SC

SARDAR PATEL UNIVERSITY
S.Y.B.Sc Fourth Semester Examination, (under CBCS)
USO4CINS01
(Signal conditioning system)
Wednesday , 6th April 2016
10.30 AM – 01.30 PM

Marks: 70

Q.1 Multiple choice questions. [10]

(1) In electronic aided measurement first stage is_____ .
    (a) Transducer   (b) Recorder
    (c) Amplifier   (d) None of above

(2) The main problem of a DC amplifier is_____.
    (a) Voltage   (b) Filtering
    (c) Frequency   (d) Drift

(3) Operational amplifier gain range is_____.
    (a) $10 - 10^2$ (b) $10 - 10^2$
    (c) $10^4 - 10^8$ (d) $10^9 - 10^{18}$

(4) Light intensity meter is calibrated in terms of _____.
    (a) Lumen   (b) pressure
    (c) Temperature   (d) None of above

(5) In thermistor temperature increase when resistance is _____.
    (a) Increase   (b) Decrease
    (c) Low   (d) High

(6) Simple bridge consists of _____ arm.
    (a) Two   (b) Three
    (c) Five   (d) Four

(7) Maxwell's bridge Quality factor range Is_____.
    (a) 1-3   (b) 1-4
    (c) 1-10   (d) 1-5

(8) A DAC is usually an _____ part of any DAC.
    (a) Integral   (b) Derivative
    (c) Analog   (d) None of above

(9) Step size is the size of the jump in the _____ wave form.
    (a) Linear   (b) Staircase
    (c) Square   (d) Non-linear

(10) The counter type ADC is also known as _____ ADC.
    (a) Digital ramp   (b) Analog ramp
    (c) (a) & (b)   (d) None of above

Q.2 Short answer type questions (Attempt any ten) [20]

(1) Enlist the characteristic of Op-amp.
(2) Draw the equivalent circuit of op-amp and write the equation.

(3) What is chopper? Draw the circuit of chopper type DC amplifier.

(4) Draw the diagram of solid state modulator and demodulator.

(5) Draw the circuit of Wheatstone's bridge. And find the unknown resistance, where $R_1 = 10K$, $R_2 = 5K$, $R_3 = 60K$

(6) Draw the block diagram of interfacing of a digital computer to the analog world.

(7) Draw the Maxwell bridge circuit and find the unknown inductance where $R_1 = 470K$, $R_2 = 150K$, $R_3 = 5.1K$ and $C_1 = 0.01\mu f$.

(8) Write about voltage to frequency converter

(9) Draw the pin diagram of the ADC 0801

(10) Draw the block diagram of an instrumentation system and explain it.

(11) Determine the resolution of (a) 8-bit DAC and (b) 12- bit DAC in terms of percentage.

(12) Write about bipolar DACs.

Q.3	**A**	Write a detail note on differentiation amplifier	[6]
	B	Discuss about inverting amplifier.	[4]

OR

Q.3	**A**	Draw the circuit of integrator and explain in detail	[6]
	B	Write a note on non-inverting amplifier	[4]
Q.4	**A**	Write a detail note on diode bridge modulator.	[5]
	B	Write about analog weight scale	[5]

OR

Q.4	**A**	Draw the necessary circuit of synchronous modulator/demodulator and explain it.	[5]
	B	Write about transistor choppers in detail.	[5]
Q.5	**A**	Draw the circuit of kelvin's double bridge and find the equation for unknown resistance.	[6]
	B	Give a detail note on Schering's bridge.	[4]

OR

Q.5	**A**	Draw the circuit of Hay's bridge and explain in detail.	[6]
	B	Give a detail note on wheatstone's bridge.	[4]
Q.6	**A**	Write about R-2R ladder type DAC and explain any two cases with necessary diagram.	[6]
	B	Write a brief note on flash type ADC.	[4]

OR

Q.6	**A**	Explain counter type ADC with diagram.	[6]
	B	Write a note on weighted resistor type DAC.	[4]

X=X=X

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