

NAME: _____ **DATE:** _____

1. Draw the first Voltage-Gain stage of the JFET preamp. Include an input jack. Label all component values (and part numbers, when applicable). Take all available space, if needed.

2. What is this circuit called?

- Common Gate?
- Common Source?
- Source Follower?

3. Complete the truth table below...

Gate Voltage (V_g)	Source Voltage (V_s)	Drain Current (I_d)
		Answer High (on) or Low (off) or 'Biased for Audio'
0 volts	0 volts	
-1 volts	0 volts	
0 volts	1 volt	
0 volts	.65 volts	

- 4. On the table above, circle the I_d that delivers $\frac{1}{2} V_{cc}$ at the Drain.
- 5. Draw the second Voltage-gain stage. Be sure to include the device that blocks $\frac{1}{2} V_{cc}$ from the previous stage. Label, Input, Output, component values and part numbers, when applicable.

6. The capacitor in parallel with the larger Source Resistor has what effect on the output signal?

7. What does the smaller Source Resistor have on the quality of amplification?

8. What is the part number of the JFET?

- MPS-A14
- 2N3904
- ZTX-653
- 2N5458
- 2N5457

9. What is the Input Impedance of the JFET?

- $< 1 \text{ M-}\Omega$
- $> 1 \text{ M-}\Omega$
- Determined by the Gate Resistor?

10. What other purpose does the resistor between Gate and Ground serve? (check all that apply)

- Keep the Gate at zero volts DC
- Make sure that the DC blocking capacitor between stages is at zero volts DC
- Set the input impedance

11. Draw the Output Stage - The impedance Converter. Label, Input, Output, component values and part numbers, when applicable.

12. What circuit configuration is the MPS-A14 (check all that apply)

- | | |
|---|---|
| <input type="checkbox"/> Common Base | <input type="checkbox"/> Active Load |
| <input type="checkbox"/> Common Collector | <input type="checkbox"/> Dynamic Load |
| <input type="checkbox"/> Common Emitter | <input type="checkbox"/> Current Source |
| <input type="checkbox"/> Emitter Follower | |

13. What Circuit Configuration is the Generic NPN transistor?

- | | |
|---|---|
| <input type="checkbox"/> Common Base | <input type="checkbox"/> Active Load |
| <input type="checkbox"/> Common Collector | <input type="checkbox"/> Dynamic Load |
| <input type="checkbox"/> Common Emitter | <input type="checkbox"/> Current Source |
| <input type="checkbox"/> Emitter Follower | |

14. Draw a Darlington Transistor schematic