

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name: Advance Electronics

Subject Code: 4TE03AEL1

Branch: B.Tech (EC)

Semester: 3 Date: 3/12/2015 Time:2:30 To 5:30

Marks :70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

- Q-1 Attempt the following questions: (14)**
- a) What is operating point of a transistor amplifier?
 - b) Why is it necessary to stabilize operating point of a transistor amplifier?
 - c) What is thermal runaway?
 - d) What is meant by midpoint biasing?
 - e) Define stability factor?
 - f) Define output offset voltage of op-amp?
 - g) Define input offset current of op-amp?
 - h) What is the multistage amplifier circuit?
 - i) List the types of couplings in multistage amplifier circuit.
 - j) Why is coupling capacitor provided in R-C coupled amplifier?
 - k) What is cross over distortion?
 - l) How can cross over distortion be minimized?
 - m) Why is positive feedback necessary to produce oscillations?
 - n) What is Barkhausen criterion for feedback oscillator?

Attempt any four questions from Q-2 to Q-8

- Q-2 Attempt all questions (14)**
- (a) Draw the small-signal model of Emitter follower and obtain the expression of voltage gain, current gain, input impedance and output impedance.
 - (b) Explain the need for coupling and bypass capacitors in transistor circuits, and draw AC Equivalent circuit of CE amplifier.
- Q-3 Attempt all questions (14)**
- (a) What is transistor biasing? What are the basic conditions which are to be necessarily fulfilled for achieving faithful amplification of input signal in transistor amplifiers?
 - (b) Discuss the BJT biasing circuit with voltage feedback.



- Q-4** **Attempt all questions** **(14)**
- (a) Explain with a neat diagram the working of a Class A transformer coupled power amplifier.
 - (b) Explain the operation of Class B power amplifier with a neat circuit diagram.
- Q-5** **Attempt all questions** **(14)**
- (a) Draw the h-parameter equivalent circuit of Common Emitter Amplifier circuit and derive the expression for input impedance, output impedance, voltage gain and current gain.
 - (b) With neat circuit diagram and frequency response, explain two stage RC coupled amplifier. What are its advantages and applications?
- Q-6** **Attempt all questions** **(14)**
- (a) What is an oscillator? How does it differ from an amplifier? What are the essential parts of an oscillator circuit?
 - (b) Draw the block diagram of basic op-amp and explain the function of each block in detail.
- Q-7** **Attempt all questions** **(14)**
- (a) Draw the circuit of Wien bridge oscillator and derive the expression for its frequency of oscillation.
 - (b) Draw the circuit of Hartley oscillator and derive an expression for its frequency of oscillation.
- Q-8** **Attempt all questions** **(14)**
- (a) Explain with help of circuit diagram Emitter-Coupled Differential Amplifier.
 - (b) Draw and explain Voltage Shunt Feedback Amplifier in detail.

