Elementary Number Theory and Cryptography, Michaelmas 2011, Recreational Problem Sheet X. (Codes)

The following are taken from a website—they get increasingly more difficult. Code 7 is of a different nature from the others.

1. SEGAP ELZZUP RUO OT EMOCLEW

2. EHT YPS WSI RAE GNI LBA CEU TAO

3. YKOEUDHTAHVIESCCROADCE

4. WEZWI LLJAT TAXCK ATQSU NSKET

5. SSA PSE TJX SME CRE STO THI GEI

6. NWOY OCUA NAMK EPUY ORUO WCNO DSEZ

7. MXOLX VFDHV DUXVH GWKLV FLSKH U

Mini Challenge:

The Criminal Investigation Service are chasing the leader of a large criminal gang, a well known liar and cheater. For a long time they were unable to find any leads on his whereabouts, but eventually an insider in the gang managed to pass on a letter. The document was badly damaged, and all they could make out was the one word:

QGBBFOG

signed at the bottom. They suspected that this is the leader's name in code but were unable to break it, since they couldn't read any more of the letter. They suspected that it was a substitution code, where each letter in the original word has been changed to another letter consistently across the word.

Several weeks later the CIS received an email forwarded from the insider:

MASEN EENTB GPEGO IMATE LGORI DWCNA NIIAE TGNTT YEABH BIBRR TRNAR IHISG

Although this message was obviously in code they had no luck using their substitution code cracking techniques and were baffled. They needed to have a word or phrase in the message to work from, so they had to wait.

Now, less than a week later they have received another coded email from the same source:

AFTGHBX YMMHTZS GJLLMGG CXX GQGHMYG SB IBF BDMFCHTBZ OTVCLW

They suspect that this is again a substitution code, and are hoping that it can provide a starting point to cracking the first email, which in turn will help to identify the codename. Can you crack the coded emails and help the CIS identify the codename of the leader?

Far more challenging: try (deadline 11.12.11) the following
http://www.canyoucrackit.co.uk/