**National University of Sciences & Technology**

**Military College of Signals**

**Number Theory**

**Fall 2012**

**Assignment # 3**

**DUE DATE: 26 December, 2012**

**SOLVE**

1. ***2x + 5y =11 3.7 q#1.a p138***
2. ***1402 x + 1969 y = 1 3.7 q#1.e p138***
3. ***5x+6y = 1***
4. ***14x+8y = 4***
5. ***321x+105y =11***
6. ***23x - 49y = 179***
7. ***45x+63y = 450***
8. **Find the method for solving linear Diophantine for 3 variables, and solve following equations:**
9. ***x+y+z = 100 , x+8y+50z = 156 3.7 q#15.a p139***
10. ***15x +12y + 30z = 24***

***9. Find all solutions where x and y are integers to the Diophantine equation: 1/x+1/y =***

***1/14 . 3.7 q#24 p140***

1. **What is the base 8 expansion of (12345)10 ? from number representation exercise**
2. **If *a* is an odd integer, then, show that, . ask by sir *4.1 q#5 p149***
3. **Give a proof of Fermat’s theorem. actual book 126 and old book 80**
4. **Solve: *4.2 p156***
5. **Solve: *4.3 q#33-35 p167 4.4 p174***
6. ***4.3 q#33-35 p167 4.4 p174***
7. **Find the day of the week of the day you were born and of your birthday this year.**

**actual book p 199 and old book p 137 ‘**

1. **Solve: *4.5 q#1 p182***
2. **Show that is involutory modulo 26. *4.5 q#6 p182***
3. **Show that if *a* is an even integer, then and if *a* is an odd integer, then *4.1 q#4 p149***
4. **Show that if *a* is an odd integer, then,**
5. ***Solve: 4.2 p156***
6. ***Solve: 4.2 p156***
7. ***S0lve:***
8. ***State and prove Fermat’s Little Theorem. p 217***
9. ***State and prove Wilson’s Theorem. new book chap 6 p 215 & old book chap 6 p 147***