

**FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2006**

EE 2K 404 ELECTRONICS—II
PTEE 2K 302

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. (a) Explain the effect of negative feedback on voltage gain and bandwidth.
- (b) Define gain margin and phase margin. How are they useful in amplifier designs ? Explain.
- (c) Draw the block diagram of stages in an Op-Amp and explain.
- (d) Explain the circuit of voltage to current converter with floating load.
- (e) Draw the basic Op-Amp comparator and explain its operation with transfer characteristics.
- (f) Explain what is meant by lock range and capture range.
- (g) Explain the advantages of active filters over passive filters.
- (h) Draw the block diagram of counter ramp A/D converter and explain.

(8 × 5 = 40 marks)

Part B

2. (a) Draw the circuit of voltage series negative feedback amplifier and derive voltage gain, input impedance and output impedance.

Or

- (b) (i) Draw the circuit of transistorized RC phase-shift oscillator and explain its working. (8 marks)

- (ii) Derive the expression for frequency of oscillation the RC phase-shift oscillator. (7 marks)

3. (a) (i) Draw the circuit of instrumentation amplifier using Op-Amp and derive its voltage gain. (9 marks)

- (ii) Define and explain the following with respect to Op-Amp :—

(1) Slew rate ; (2) Offset voltages.

(6 marks)

Or

- (b) (i) Draw the circuit of non-inverting Op-Amp amplifier and derive its gain. (8 marks)

- (ii) Draw the basic block diagram of three terminal IC regulator and explain. (7 marks)

Turn over

4. (a) (i) Draw the circuit of square wave generator and explain its operation. (8 marks)
 (ii) Derive the expression for period of square wave generation. (7 marks)

Or

- (b) (i) What is meant by precision rectifier? Draw and explain the operation of half-wave precision rectifier circuit. (10 marks)
 (ii) Draw the basic block diagram of PLL and explain. (5 marks)
5. (a) (i) Draw the circuit of second order active low-pass filter and derive its transfer function. (12 marks)
 (ii) Explain what is meant by wideband and narrow band filters. (3 marks)

Or

- (b) (i) Explain sample and hold amplifier circuit. (6 marks)
 (ii) Explain R-2R ladder type D/A converter and derive its output voltage equation. (9 marks)

[4 × 15 = 60 marks]