

(Following Paper ID and Roll No. to be filled in your
Answer Books)

Paper ID :131668

Roll No.

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B. TECH.

Theory Examination (Semester-VI) 2015-16

ANALOG SIGNAL PROCESSING

Time : 3 Hours

Max. Marks : 100

Section-A

1. Attempt each short answer type questions. (10×2=20)

- (a) Draw the circuit of op-amp as zero crossing detectors.
- (b) Draw the circuit diagram and write the transfer function of a first order all pass filter.
- (c) Comment on voltage feedback amplifier.
- (d) What do you mean by nuller.
- (e) Comment on Bruton's FDNR technique.
- (f) Give the idea on single amplifier biquad.

- (g) Give idea on delay equalization
- (h) What is Operational Transconductance Amplifier.
- (i) Give an idea on current conveyor
- (j) Give an idea on analog signal filtering.

Section-B

2. Attempt any five parts of the following. (10×5=50)

- (a) Draw and explain the Voltage series feedback amplifier. Derive the closed loop voltage gain.
- (b) Explain in detail about Bruton's FDNR technique.
- (c) Explain the working of op-amp as an amplitude demodulator.
- (d) Explain the working of op-amp as peak detector.
- (e) Draw the circuit of a generalized impedance convertor (GIC).
- (f) Realize a grounded inductance using GIC and find its value.

- (g) What is a negative impedance convertor. Draw circuit diagram and find the input impedance.
- (h) Explain basic comparator with its input and output waveforms.

Section-C

Note: Attempt any two parts of the following. (15×2=30)

- 3. (a) A first order active high pass filter has a pass band gain of two and a cut-off corner frequency of 1 kHz. If the input capacitor has a value of 10 nF, calculate the value of the cut-off frequency determining resistor and the gain resistors in the feedback network.
Also plot its frequency response curve.
 - (b) Draw the circuit of a passive second order High Pass filter Resistance, Inductance and Capacitance. Convert the same to an active filter using OTA.
- 4. Describe in detail process of second order realization and various design parameters.
 - 5. Briefly explain the design and magnitude response of Butterworth filter.