MATH447/747 ASSIGNMENT 4

FALL 2012

The following questions are optional questions. They do not need to be handed in and will not be graded if they are handed in

- Vanstone and van Oorschot section 3.9 # 18.
- Vanstone and van Oorschot section 4.4 # 3 parts a and d.

The following questions are to be handed in. They are due **Friday October 5** in class.

(1) Vanstone and van Oorschot section 3.9 # 14, 77 (you may use question 18 (I hope you did it up above!))
(2) Vanstone and van Oorschot section 4.4 # 4 parts a and c, 6, 27
(3) Let R be a binary 2^r-tuple. Let $\mathcal{H}_{2^r}$ be the $2^r \times 2^r$ Hadamard matrix we constructed in class. Prove that $R\mathcal{H}$ is the vector where the coordinate indexed by the binary number (as a vector) u is

$$\sum_{v \in \mathbb{F}_2^r} (-1)^{u \cdot v} R(v)$$

(This is Vanstone and van Oorschot section 4.4 # 25)