

D 249

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2003.

Fourth Semester

Electronics and Communication Engineering

EC 244 — LINEAR INTEGRATED CIRCUITS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention any four important characteristics of ideal operational amplifier.
2. Define slew rate.
3. For the noninverting operational amplifier with input resistance 100 K and feedback resistance 900 K find the effect on output voltage due to common mode voltage when the input voltage changes by 1 V. Assume CMRR as 70 dB.
4. Draw a precision half wave rectifier.
5. A PLL has free running frequency of 500 kHz and bandwidth of the low pass filter is 10 kHz. Will the loop acquire lock for an input signal of 600 kHz? Justify your answer. Assume that the phase detector produces sum and difference frequency components.
6. What is modulation?
7. Find the resolution of a 12 bit D/A converter.
8. What is quantisation noise?
9. What is the need for voltage regulation?

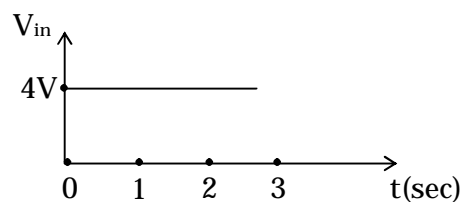
10. Name two applications of isolation amplifier.

PART B — (5 × 16 = 80 marks)

11. Explain, in detail about frequency compensation applied to operational amplifiers. (16)

12. (a) (i) Discuss the working of instrumentation amplifier. Name two applications of the same. (10)

(ii) An input dc voltage as shown below is fed to an operational amplifier integrator with $RC = 1$ second. Find the output and sketch. Operational amplifier is nulled initially. (6)



Or

(b) (i) Explain the working of op-amp Schmitt Trigger. (9)

(ii) Discuss the working of a RC phase shift oscillator. (7)

13. (a) (i) Explain the working of a general purpose voltage controlled oscillator. (9)

(ii) Discuss the working principles of frequency synthesizer. (7)

Or

(b) Explain the working of PLL. Explain in detail, FSK demodulation using PLL. (16)

14. (a) (i) Explain working of a weighted resistor D/A converter. (7)

(ii) If the maximum output voltage of a 7 bit D/A converter is 25.4 V, what is the smallest change in the output as the binary count increases. (3)

(iii) Write notes on ADM. (6)

Or

(b) (i) Explain successive approximation A/D converter. (12)

- (ii) How many bits are required to design a D/A converter, that can have a resolution of 5 mV? The ladder has +8V full scale. (4)
15. (a) (i) Explain the operation of monostable multivibrator using 555 timer. (12)
- (ii) Write notes on switched capacitor filter. (4)
- Or
- (b) Explain about power amplifiers and video amplifiers. (8 + 8)
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