Problem #1- Design a modulo-3 binary counter using SR flip-flops. Show all the steps.

Problem #2- Design a bit-serial arithmetic unit that performs addition and subtraction for 16 bit operands and result in two’s complement system.

Problem #3- Design a minimal two-level single-error detector for the 2-out-of-5 code. The input is a digit in the 2-out-of-5 code and the output is 0 if the number of 1s in the input is 2.

Problem #4- Show the logic circuit for each of the following standard modules:
- 3-input Binary Decoder-attached to an Encoder with 3 outputs, three input Multiplexer attached to a Demultiplexer with three outputs, three bit comparator, three bit shift register

Problem #5- Briefly explain each of the following:
- RTL, FPGAs, ROM, PSA, PLAs, and PALs.

Problem #6- Add the quaternary negative number, -120 to the octal positive number, 526, and then represent the result in BCD.