D 23525

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Name..

Reg. No..

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2011

EC 04 305—ELECTRONIC CIRCUITS—I

Time : Three Hours

Maximum : 100 Marks

Answer **all** *questions.*

I. (a) Derive the expression for small signal parameters.

(b) Define "unity gain bandwidth". What does it signify ?

(c) Compare JFET with MOSFET.

(d) Draw the biasing circuits for depletion MOSFET. .

(e) Give an account on amplifier gain function.

(f) Derive an expression for voltage gain of an source follower.

(g) How does negative feedback reduce distortion in an amplifier ?

(h) Compare RC and LC oscillators.

(8 × 5 = 40 marks)

II. (a) (i) Compare the performance of a BJT as an amplifier in CE, CB and CC configuration.

(7 marks)

(ii) Explain the resistance reflection rule.

(8 marks)

Or

(b) Draw the high frequency hybrid Pi model for a transistor in the CE configuration. Derive expressions for all the parameters.

(15 marks)

III. (a) (i) Explain "FET biasing" methods.

(7 marks)

(ii) Explain "Biasing in discrete circuits and biasing in IC".

(8 marks)

Or

(b) (i) Define FET parameters and write relation among the FET parameters.

(8 marks)

(ii) Draw an equivalent circuit CS FET amplifier and derive expressions for all the parameters.

(7 marks)

IV. (a) (i) Derive the expresion for amplifier gain function.

(7 marks)

(ii) Draw a circuit diagram of BJT emitter follower and explain its operation.

(8 marks)

Or

(b) Derive expressions for gain in low frequency, high frequency of a BJT amplifier. (15 marks)

Turn over

V. (a) (i) State the stability condition in terms of Bode plots. Define (1) Gain margin ; (2) Phase margin.

(8 marks)

(ii) What is the effect of a voltage series negative feedback in the following performance measures of a BJT amplifiers : (1) Input resistance ; (2) Output resistance ; (3) B-W ; (4) Distortion.

Or

(b) (i) Describe the construction of phase shift oscillator and explain its working. (8 marks)

(ii) What are the factors which affect the frequency stability of an oscillator. (7 marks)

[4 × 15 = 60 marks]