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SEAT No. _____

No. of Printed Pages : 2

SARDAR PATEL UNIVERSITY**B.Sc. Fifth semester****Electronics & Communication****US05CELC03****Measuring instrument and Signal generators****Saturday, 11/11/2017****Time: - 10:00AM To 1:00 PM****Marks: - 70**

- Q1 Choose the correct Answer.(Attempt all) [10]**
- What is the typical range of resistance measurement of Kelvin's bridge?
a) 0.1Ω to $M\Omega$ b) 0.00001Ω to $M\Omega$ c) 1Ω to low $M\Omega$ d) None
 - What is the balance condition for the ac bridge?
a) $Z_1=Z_2Z_3 Z_4$ b) $Z_1Z_4=Z_2Z_3$ c) $Z_1=Z_2Z_3$ d) None
 - Which of the following is used for measurement of resistance only?
a) Wheatstone bridge b) Hay bridge c) Maxwell bridge d) None
 - What is the normal operating temperature range of Thermistors?
a) -100°C to 300°C b) 0°C to 300°C c) 100°C to 300°C d) None
 - Low impedance component such as low value resistors, large capacitors are measured by connecting them _____ with measuring circuit.
a) parallel-series b) series c) Parallel d) None
 - What is the equation of the gage factor K?
a) $k=R+\Delta R$ b) $k=1-2\mu$ c) $k=1+2\mu$ d) None
 - Capacitive transducer is a _____ transducer.
a) passive b) Active c) analog d) digital
 - Which of following is an electromechanical device containing a resistance element that is contact by a movable slider?
a) RTD b) c) Potentiometric d) None
Capacitive transducer transducer
 - Attenuator is used to _____ the power level of a signal by fixed amount.
a) Reduce b) Increase c) Keep constant d) None
 - In which of following the oscillation frequency is controlled by input voltage?
a) voltage-controlled b) spectrum analyzer c) Peak detector d) None
oscillator or VCO

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CP To)

- Q2 Answer in short. (Any ten) [20]
1. What is the measurement errors associated in whetstone bridge?
 2. Draw the neat and clean circuit diagram of Schering bridge.
 3. Draw the general circuit diagram of kelvin bridge.
 4. Why digital voltmeter is more versatile instrument than analog?
 5. What is the input range and absolute accuracy of Digital Voltmeter?
 6. Which three basic questions are asked while selecting transducers?
 7. What is the main function of frequency synthesized function generator?
 8. In what shapes and sizes thermistors are available?
 9. Give the classification of transducers.
 10. List the advantages and disadvantages of RTD.
 11. What are the applications of Peak detector?
 12. Draw the block diagram of sine wave generator.
- Q3 "The Maxwell bridge is limited to measurement of medium Q-coils ($1 < Q < 10$)" [10]
Justify the statement. Explain working of Maxwell's bridge.
- OR
- Q3 (a) Explain Wheatstone bridge with necessary circuit diagram and equations. [5]
(b) Write a note on Hay bridge. [5]
- Q4 (a) With necessary circuit diagram explain series and parallel Q-meter circuit. [10]
- OR
- Q4 (a) With necessary equations and circuit diagram explain basic Q-meter circuit. [5]
(b) Explain successive approximation type ADC in detail. [5]
- Q5 (a) What are the Thermistors? Describe any two characteristics of Thermistor. [5]
(b) Write a short note on piezoelectric transducer. [5]
- OR
- Q5 (a) Explain principle and construction of LVDT. [5]
(b) Write a short note on a capacitive transducer. [5]
- Q6 Explain working of Hartley and Colitis oscillator in detail with circuit diagrams. [10]
- OR
- Q6 With necessary circuit diagram explain function generator. [10]

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