

**MODEL QUESTION PAPER Prepared by [ktubtechquestions.com](http://ktubtechquestions.com)  
THIRD SEMESTER B.TECH DEGREE EXAMINATION JANUARY 2017**

**EC 205 Electronics Circuit**

**Time: 3 Hrs**

**Marks: 100**

**PART A**

( Answer any Three)

1. Elaborate on integrator circuit. Discuss its response for step, pulse and square wave inputs.
2. Derive the condition for the circuit to work as an integrator?
3. An emitter follower circuit is having  $\beta = 100$  and  $R_1 = 30K$ ,  $R_2 = 5K$ ,  $V_{cc} = 20V$ . Calculate  $R_i$  and  $A_v$ ?
4. Draw the small signal equivalent circuit of a CC amplifier and derive the expression for input resistance, output resistance, voltage gain and current gain.

**PART B**

( Answer any Three)

5. Draw the small signal equivalent circuit of a series feedback amplifier and derive the expression for input resistance, output resistance and voltage gain with feedback?
6. An amplifier with open loop voltage gain  $2000 \pm 150$  is available. It is necessary to have an amplifier whose voltage gain varies no more than  $\pm 0.2\%$ . Find the reverse transmission factor beta and the gain with feedback.
7. Draw the circuit of a Wien bridge oscillator and explain its working.
8. Explain
  - i) Broad banding techniques
  - ii) Feedback topologies

**PART C**

( Answer any Four)

9. For a common source MOSFET amplifier, the following parameters and circuit components are given:  $V_{GS(Q)} = 2.12 V$ ,  $V_{DD} = 5 V$ ,  $R_D = 2.5 K$ ,  $V_{TH} = 1 V$ ,  $K_n = 0.8 \text{ mA/V}^2$  and  $Z = .02/V$ . Assume the transistor is in saturation, determine its voltage gain.
10. Analyze a MOS differential amplifier and obtain the expression for the CMRR.

11. What is body effect? Deduce the small signal equivalent circuit of an n-channel MOSFET including body effect?
12. With relevant sketches explain the working of bootstrap sweep Circuit?
13. Derive the expression for conversion efficiency, total load power, collector dissipation and figure of merit of a transformer coupled power amplifier?
14. Draw the circuit of a series voltage regulator and explain its working? Also derive the expression for input regulation factor and output resistance?

ktubtechquestions.com