Show all work for full credit, use correct notation, and clearly mark your answer.

All questions use the following:

For a fully discrete whole insurance of 40,000 on (40), you are given:

(i) \( A_{40} = 0.2 \)

(ii) \( A_{50} = 0.3 \)

(iii) \( d = 0.05 \)

(iv) The annual gross premium is 1.2 times the annual net premium.

(v) A settlement expense of 500 is owed at the time the death benefit is paid.

(vi) Per policy expense are:
   100 in the first year; 10 in renewal years

(vi) Percent of premium expenses are:
   50% in the first year; 5% in renewal years

(vii) \( p_{40} = 0.995 \)

(viii) \( p_{50} = 0.990 \)
1. Show that the gross premium reserve at time $t = 10$ is $4310$.

2. Show that the net premium reserve at time $t = 10$ is $5000$.

3. Calculate the expense reserve at time $t = 10$.

4. Calculate the full preliminary term reserve at time $t = 10$, $V^{FPT}_{10}$.

5. Use 1-year recursion to calculate the gross premium reserve at time $t = 11$. 