

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code : 80445

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Fourth Semester

Electronics and Communication Engineering

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

(Regulations 2008/2010)

(Common to PTEC 2254 — Linear Integrated Circuits for BE. (Part-Time) — Third
Semester — ECE — Regulations 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the limitations of discrete circuits.
2. Why do we use Aluminium for metallization?
3. State reasons why integrator is called “lossy”.
4. What is a precision rectifier?
5. What do you mean by frequency synthesizing?
6. A PLL frequency multiplier has an input frequency of ‘f’ and a decade counter is included in the loop. What will be the frequency of the PLL output?
7. What output voltage would be produced by a D/A converter whose output range is 0 to 10 V and whose input binary number is 0110 for a 4 bit DAC.
8. What is the main drawback of dual slope ADC?
9. What are the limitations of three terminal regulator?
10. What is a switched capacitor filter?

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) (i) What do you understand by an Instrumentation Amplifier? (2)
- (ii) State the requirements of a good Instrumentation Amplifier. (4)
- (iii) Draw the circuit diagram and explain the working of instrumentation Amplifier. (6)
- (iv) Mention the specific advantages of three op-amp Instrumentation Amplifier circuit. (4)

Or

- (b) (i) What do you understand by an Integrator? (2)
- (ii) Draw and explain an ideal active op-amp Integrator ckt (4)
- (iii) Draw the I/O waveforms for: integrator (3 × ½ = 1½)
- (1) Step input signal
- (2) Square wave input signal
- (3) Sine wave input signal
- (iv) Derive the expression for change in output voltage. (3)
- (v) List the applications of practical Integrator. (1½)
- (vi) Design a practical integrator circuit with a dc gain of 10, to integrate a square wave of 10KHZ. (4)
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)
-