brass and steel nozzles ---- 60 points
2. Residual plots (3 for brass and 3 for steel) --- 60 points
3. Independent and Dependent variable ---- 10 points
4. Discussion of above items ---- 30 points
5. Web information --- 10 points
6. Neatness, accuracy, spelling and grammar – 20 points
7. cover page --- 10 points

**( Total points 200; late penalty - 10 points per day after due date).**