1. What device is similar to a resistance temperature detector (RTD) but has a negative temperature coefficient?
A. Strain gauge
B. NTC Thermistor
C. Negative-type RTD
D. Thermocouple

2. The resistive change of a strain gauge
A. is based on the weight placed upon it, but can be many thousands of ohms
B. is usually no more than 100Ω
C. is based on the gauge factor, but is typically less than an ohm
D. has a positive temperature coefficient

3. Abbreviation MEMS means
A. MEMory Sensor
B. Mathematicaly Enhanced Multisensing System
C. MicroElectroMechanical System, used often in sensor technology
D. Nothing from above mentioned alternatives

4. The output voltage of a typical thermocouple is
A. less than 100 mV
B. greater than 1 V
C. Thermocouples vary resistance, not voltage.
D. None of the above

5. The connections to a thermocouple
A. can produce an unwanted thermocouple effect, which must be compensated for
B. produce an extra desirable thermocouple effect
C. must be protected, since high voltages are present
D. produce an extra desirable thermocouple effect and must be protected, since high voltages are present

6. The current loop 4-20mA is used
A. To power low voltage system
B. To control low-voltage circuits
C. To provide power to a circuit when power is lost
D. As simple analog communication systems

7. Temperature sensing can be achieved by the use of
A. thermocouples
B. RTDs
C. thermistors
D. All of the above

8. The purpose of compensation for a thermocouple is
A. to decrease ambient temperature sensitivity
B. to increase voltage output
C. to cancel unwanted voltage output of a thermocouple
D. used for high-temperature circuits

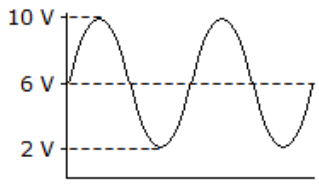
9. The change in value of an analog signal during the conversion process produces what is called the
A. quantization error
B. resolution error
C. Nyquist error
D. sampling error

10. RS485 is
A. Serial communication Point to point
B. Paralel communication Point to point
C. Serial communication multipoint bus
D. Computer bus

11. RTDs are typically connected with other fixed resistors
A. in a pi configuration
B. in a bridge configuration
C. and variable resistors
D. and capacitors in a filter-type circuit

12. What is the fourth harmonic of a fundamental frequency of 400 Hz?
A. 100 Hz
B. 4 kHz
C. 4 Hz
D. 1.6 kHz

13. What is the moving part of a linear variable differential transformer?
A. Primary
B. Secondary
C. Diaphragm
D. Core



14. What is the peak-to-peak voltage of the waveform in the given circuit?
A. 2 V
B. 4 V
C. 6 V
D. 8 V

15. Signal comparisons may be most easily seen when using which item of test equipment?
A. spectrum analyzer
B. multimeter
C. function generator
D. dual trace oscilloscope

16. If the frequency of a radio wave is increased, then its wavelength will:
A. increase
B. decrease
C. remain the same
D. cannot tell

17. Which of the following is a type of error or errors associated with digital-to-analog converters (DACs)?
A. nonmonotonic error
B. incorrect output codes
C. offset error
D. nonmonotonic and offset error

18. The Profibus is:
A. Computer bus for professional computer
B. Industrial communication bus
C. The newest standard for the Internet
D. None from above

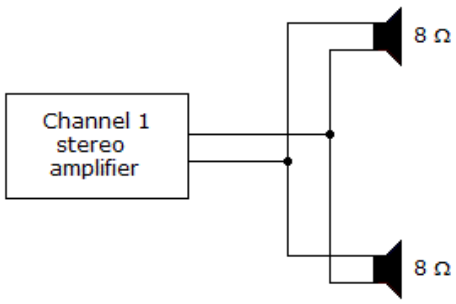
19. What is the resolution of a digital-to-analog converter (DAC)?
A. It is the comparison between the actual output of the converter and its expected output.
B. It is the deviation between the ideal straight-line output and the actual output of the converter.
C. It is the smallest analog output change that can occur as a result of an increment in the digital input.
D. It is its ability to resolve between forward and reverse steps when sequenced over its entire range.

