SOLUTION

Tungsten-copper (WCu) is an alloy often used in applications requiring high strength, high melting temperature, and good electrical conductivity, such as welding rods. It is believed that there is a relationship between the proportion of tungsten and bending-mode strength. Fifteen welding rods were tested at five different proportions of tungsten in random order and the results presented below:

w	Bending-Mode Strength (MPa)			14/6	m. D. Heal
	Sample 1	Sample 2	Sample 3	totals	averuges
0.70	770	792	799	2361	787
0.75	882	894	873	2619	883
0.80	922	936	977	2835	945
0.85	1050	1088	1104	3242	108.1
0.90	1161	1091	1240	3492	1164
		14579	972		

Use Analysis of Variance (ANOVA) to test the null hypothesis that the treatment means are equal at the  $\alpha$  = 0.05 level of significance. Fill in the ANOVA table and state your final conclusion regarding the significance of tungsten content in the bending-mode strength of WCu welding rods.

$$SST = 770^{2} + 882^{2} + ... - \frac{14579^{2}}{15} = 14459425 - 62985.6 = 289608.9.$$

$$SST = 470^{2} + 882^{2} + ... - \frac{14579^{2}}{15} = 14459425 - 62985.6 = 289608.9.$$

$$SST = 470^{2} + 882^{2} + ... - \frac{14579}{15} = 1444458.3 - 62985.6$$

$$9-1 = 5-1 = 4 + 1 = 274642.267$$

SSE = 55T - SStreatments = 14966.67(-10) = 24642.207

MS = 21 21 274642.3 = 10110 512 (4)

MS Treatments = 274642.3 = 68660.567 (+1)

fo = 68660.567 = 45.87 (+1)

ferition = f.05,4,10 = 3.48 (+1)

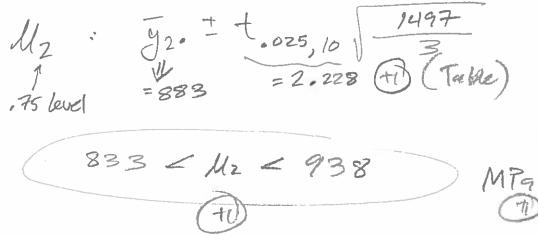
Pilled /	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	£б
in	Treatments	274642.3	4	68660.6	45.87
(PD)	Error	14966.7	10	1497	
	Total	289408.9	14		

for # faritial; strongly reject to (+1)

The Proportion of W is significant to bending-mode so

strength 15

Write a 95% confidence interval on bending-mode strength at the 0.75 tungsten level. Include a unit with your answer.



Use Fisher's Least Significant Difference to determine which, if any, pairs of treatment means show significant difference at  $\alpha = 0.05$ . (Hint: 12 23 34 45 13 24 35 14 25 15)

