

**Homework – Communications**

Email PDF version no later than beginning of next class.

1. Fill in the blank (20 points)
  - A. In serial communications, setting baud rates with 8N1 means \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
  - B. Legacy RS-232 equipment like modems and a mouse use a \_\_\_\_\_ device
  - C. I2C stands for \_\_\_\_\_ and is \_\_\_\_\_-speed, \_\_\_\_\_-duplex
  - D. RS-485 stands for \_\_\_\_\_ and is \_\_\_\_\_-speed, \_\_\_\_\_-duplex
  - E. Serial ports are asynchronous; devices must agree to a \_\_\_\_\_ rate a priori
  - F. Serial ports \_\_\_\_\_ be networked easily
  - G. In I2C, SDA is the \_\_\_\_\_ line and SCL is the \_\_\_\_\_ line
  - H. 7-bit address of a slave means that \_\_\_\_\_ slave devices can be connected
  - I. PCF8574 is an I2C-based \_\_\_\_\_ expander
  - J. The PCF8574 has an \_\_\_\_\_-bit digital port.
  
2. Sketch a schematic where the PCF8574 sources current through its digital lines (D0-D7) to light up their corresponding LEDs. If any external components are used, then show how you calculated their values (10 points).
  
3. Sketch a schematic for the PCF8574 where the when the DIP switch is closed, the corresponding digital line is pulled to GND, but when the switch is open, the digital line is read as +5V. If any external components are used, then show how you calculated their values (10 points).
  
4. Refer to Lab Exercise 3. Complete the table in Exercise 3-1 and show photos of the Brick's display and corresponding DIP and LED states (10 points)