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Total No. of Pages : 02

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B.Tech.(Electronics Engg.) (2012 Onwards) B.Tech.(ECE)/(Electronics & Computer Engg.)/(ETE) (2011 Onwards) (Sem.-3) 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 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**

#### 1) Write briefly :

- a) What are the advantages of complimentary symmetry amplifier?
- b) What is diffusion capacitance?
- c) State the advantages of FET over BJT.
- d) What is depletion region in PN junction?
- e) Define Early effect.
- f) Why FET is called voltage controlled device?
- g) Draw equivalent circuit of tunnel diode.
- h) State the Barkhausen criterion for an oscillator.
- i) Write down the advantages, disadvantages and applications of Colpitt's oscillator.
- j) What is meant by saturation region?



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### **SECTION-B**

- 2) Explain how feedback circuit can be used as an oscillator.
- 3) Differentiate between enhancement and depletion of MOSFET.
- 4) Explain the working of Wein bridge oscillator.
- 5) Explain the working, advantages and application of LED and LCD.
- 6) Explain the operation of PN junction under forward bias condition with its characteristics.

#### **SECTION-C**

- 7) With the neat circuit diagram, explain the working of RC phase shift oscillator, with relevant equations.
- 8) The transistor is connected as CE amplifier. Determine Z<sub>c</sub>, Z<sub>o</sub>, A<sub>i</sub> and A<sub>v</sub> using complete hybrid model.
- 9) Write the ac equivalent circuit for voltage divider JFET configuration and determine Z<sub>i</sub>, Z<sub>o</sub> and A<sub>v</sub>.