

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 AND CIRCUITS

Subject Code : BTEC-301

Paper ID : [A1130]

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

1. Write briefly :

- (a) What is Ripple Factor?
- (b) Define 'Pinch-off' voltage of a JFET.
- (c) How does DE- MOSFET differ from E- MOSFET?
- (d) What is transistor biasing?
- (e) How β and β_{DC} are related with each other?
- (f) How signal generator is different from an ordinary oscillator?
- (g) What is faithful amplification?
- (h) Why two transistors are used in Wein bridge oscillator?
- (i) What is the maximum collector circuit efficiency of transformer-coupled class-A power amplifier?
- (j) Distinguish between Zener breakdown and Avalanche breakdown.

SECTION - B

2. Describe briefly the constructional and operational principle of a MOSFET in depletion region.
3. Draw the circuit diagram of a full-wave bridge rectifier circuit and Calculate :
 - (a) I_{de}
 - (b) I_{rms}
 - (c) Ripple factor
 - (d) Efficiency of rectification
 - (e) PIV rating of a diode
4. Explain the functioning of crystal controlled oscillator. Give its design procedure with some applications.
5. Explain the working of a Push-pull power amplifier and its merits over single-ended power amplifier.
6. Discuss the difference between LED and LCD display.

SECTION - C

7. Draw the circuits of three transistor amplifier configurations using npn transistor and explain how a voltage amplification is achieved in CE amplification.
8. Define h-parameters. Derive expression for following of CE amplifiers using h-parameters.
 - (a) Voltage Gain
 - (b) Current Gain
 - (c) Input resistance
 - (d) Output resistance
9. What is bias compensation and why it is needed? Explain the different methods of bias compensation.