1) Let the round 7 key for AES be the following in hexadecimal:

\[ 8910 \ 4DFA \ A275 \ BBCD \ F011 \ 184E \ 976D \ 5DB3 \]

Determine the first 4 bytes of the round 8 key. Please give your answer in hexadecimal.

2) Let the round 4 key for AES be the following in hexadecimal:

\[ 1234 \ 5678 \ 9ABC \ DEFF \ EDCB \ A987 \ 89AB \ CDEF \]

Determine the first 4 bytes of the round 5 key. Please give your answer in hexadecimal.

3) What is the remainder when \( 121^{4753} \) is divided by 399?

4) What is the remainder when \( 222^{21387} \) is divided by 871?

5) What is the remainder when \( 154^{17822} \) is divided by 589?

6) Consider an RSA system where \( n = 221 \) and \( e = 125 \). What are \( p, q, \phi(n) \) and \( d \)?

7) Consider an RSA system where \( n = 437 \) and \( e = 137 \). What are \( p, q, \phi(n) \) and \( d \)?