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Question Paper Code : 31359

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fourth Semester

Electronics and Communication Engineering

EC 2254/ EC 44/10144 EC 405/EC 1254/080290022 — LINEAR INTEGRATED CIRCUITS

(Regulation 2008/2010)

(Common to PTEC 2254 Linear Integrated Circuits for B.E. (Part-Time) — Third Semester ECE — Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the advantages of Integrated circuits over discrete components.

2. Define offset voltage of an operational amplifier.

3. Draw a non-inverting amplifier with voltage gain of 3.

4. Give an application for each of the following circuits:

   Voltage follower, peak detector, Schmitt trigger and clamper.

5. What is meant by frequency synthesizing?

6. Define lock range of a PLL.

7. Draw a sample and hold circuit.

8. State the principle of single slope A/D converter.

9. State the applications of 555 Timer IC.

10. Define line regulation with respect to a voltage regulator.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the construction of a monolithic bipolar transistor. (16)

Or

(b) (i) Explain the working of a BJT differential amplifier with active load. (12)

(ii) Write down the characteristics and their respective values of an ideal operational amplifier. (4)

12. (a) Explain the working of

(i) Instrumentation amplifier (8)

(ii) Schmitt trigger. (8)

Or

(b) Explain the working of

(i) Precision Full wave rectifier (8)

(ii) Integrator. (8)

13. (a) (i) Explain the working of a Gilbert multiplier cell. (11)

(ii) Explain the principle of operation of a PLL. (5)

Or

(b) (i) Explain the working of IC 565. (10)

(ii) Explain the application of PLL used for FM detection. (6)

14. (a) Explain the working of

(i) R-2R ladder D/A converter (6)

(ii) Dual slope A/D converter. (10)

Or

(b) Explain the working of

(i) Weighted resistor D/A converter (6)

(ii) Successive approximation A/D converter. (10)

15. (a) (i) Explain the working of monostable multivibrator. (14)

(ii) What are opto-couplers? (2)

Or

(b) (i) Explain the working of a general purpose voltage regulator. (14)

(ii) What is the need for isolation amplifiers? (2)