20. SINAD is:
A. Parameter of signal describing amount of noise and distortion in distorted sinewave signal
B. Generator of sinewave
C. Serial AD convertor
D. Industrial communication system

21. Conversion of decimal number 61_{10} to it's binary number equivalent is
A. 110011_2
B. 11001110_2
C. 111101_2
D. 11111_2
E. None of the above

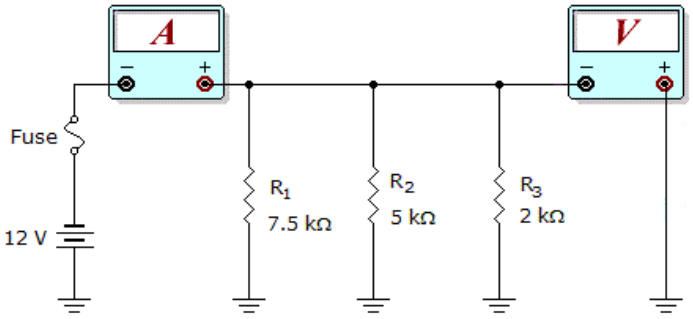
22. The resolution of a 0–5 V 6-bit digital-to-analog converter (DAC) is ..... of its full scale:
A. 63%
B. 64%
C. 1.56%
D. 15.6%

23. Sample-and-hold circuits in analog-to digital converters (ADCs) are designed to:
A. sample and hold the output of the binary counter during the conversion process
B. stabilize the comparator's threshold voltage during the conversion process
C. stabilize the input analog signal during the conversion process
D. sample and hold the D/A converter staircase waveform during the conversion process



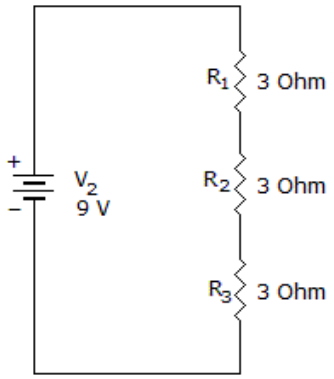
24. In the given circuit, Channel 1 of the stereo amplifier outputs 12 V to the speakers. How much total current is the amplifier providing to the speakers?
A. 0 A
B. 1.5 A
C. 3 A
D. More information is needed to find the total current provided to the speakers.

25. A portion of the output that provides circuit stabilization is considered to be:
A. negative feedback
B. distortion
C. open-loop
D. positive feedback



26. What would these meter readings indicate about the circuit in the given circuit?
Meter Readings: I = 7.6 mA, V = 12 V
A. R1 is open.
B. R2 is open.
C. The fuse is open.
D. The circuit is operating normally.

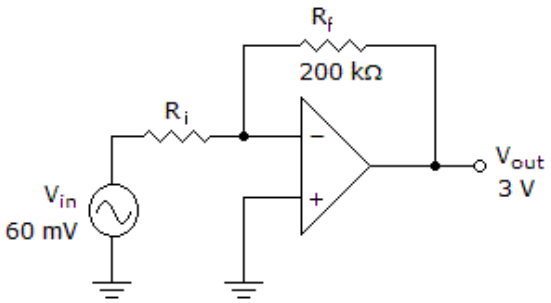
27. What is the current flow through R1, R2, and R3?
A. 1A, 1A, 1A
B. 1A, 2A, 3A
C. 3A, 3A, 3A
D. 3A, 2A, 1A



28. Power is defined as:
A. the rate at which work is done
B. work
C. the conversion of energy
D. joules

29. An ideal operational amplifier has
A. infinite output impedance
B. zero input impedance
C. infinite bandwidth
D. All of the above

30. Ri=?
A. 100kΩ
B. 4 kΩ
C. 40 kΩ
D. 20 kΩ



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A																														
B																														
C																														
D																														