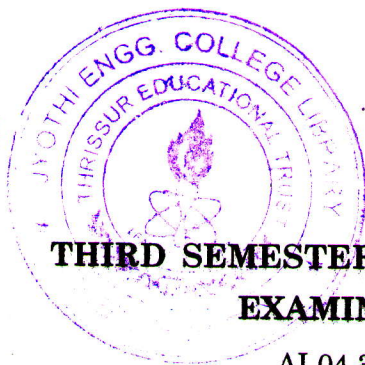


D 2342



(Pages 2)

Name.....

Reg. No.....

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2009**

AI 04 306—ELECTRONIC CIRCUITS

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Part A

- I. (a) How are amplifiers classified ?
(b) Draw the circuit of common source amplifier with fixed bias.
(c) Discuss various capacitance in hybrid- π model of a transistor.
(d) Draw the equivalent circuit of a transformer coupled amplifier in high frequency range.
(e) With circuit diagram, explain the working of CMOS inverter.
(f) Compare P channel - N channel MOSFETs.
(g) Define common mode signal and difference mode signal.
(h) Mention any *one* advantage and application of GaAs amplifier.

(8 × 5 = 40 marks)

Part B

- II. (a) (i) Explain how JFET can be used as a VVR. (7 marks)
(ii) Draw the circuit and transfer curve for N -channel JFET CS amplifier using self bias. (8 marks)

Or

- (b) Obtain the expression for current gain, voltage gain, power gain, input and output impedance of CE amplifier. (15 marks)

- III. (a) Express the hybrid- π conductance elements in terms of low frequency h parameters. (15 marks)

Or

- (b) Derive an expression for short circuit current gain as a function of frequency. Draw A_{I_s} vs. frequency curve.

(15 marks)

Turn over

IV. (a) Explain how MOSFETs can be used as (i) amplifier ; (ii) switch.

(15 marks)

Or

(b) Explain the construction, operation and characteristics of *P*-channel E MOSFET.

(15 marks)

V. (a) Write notes on :

(i) BICMOS amplifier.

(ii) CMOS differential amplifier.

(iii) BJT differential amplifier.

(8 marks)

Or

(b) Explain the ideal characteristics of differential amplifier. A differential amplifier has a common mode gain $A_c = 2$, a difference mode gain $A_d = 400V$. Is the input signals are $V_1 = 1100 \mu V$ and $V_2 = 900 \mu V$. Find the output voltage and CMRR.

(7 marks)

[4 × 15 = 60 marks]