

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
JUNE 2009

EE 04 404—ELECTRONICS II

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Part A

1. (a) Differentiate positive feedback from negative feedback. Explain the basics.
- (b) State and prove Barkhausen's Criterion.
- (c) Draw op-amp inverting and summing amplifiers. Explain them.
- (d) Draw op-amp ramp generator and explain its principle of operation.
- (e) Give an account on "NE565".
- (f) Design an op-amp BPF for $f_L = 500 \text{ Hz}$ and $f_H = 2 \text{ KHz}$.
- (g) Explain the principle of current switching DAC.
- (h) Draw a neat sketch of tracking ADC and explain its principle in detail.

(8 × 5 = 40 marks)

- II. (a) (i) Explain the advantages of negative feedback with examples. (7 marks)
- (b) (ii) Explain in detail the properties of practical op-amps. (8 marks)

Or

- b (i) Draw a CST current shunt feedback amplifier and its equivalent circuit. Derive expressions for A_i , A_v , z_i and z_{out} .

(7 marks)

- (ii) Explain the properties of voltage follower. (8 marks)

- III. (a) Explain the principles of op-amp square and triangular wave generators with neat sketches.

Or

- (b) Explain the following op-amp circuits in detail :

- 1 Instrumentation amplifier. (5 marks)

- 2 Principles of Vco circuit. (5 marks)

- 3 Op-amp scalar. (5 marks)

IV. (a) Draw op-amp astable and monostable circuits. Explain their principle of operation.

Or

(b) Give an account on :

- 1 PLL in signal reconstruction. (7 marks)
- 2 Op-amp all pass filter. (8 marks)

V. (a) Explain the following op-amp circuits in detail :

- 1 Sample and hold circuit. (7 marks)
- 2 Current switching DAC. (8 marks)

Or

(b) Draw a neat sketch of successive approximation ADC and explain its principle in detail.

[4 × 15 = 60 marks]