Sardar Vallabhbhai National Institute of Technology, Surat

ECED Department

Subject: Digital Electronics & Logic Design (EC-207)

B.Tech Computer, Sem-III, Div – (A&B)

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Tutorial – 3 Hints/Solutions

1. Buffer Circuit. Hence Vo=Vi (Voltage at output of Opamp) = 6V. Then use voltage division to determine voltage across 4K resistor. Finally use any of the formulas (P=V^2/R or I^2*R) to determine the required power across 4K. Ans: 4 mW

2. Ideal Opamp -> Voltage at V+ == Voltage at V--. Vs=0 makes voltage at V++ ==0 volts. Apply KCL at inverting terminal or use the formula of inverting amplifier (Vo=-Rf/R1*Vin) to determine voltage at output node of opamp. The current then will be by ohms law, Vo/2Kohm. Ans: -10 mA

3. Use the formula Vo=-Rf/R1*Vin for all the three cases.
   a. -2.4
   b. -16
   c. -400

4. Voltage division at input side gives v1=4.5 volts. Because of buffer configuration, v2=v1=4.5 volts. Once again employ voltage division at output to obtain the required answer. Ans: 2.7 Volts.

5. Rf=infinity makes 1st stage work as an inverting amplifier with a gain of -3. Voltage at output of 1st stage = -45 mV. 2nd stage is a non-inverting amplifier having a gain of (1+Rf/R1)=4. Ans: -180 mV

6. Opamp as a Summer Configuration. Aplly Equation and determine v2 value. Vo=-16.5 = ((-15/10*2)+(-50/20*v2)+(-50/50*-1)). Solve for v2. Ans: 3 V