MILITARY COLLEGE OF SIGNALS

Final Exam Fall 2011

Number Theory, SE – 15 (B)

**Instr: Dr Muhammad Ashiq Max. Marks: 100 Time: 2: 30 Hrs**

**Note: Attempt all questions, having equal marks. In case of any confusion, write your assumptions while solving the question.**

|  |  |
| --- | --- |
| **S/No** | **Questions** |
| **Q-1** | **How differs a Complete Residue System (CRS) with Reduced Residue System (RRS), explain with atleast one example.** |
| **Q-2** | **Show that for any prime and** |
| **Q-3** | **If is an odd integer, show that:** |
| **Q-4** | **What is Euler’s function? Also, evaluate:** |
| **Q-5** | **State and prove Fermat’s Little Theorem.** |
| **Q-6** | **Prove that congruence relation is an equivalence relation.** |
| **Q-7** | **Ali wishes to purchase €510 of travelers checks. The checks are available only in denominations of €20 and €50 . How many of each denominations should he buy?** |
| **Q-8** | **Prove that: where is positive integer.** |
| **Q-9** | **Find the day of the week of August 14, 1947.** |
| **Q-10** | **Set up a Round – Rrobin Tournament schedule for five teams.** |