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Total No. of Questions : 09] [Total No. of Pages : 02

B. Tech. ECE/ETE (Sem. - 3rd)

ANALOG DEVICES AND CIRCUITS

SUBJECT CODE : BTEC-301 (2011 & 2012 Batch)

Paper ID : [A1130]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is compulsory consisting of Ten questions carrying Two marks each.
2) Section - B contains Five questions carrying Five marks each and students has to attempt any Four questions.
3) Section - C contains Three questions carrying Ten marks each and students has to attempt any Two questions.

Section - A

Q1)

a) Differentiate between LEDs and Photodiode.

b) A Silicon diode is connected in series with a load resistance of 10 ohm. For a dc supply of 5 V, determine the current in the circuit.

c) Explain how transistor acts as an amplifier?

d) What is UJT? Give its various applications.

e) What is cross over distortion

f) List various drawbacks of complementary symmetry amplifier.

g) Explain feedback factor and open loop gain

h) What are the limitations of h parameters?

i) Compare Wein Bridge Oscillators and RC Phase Shift Oscillators.

j) Draw the hybrid model of CE BJT and define h_{fe} and h_{oe}.

Section - B

Q2) Derive the relation between maximum power and transistor dissipation for class B push pull amplifier.

Q3) Discuss the effect of temperature on PN junction diode.

Q4) A transistor is operated in CE configuration. If α is 0.99, I_{CBO} is 10 micro amperes and I_B is 200 micro amperes. Calculate β, I_C and I_E. Also draw the circuit diagram.

Q5) Discuss with the help of circuit diagrams the purpose of providing negative and positive feedback.

Q6) Explain briefly the working of Hartley oscillator and also derive the expression for frequency of oscillations.

Section - C

Q7) Give the need of biasing. Discuss different methods by which it is achieved for a NPN BJT?

Q8) Explain working and characteristics of JFET. How does it differ from BJT?

Q9) Write short notes on any two of the following:

i) High frequency T model ii) Zener diode as voltage regulator

iii) Effect of negative feedback on bandwidth