Code No: 9A10504/R09

B.Tech. III Year II Semester Regular & Supplementary Examinations **Set-2**

April/May - 2013

LINEAR AND DIGITAL IC APPLICATIONS

(Common to EEE and MCT)

Time: 3 Hours Max. Marks: 70

*Answer any **FIVE** Questions*

*All Questions carry **Equal** Marks*

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1. (a) Define thermal drift. What is the need for frequency compensation?

   (b) Explain the D.C characteristics of op-amp.

2. (a) Draw the circuit diagram of a two input non inverting type summing amplifier and derive the expression for output voltage.

   (b) Explain the operation of log amplifier using op-amp.

3. (a) Explain the terms lock range, capture range and pull-in time of a PLL.

   (b) Design and explain a 555 astable multivibrator to operate at 10 kHz with 40% duty cycle.

4. (a) Explain briefly MOS and CMOS logic families and give different CMOS characteristics.

   (b) Draw the circuit of CMOS NOR gate and explain its operation. Mention any two points about the advantages of CMOS over the other digital logic families.

5. (a) Design TTL three state NAND gate and explain the operation with the help of functional table.

   (b) Which is the fastest non-saturated logic gate? Draw the circuit and explain its functions.

6. (a) Explain the difference between function and procedure supported by VHDL. Give the necessary examples.

   (b) Explain data-flow design elements of VHDL.

7. (a) Give the working principle of analog-multiplexer. Give block diagram of a 16 input analog- multiplexer using CMOS gates and explain how it works.

   (b) Draw the logic diagram of 74 × 174 IC and explain the operation. Develop the VHDL code for this IC.

8. (a) Explain the operation of edge triggered T flip-flop. (b) Explain about asynchronous flip flops.