

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name: Advance Electronics

Subject Code: 4TE03AEL1

Branch: B.Tech (EC)

Semester: 3

Date: 22/04/2016

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.
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Q-1 Attempt the following questions: (14)

- a) What is CMRR?
- b) Define output offset voltage of op-amp
- c) What are differential gain and common mode gain of differential amplifier?
- d) What is thermal runaway?
- e) Define stability factor
- f) What is feedback in amplifier?
- g) Define input offset current of op-amp
- h) Why coupling capacitor is provided in R-C coupled amplifier?
- i) What is the effect of positive feedback in the amplifier?
- j) Which configuration is used as multi stage configuration in cascade amplifier?
- k) In which amplifier the efficiency and distortion both are maximum?
- l) What is cross over distortion?
- m) What is Barkhausen criterion for feedback oscillator?
- n) Why is it necessary to stabilize operating point of a transistor amplifier?

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

Q-2 Attempt all questions (14)

- (a) Explain comparison of Transistor Amplifier Configurations in brief.
- (b) Draw the small-signal model of Emitter follower. Obtain the expression of voltage gain, current gain, input impedance and output impedance.

Q-3 Attempt all questions (14)

- (a) Explain the need for coupling and bypass capacitors in transistor circuits. Draw AC Equivalent circuit of CE amplifier.
- (b) Discuss the FET Small-Signal Model.

Q-4 Attempt all questions (14)

- (a) Explain with a neat diagram the working of a Push pull power amplifier.



(b) Explain the operation of Class AB power amplifier with a neat circuit diagram.

Q-5 **Attempt all questions** (14)

(a) Explain Low Frequency Response of an RC Coupled Stage amplifier. What are its advantages and applications?

(b) Draw the h-parameter equivalent circuit of Single-Stage CE Transistor Amplifier circuit and its response. Derive the expression for input impedance, output impedance, voltage gain and current gain.

Q-6 **Attempt all questions** (14)

(a) Draw and explain current Shunt Feedback Amplifier in detail.

(b) What is an oscillator? How does it differ from an amplifier? What are the essential parts of an oscillator circuit?

Q-7 **Attempt all questions** (14)

(a) Draw the circuit of phase shift oscillator. Derive the expression for its frequency of oscillation.

(b) Explain with help of circuit diagram Emitter-Coupled Differential Amplifier.

Q-8 **Attempt all questions** (14)

(a) Explain the block diagram of basic op-amp in detail.

(b) Draw the circuit of Colpitts oscillator. Derive an expression for its frequency of oscillation.

