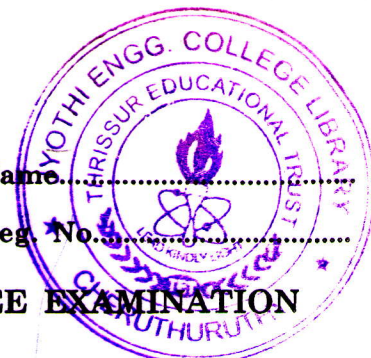


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Name.....

Reg. No.....



**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2007**

EC 04 305—ELECTRONIC CIRCUITS—I

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

- I.** (a) Give a short description on unity Gain Bandwidth.
(b) Give a short account on T-model of a transistor.
(c) Compare between FETs and BJTs.
(d) Write short note on low-frequency model of FET for small-signal operations.
(e) Derive an expression for voltage gain of a common-collector amplifier.
(f) Give a short account on low frequency and high frequency response of a common emitter amplifier.
(g) Explain Nyquist criterion on stability of feedback amplifiers.
(h) With figure, give account on Colpitts oscillator.

(8 × 5 = 40 marks)

- II.** (a) Give hybrid- π model of a common emitter amplifier explain and derive various parameters during high frequency operation.

Or

- (b) Derive simplified expression of current-gain, voltage gain, input impedance, output impedance for common-collector amplifier circuit.

(15 marks)

- III.** (a) (i) Differentiate between E-MOSFET and D-MOSFET with the help of transfer curve.

(8 marks)

- (ii) Draw small signal equivalent of common source amplifier and derive expression for voltage gain, A_v .

(7 marks)

Or

- (b) Give a detailed account on biasing depletion and enhancement MOSFETs. (15 marks)

- IV.** (a) (i) Write notes on (1) Short circuit current gain-bandwidth product ; (2) Corner frequency.

(8 marks)

- (ii) Draw small signal equivalent circuit for an emitter follower at high frequencies.

(7 marks)

Or

Turn over

(b) Write a detailed account on Miller capacitance and high frequency response of CE amplifier.

(15 marks)

V. (a) Describe different feedback amplifier topologies in detail.

(15 marks)

Or

(b) (i) Draw a current series feedback circuit and obtain expression for input and output impedance.

(7 marks)

(ii) Explain UJT Relaxation Oscillator circuit. Mention some of the applications of the circuit.

(8 marks)

[4 × 15 = 60 marks]