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

Total No. of Questions : 09

B.Tech.(Electronics Engg.) (2012 Onwards)
B.Tech.(ECE)/(Electronics & Computer Engg.)/(ETE) (2011 Onwards)
(Sem.–3)
ANALOG DEVICES & CIRCUITS
Subject Code : BTEC-301
M.Code : 57583

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS 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

Q1. Write briefly :

a) Explain how Zener diode can be used as a voltage regulator.

b) What is the principle behind the working of an oscillator?

c) Explain the working of a transistor as a switch.

d) What do you mean by dc load line?

e) Give the V-I characteristics of PN diode.

f) Calculate I_c and I_E for a transistor that has $\alpha_{dc} = 0.99$ and $I_B = 150\mu A$. Determine the value of β_{dc} for the transistor,

g) Define Transconductance of MOSFET.

h) What is pinch off voltage?

i) State Barkhausen criteria for oscillators.

j) What is diffusion capacitance?

SECTION-B

Q2. Explain the effect of using negative feedback on various parameters of amplifiers.

Q3. What are h-parameters? Explain how these are used for making equivalent transistor model.

Q4. Discuss the factors involved in the selection of I_c, R_c and R_E for a single stage common emitter BJT amplifier circuit, using voltage divider bias.

Q5. Explain in detail with diagrams, the difference between LED and Photo-diodes.

Q6. Explain construction, operation and characteristics of JFETs.

SECTION-C

Q7. Explain the construction and working of MOSFET.

Q8. Explain the working of Colpitts oscillator. Derive the expression for its frequency.

Q9. Describe in detail with diagram and characteristics:

a) UJT

b) RC phase shift oscillator.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.