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# B.Tech.(Electronics Engg.) (2012 Onwards) 

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

## ANALOG DEVICES \& CIRCUITS <br> Subject Code : BTEC-301 <br> 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?

## 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 $Z_{c}, Z_{o}, A_{i}$ and $A_{v}$ using complete hybrid model.
9) Write the ac equivalent circuit for voltage divider JFET configuration and determine $\mathrm{Z}_{\mathrm{i}}, \mathrm{Z}_{\mathrm{o}}$ and $\mathrm{A}_{\mathrm{v}}$.
