

[56]

SEAT No. \_\_\_\_\_

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Sardar Patel University  
B.Sc. (semester-V) CBCS Examination oct. – 2018  
26/10/2018, Friday  
10:00 am to 1:00 pm  
Electronics & Communication  
US05CELC03: Measuring instrument and Signal generators

Maximum Marks: 70

Note: Figure to the right indicates full marks.

Q-1 Choose the correct Answer.

[10]

1. The Kelvin bridge is widely used for precision measurement of resistance approximately in the range of .....  
a)  $0.00001\Omega$  to  $M\Omega$       b)  $0.1\Omega$  to  $M\Omega$       c)  $1\Omega$  to low  $M\Omega$       d) None
2. The condition for the bridge balance for impedance is.....  
a)  $Z1Z4=Z2Z3$       b)  $Z1=Z2Z3 Z4$       c)  $Z1=Z2Z3$       d) None
3. Resistance is measured by .....  
a) Wheastone bridge      b) Hay bridge      c) Maxwell bridge      d) None
4. Thermistors are widely used in the temperature range of .....  
a)  $-100^{\circ}\text{C}$  to  $300^{\circ}\text{C}$       b)  $0^{\circ}\text{C}$  to  $300^{\circ}\text{C}$       c)  $100^{\circ}\text{C}$  to  $300^{\circ}\text{C}$       d) None
5. Low impedance component such as low value resistors, large capacitors are measured by connecting them .....with measuring circuit.  
a) parallel-series      b) shunt      c) Parallel      d) series
6. Thermocouple is \_\_\_\_\_ transducer.  
a) passive      b) Active      c) analog      d) digital
7. The transducer that needs external power supply is called as \_\_\_\_\_ transducer.  
a) passive      b) Active      c) analog      d) digital
8. ....is an electromechanically device containing a resistance element that is contact by a movable slider.  
a) Potentiometric transducer      b) Capacitive transducer      c) RTD      d) None
9. ....Is an electronic oscillator whose oscillation frequency is controlled by a voltage input.  
a) voltage-controlled oscillator or VCO      b) spectrum analyzer      c) Peak detector      d) None
10. Attenuator is the device that will ..... the power level of a signal by fixed amount.  
a) zero      b) increase      c) keep constant      d) reduce

P.T.O

**Q-2 Answer in short.(Any ten)**

[20]

1. Draw the general circuit diagram of kelvin bridge.
2. Draw the neat and clean circuit diagram of wein bridge.
3. Draw the basic general diagram of AC bridge.
4. What is the input range and absolute accuracy of Digital Voltmeter?
5. What are the advantages of digital multimeter over analog multimeter?
6. Which three basic questions are asked while selecting transducers?
7. Explain negative temperature coefficient (NTC) in RTD.
8. In what shapes and sizes thermistors are available?
9. Draw the diagram of capacitive transducer.
10. Explain positive temperature coefficient (PTC) in RTD.
11. Draw the circuit diagram of positive clamper.
12. What are the applications of Peak detector?

**Q-3** Explain Wheastone bridge with necessary circuit diagram and equations. What are the errors associated in wheastone bridge? [10]

**OR**

**Q-3** "The Maxwell bridge is limited to measurement of medium Q-coils ( $1 < Q < 10$ )" Justify the statement.. [10]

**Q-4 (a)** Explain series Q-meter circuit in detail. [05]

**(b)** Explain parallel Q-meter circuit with necessary equations. [05]

**OR**

**Q-4** Explain successive approximation type ADC in detail. [10]

**Q-5 (a)** Write a short note on piezoelectric transducer. [05]

**(b)** What are the Thermistors? Describe any two characteristics of Thermistor. [05]

**OR**

**Q-5 (a)** Explain principle and construction of LVDT. [05]

**(b)** Give the classification of transducers. [05]

**Q-6 (a)** Write a short note on voltage control oscillator. [05]

**(b)** Explain frequency generator in detail. [05]

**OR**

**Q-6** Explain audio frequency function generator in detail. [10]

