**Quiz VI**

Part I – Individual Quiz (Before Class)

Part II – Group Quiz (During Class)

1. Did you complete the reading (6 points)?

YES

1. What does it mean when one factor is an alias for another factor?

You can’t separate the main effects and the interaction effects

1. How many experimental runs are needed for a half-fractional factorial experiment involving 3 factors, each with 2 levels?

4

**End of Part I**

1. Were you in class on time (2 pts)?

YES

1. How many experimental runs are needed to run a half fractional factorial with 6 factors, assuming all factors only have 2 levels? (1 point)

32

1. Write out the experimental run levels of factors A, B, C, and D in a half fractional factorial design using a generatoring relation of D = ABC. (assume each factor has a high and a low, which can be represented as represented as ‘+’ and ‘-‘ in your table). (4 points)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Exp. Run | A | B | C | D |
| 1 | + | + | + | + |
| 2 | + | + | - | - |
| 3 | + | - | + | - |
| 4 | + | - | - | + |
| 5 | - | + | + | - |
| 6 | - | + | - | + |
| 7 | - | - | + | + |
| 8 | - | - | - | - |

1. Write the “defining relation” if you use a generator of D = ABC (1 points)

A = A \* ABCD = BCD = BCD

B = B \* ABCD = ACD = ACD

C = C \* ABCD = ABD = ABD

D = D \* ABCD = ABC = ABC

1. You are doing a half fractional factorial design for an experiment with 4 factors, each with 2 levels, write the entire alias structure (6 points). Use D=AB as the generating relation. (4 points)

A = B \* ABD = BD

B = B \* ABD = AD

C = C \* ABD = ABCD

D = I \* ABD = AB

AC = BCD

BC = ACD

BD = A

CD = ABC