BTS(C) – V– (S) – 09 – 032 – B

B. Tech Degree V Semester (Supplementary) Examination July 2009

EC/EI 505 MICRO ELECTRONICS AND INTEGRATED CIRCUITS

(2006 Scheme)

Time : 3 Hours Maximum Marks : 100

PART – A

(Answer *ALL* questions)

(8 x 5 = 40)

I. (a) List the characteristics of an ideal op-amp.
(b) Explain current to voltage converter using op-amp.
(c) Explain a peak detector using neat sketches.
(d) Draw the transfer characteristics of a Schmitt trigger and explain. What is hysterics?
(e) Explain the current limiting technique in a 723 voltage regulator.
(f) List the important specifications of ADC/DAC.
(g) Compare monolithic and hybrid IC's and also mention about its application area.
(h) Explain the fabrication of monolithic bipolar npn transistor.

PART – B

(4 x 15 = 60)

II. Draw the circuit diagram of an instrumentation amplifier. Derive the expression for its output voltage. What are the advantages of instrumentation amplifier. (15)

OR

III (a) What is meant by input bias current in an op-amp? How it is compensated? (6)
(b) Explain op-amp differentiator and derive the equation for output voltage. (9)

IV. (a) Explain a log amplifier and show how saturation current and temperature compensation are achieved. (8)
(b) Explain the concept of simulated inductance with neat diagram. (7)

OR

V. (a) With the help of a circuit, explain a 2^{nd} order high pass Butterworth filter and hence derive its transfer function. (8)
(b) Explain the working of a monostable multivibrator using op-amp with diagram. (7)

VI. Explain a 3 bit flash type analog to digital converter. Discuss its advantages and disadvantages. (15)

OR

VII. (a) What are the features of a 555 timer IC. Draw its functional block diagram and explain. (11)
(b) What o/p voltage would be produced by a 4 bit DAC whose o/p voltage range is 0 to 10V and input binary number is 0111? (4)

VIII. Discuss thin film and thick film technology. Explain its advantages and applications. (15)

OR

IX. Explain ion implantation in IC fabrication with necessary diagram. (15)

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