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Draw the appropriate symbol for the following terms:

1. **NPN Transistor** _____
2. **Zener Diode** _____
3. **NAND Gate, 2 input** _____
4. **Variable Resistor** _____
5. **Full Wave Bridge** _____
6. **Transformer** _____
7. **Inductor** _____
8. **PNP Transistor** _____
9. **Fuse** _____
10. **Circuit Breaker** _____

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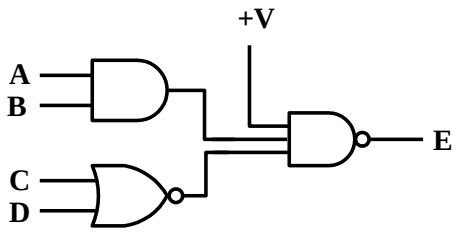
Name _____ **Date** _____

Provide the following conversions:

11. **1000 pico farad to** _____ **microfarad**
12. **0.100 volts to** _____ **milli volts**
13. **0.001 volts to** _____ **milli volts**
14. **0.001 kΩ to** _____ **ohms**
15. **0.01 µ sec to** _____ **nano sec**

Provide the correct output for the given Inputs in the following circuit (assume positive logic):

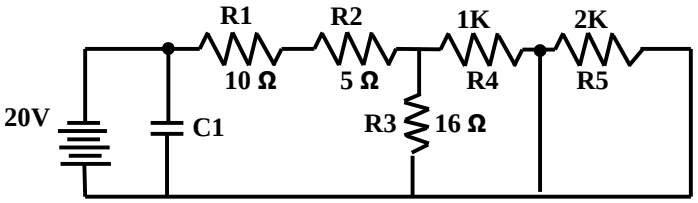


	A	B	C	D	E
16.	0	0	0	1	
17.	1	1	0	0	
18.	1	0	1	0	

Digital Test

Name _____ **Date** _____

19. Determine the voltage drop for the following:



20. R5 _____

R2 _____

C1 _____

R1 _____

Complete the following formulas:

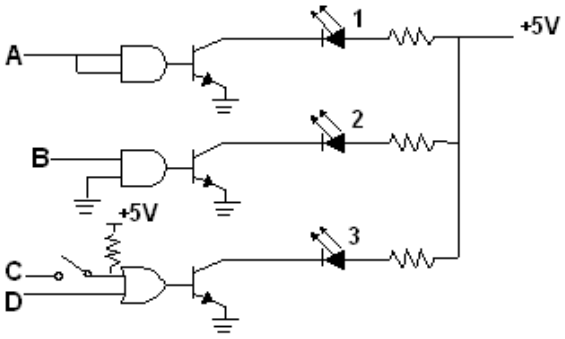
21. Power = _____ X Voltage

22. Current = _____ ÷ Voltage

23. Voltage = Current X _____

Digital Test

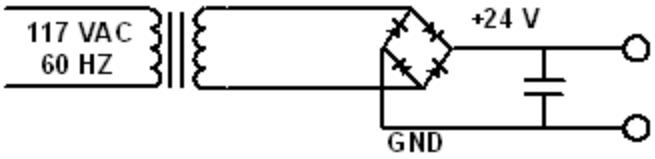
Name _____ **Date** _____



	A	B	C	D	1	2	3
24.	L	H	L	L			
25.	H	L	H	L			
26.	L	H	L	H			
27.	H	H	L	H			

28. Draw a latch using 2 dual input NAND gates. Label $\overline{R}$, $\overline{S}$, Q and $\overline{Q}$.

29. Describe the circuit listed below.



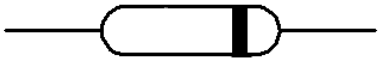
_____

30. What RMS voltage would be required at the transformer secondary to provide specified output of 7 volts (on question 29)?

31. What does the band on Diode packages indicate?

Digital Test

Name _____ **Date** _____



_____

32. To measure current through a resistor, an ammeter must be connected in _____

33. To measure a voltage across a resistor, a voltmeter must be connected in _____

What is the typical forward voltage drop of the following devices for operating conditions usually encountered?

34. Silicon signal Diode _____

35. LED _____

36. SCR (Anode to Cathode) _____

37. Germanium signal Diode _____

38. Silicon small signal transistor VCD SAT. _____

39. Given binary 1001 1110, convert to hexadecimal _____

40. Given hexadecimal FC0B, convert to binary equivalent _____

41. According to the diagram below, how long will it take V_{c1} to reach 63.2% Of V_{cc} or 6.32V? _____

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