Homework # 5 –IM602-71

Question # 1. An article in Environment International (Vol. 18, No. 4, 1992) described an experiment in which the amount of radon released in showers was investigated. Radon-enriched water was used in the experiment, and six different orifice diameters were tested in shower heads. The data from the experiment are shown in the following table

Orifice Diameter	Radon Released (%)			
0.37	80	83	83	85
0.51	75	75	79	79
0.71	76	76	83	77
1.02	67	72	84	74
1.4	62	62	85	85
1.99	60	61	64	66

a. Does the size of the orifice affect the mean percentage of radon released? What conclusions would you draw? Use $\alpha = 0.05$. What would you conclude if $\alpha = 0.010$

b. Find the P-value for the F-statistic in part (a).

c. Find a 95% confidence interval on the mean percent of radon released when the orifice diameter is 1.40.

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Question # 2. The results of an experiment involving a storage battery used in the launching mechanism of a shoulder-fired ground-to-air missile were presented. Three material types can be used to make the battery plates. The objective is to design a battery that is relatively unaffected by the ambient temperature. The output response from the battery is effective life in hours. Three temperature levels are selected, and a factorial experiment with four replicates is run. The data are as follows:

Material	Temperature (°F)					
	Low		Medium		High	
1	130	155	34	40	20	70
	74	180	80	75	82	58
2	150	122	136	120	25	70
	159	115	106	115	58	45
3	138	110	174	120	96	104
	168	160	180	139	82	60

Test the appropriate hypotheses and draw conclusions using the analysis of variance with $\alpha = .05$

Note: - Must be typed and submitted using MS -Word format ONLY. You need to show your work (ANOVA Tables, formulas and calculations to receive full credit