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B.Tech. (ETE/ECE/Electronics & Computer Engg.) (Sem. - 5th)

LINEAR INTEGRATED CIRCUITS

SUBJECT CODE : BTEC - 503 (2011 Batch)

Paper ID : [A2105]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is compulsory consisting of Ten questions carrying Two marks each.
2) Section - B contains Five questions carrying Five marks each and students has to attempt any Four questions.
3) Section - C contains Three questions carrying Ten marks each and students has to attempt any Two questions.

Section - A

Q1) a) What is the expression for voltage gain of DIBO differential amplifier with swamping resistors?

b) List the ideal characteristics of an Op-Amp.

c) What are the limitations of the basic differentiator circuit?

d) What is a Schmitt trigger?

e) Draw a well labeled transfer curve of an Op-amp?

f) Define CMMR and PSRR.

g) A three-pole high-pass active filter would have a roll-off rate of:

i) 40 dB/decade

ii) -40 dB/decade

iii) -60 dB/decade

iv) -20 dB/decade

h) Define input offset voltage. State the reasons for the offset voltages of the op-amp.

i) Draw the labelled pin diagram of 555 timer IC.

j) Distinguish between active and passive filters.

Section - B

Q2) Discuss the current mirror circuit. How is it helpful in improving the CMRR?

Q3) Describe the application of OP-AMP as current voltage converter.

Q4) What is slew rate? What are its causes? Derive the expression of maximum frequency of operation for a desired output swing in terms of slew rate.

Q5) Derive the expression for voltage as a function of frequency. Define break frequency and bandwidth.

Q6) Describe the operating principle of PLL. Define capture range and locking range.

Section - C

Q7) Describe the working of practical differentiator circuit. Derive the expression for output voltage. Also discuss the frequency response of the differentiator.

Q8) Describe the applications of OP-AMP in open loop configuration.

Q9) Write short notes on the following :

a) VCO

b) Triangular wave generator.