Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Electronics Engg.) (2012 Onwards) (Sem.–3)
B.TECH.(ECE)/(ELECTRONICS & COMPUTER ENGG.)/(ETE)
(2011 Onwards)
ANALOG DEVICES & CIRCUITS
Subject Code : BTEC-301
Paper ID : [A1130]

Time : 3 Hrs. **Max. 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 have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. **Write briefly :**

a) Why is hybrid model of a transistor preferred over other methods?

b) State the necessary conditions for oscillations in feedback amplifier.

c) Explain why power amplifiers is always preceded by voltage amplifier.

d) A BJT has base current 10 micro amperes, beta as 99, and leakage collector current of 1 micro ampere. Find the collector current.

e) With the help of labeled energy band diagrams give the formation of open circuit PN junction.

f) Compare Zener breakdown and Avalanche break down.

g) Enlist various advantages and disadvantages of Wein Bridge oscillator.

h) Explain with the help of circuit diagram the purpose of providing negative feedback.

i) Draw the hybrid model of CE, CB and CC BJT's.

j) A transformer coupled Class A large signal amplifier has maximum and minimum values of collector emitter voltage of 25 V and 2.5 V. Determine its collector efficiency.

SECTION-B

2. Compare the performance of CB, CE and CC configurations of BJT. Which is most suitable to use as an amplifier?

3. A negative feedback in voltage series configuration feeds 10 % of output back to input. Voltage gain of amplifier without feedback is 100. Input and output resistances are 10 kilo ohms and 1 kilo ohm. Find the percentage reduction in voltage gain, input resistance and output resistance with feedback.

4. Explain how push pull amplifier reduces harmonic distortion in an amplifier.

5. What is stability factor? Derive its expression for fixed bias circuit.

6. Explain briefly the working of RC phase shift oscillator.

SECTION-C

7. Derive the equation for voltage gain, current gain, input impedance, output impedance for BJT using low frequency h-parameter model for

   a) CE configuration

   b) CC configuration.

8. What are the various stages of practical power amplifier? Explain the operation of direct coupled with resistive load type class A power amplifier.

9. Write short notes on the following :

   a) JFET

   b) Tunnel diode