1. Please check out the online solutions at 

2. (a) There are three parity streams, so the rate is \( \frac{1}{3} \). The constraint length is 4, so there are 
\( 2^4 = 8 \) states in the state machine representation of the code.
(b)  
   i. There are two predecessor states.
   ii. The bit-sequence representations of the predecessor states are 100 and 101.
   iii. 100 \( \rightarrow \) 110 has expected parity bits 001.
        101 \( \rightarrow \) 110 has expected parity bits 100.
(c) The rate of the code without puncturing is \( \frac{1}{3} \). With the given puncturing schedule, the
    sender transmits \( 3 + 4 + 5 = 12 \) parity bits for every 5 message bits, giving a rate of \( \frac{5}{12} \).

3. This problem is part of PSet #3. Please see those solutions when they’re available after the
due date.