1Aa) Inverting amplifier

b) gain $= -\frac{R_F}{R_1}$

c) $-\frac{29}{2} = -14.5$

d) $0.345 \times 14.5 = 5.0025 \simeq 5V$

e) The output signal would be 180° out of phase with the input signal.

Ba) non-inverting amplifier

b) gain $= 1 + \frac{R_1}{R_2}$

c) $1 + \frac{27000}{2000} = 14.5$

d) $0.62 \times 14.5 = 8.99\,V$

e) The output signal will be in phase with the input signal.

2Aa) 10000010 (Start and Stop bit omitted)
↑Parity bit

b) A

Ba) 10101010 (Start and Stop bit omitted)
↑parity bit

b) U

3a) I^2C (Inter-integrated circuit) Serial transmission system

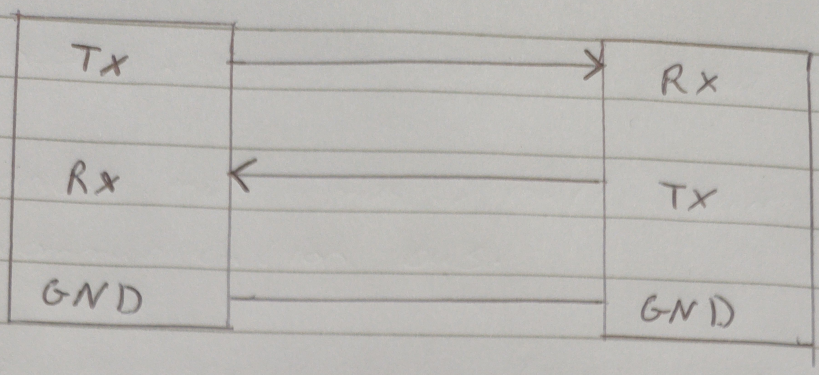
b) Synchronous, multi-master, multi-slave, packet switched serial communication bus.

c) SDA is the serial data line and is responsible for the data sent to each device.

SCL is the serial clock line and carries the clock signal so the output bit is synchronized with the sample bit.

d) This protocol is likely to be found in system management for PC systems via SMbus.

4a)



b) RS-232 is a serial communications protocol. It formally defines signals connecting between a DTE and a DCE.

c) RS-232 port are commonly used to communicat with head less systems such as servers.

d)

