C 37077 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION

JUNE 2004

EE. 2K. 404/PTEE. 2K. 302—ELECTRONICS—II

(New Scheme)

Time : Three Hours Maximum : 100 Marks

Answer **all** *the questions.*

Assume suitable data that are not given.

I. (a) Compare and contrast the properties of voltage shunt and current shunt feedback amplifiers.

(b) What is the difference between function generator and signal generator ? What is meant by sustained oscillation ? Explain.

(c) Define and explain :

(i) CMER : (ii) OFFSETNULL of an op-amp.

(d) What is a Buffer ? How a buffer is constructed from an op-amp ? Derive the voltage gain.

(e) Draw the practical versions of Inverting and Non-inverting comparators. Enumerate the advantages and disadvantages of them.

(f) Enumerate the applications of PLL in communication Engineering.

(g) Derive the transfer function of first order Butterworth low-pass filter.

(h) Explain the principle of operation of FLASH ADC", with a neat diagram. List its advantages and disadvantages.

(8 × 5 = 40 marks)

II. (a) (i) Draw and explain the principle of operation of current series feedback amplifier.

(ii) Derive the Barkhausen conditions for sustained oscillations.

(8 + 7 = 15 marks)

Or

(b) Distinguish the following :

(i) Amplifiers from Oscillators.

(ii) RF oscillator from AF oscillator.

(8 + 7 = 15 marks)

III. (a) (i) Define and explain the following :—

(1) Slew rate ; (2) PSRR.

(ii) Derive the output voltage expression of an op-amp. differentiator.

(8 + 7 = 15 marks)

Or

Turn over

(b) Explain the following op-amp. circuit :—

(i) Inverting amplifier.

(ii) Voltage follower.

(iii) Adder.

(5 + 5 + 5 = 15 marks)

IV. (a) Explain in detail the role of log and antilog amplifiers in constructing op-amp. multiplier and divider. Derive the relevant equations.

(15 marks)

Or

(b) Write technical notes on :

(i) Frequency-Multiplication.

(ii) Line synchronisation.

(8 + 7 = 15 marks)

V. (a) Design a Forth order Butterworth Low-pass filter, whose bandwidth is 2 kHz.

(15 marks)

Or

(b) With a neat block diagram, explain the principle of operation of Dual slope Analog to Digital converter. Enumerate its advantages and disadvantages.

(15 marks)

[4 × 15 = 60 marks]