BTS –V–11.14–0910 Reg. No. | | | | | | | | |

B

B. Tech. Degree V Semester Examination November 2014

EE 1505 LINEAR INTEGRATED CIRCUITS

(2012 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A
(Answer *ALL* questions)

(8 x 5 = 40)

I. (a) What are the characteristics of an ideal op-amp?
(b) Determine the output voltage of a DA for the input voltages of $300\mu V$ and $240\mu V$. The gain of the amplifier is 5000 and the value of the CMRR is (i) 100 and (ii) 10^5.
(c) Define slew rate. For an op-amp with slew rate of $0.5V \setminus \mu s$, what is the maximum frequency to get an undistorted sine wave output of 10V peak?
(d) Draw and explain a current mirror circuit.
(e) Sketch the circuit diagram of a precision full wave rectifier and compare it with normal rectifier and applications of precision rectifiers.
(f) Compare comparator and Schmitt trigger.
(g) Explain the application of PLL as a frequency multiplier.
(h) Compare active and passive filters.

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PART B

(4 x 15 = 60)

II. Derive the expression for voltage gain, input impedance and output impedance of dual input balanced output differential amplifier with neat diagrams. (15)

OR

III. (a) Explain in detail, the internal block schematic of op-amp. (10)
(b) Explain frequency response compensation in op-amp. (5)

IV. Draw the circuit and derive the expression for overall gain of an instrumentation amplifier with three op-amps. What are its applications? (15)

OR

V. (a) Derive the expression for voltage gain of a non inverting feedback amplifier, along with a neat circuit diagram. (10)
(b) Draw and explain an I/V converter. What are its applications? (5)

VI. (a) Sketch the circuit diagram of an astable multivibrator using op-amp and explain its operation. Derive the expression for frequency of oscillation. (10)
(b) Explain the internal block diagram of IC 723 with a neat diagram. (5)

OR

VII. Explain the working of a Wien bridge oscillator using op-amp. Derive the expression for frequency of oscillation. (15)

VIII. (a) Draw and explain the functional block diagram of 555 timer. (7)
(b) Draw and explain binary weighted resistor type DAC. (8)

OR

IX. (a) Design second order Butterworth low pass filter at a high cut-off frequency of 1KHz. (10)
(b) Explain all pass filter. (5)

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