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Question Paper Code : 50962

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2024.

Fourth Semester

Electronics and Communication Engineering

EC 3451 — LINEAR INTEGRATED CIRCUITS

(Common to : Electronics and Telecommunication Engineering)

(Regulations 2021)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is slew rate? How is it significant?
2. Compare open loop and closed loop operation of an operational amplifier.
3. Draw the diagram of OPAMP as integrator and differentiator.
4. How does a precision rectifier differ from an ordinary rectifier?
5. List analog multiplier IC's.
6. Draw the pin diagram of IC565.
7. Which is the fastest ADC? Justify.
8. Why inverted R-2R DAC is preferred than R-2R DAC?
9. How current boosting is done in voltage regulator?
10. Sketch the circuit of sine wave generator.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss about LF155 MOSFET operational amplifier.

Or

(b) Draw the equivalent circuit of general operational amplifier and explain its working.

12. (a) What is the difference between clipper and clamper? Explain the circuit operations for positive clipping, negative clipping, positive clamping and negative clamping using OPAMP.

Or

(b) Design a second order Butterworth low pass filter for a cutoff frequency of 2 KHz and obtain its frequency response.

13. (a) Explain the operation of IC565 along with AM and FM detection.

Or

(b) Explain about analog multiplier IC's with one application.

14. (a) Explain the construction and working of dual slope ADC.

Or

(b) Explain the construction and working of A/D converter using voltage to time conversion.

15. (a) What are the types of voltage regulators? Discuss the operation of fixed and adjustable voltage regulators.

Or

(b) With neat circuit diagram explain the operation of frequency to voltage and voltage to frequency converter using opamp.

PART C — (1 × 15 = 15 marks)

16. (a) Design a voltage regulator using IC723 to supply 5V for a circuit of 500mA load. Write short notes on protection circuits in IC voltage regulator.

Or

(b) With a neat sketch, Design a thermistor Instrumentation amplifier as transducer.