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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

Electronics and Communication Engineering

Third Semester

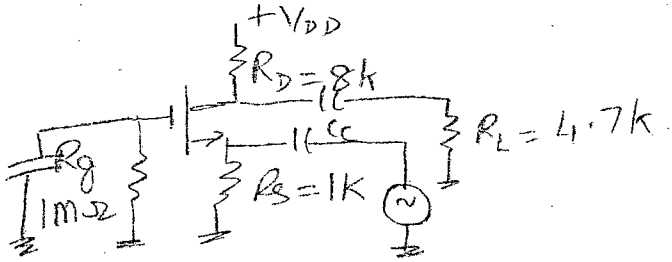
EC9202 ELECTRONICS CIRCUITS-1

(Regulation 2008)

Time: 3 Hours **Answer ALL Questions** **Max. Marks 100**

PART-A (10 x 2 = 20 Marks)

1. Draw a Fixed Bias circuit of BJT draw the dc load line.
2. Define the stability factors of BJT.
3. In a differential amplifier differential gain is 200 and Common mode gain is 0.5.Calculate the CMRR.
4. With equivalent circuit of CB amplifier, derive the input impedance.
5. Draw the VTC of CMOS inverter and mark the different regions of operation.
6. In the circuit shown calculate the gain. [Assume gm = 5 mA/V and r_d = 50K]



7. MOSFET(N-channel) is biased in triode region. Calculate the resistance offered by it with the data given. Process parameter = 387μ A/V^2, Aspect ratio = 10, Overdrive voltage = 2V.
8. Draw a CMOS amplifier with NMOS driver and PMOS diode as active load.
9. Differentiate between Class B and Class AB power amplifier.
10. What is the effect of Miller's Capacitance on the frequency response of an amplifier.

b) (i) Draw a NMOS common source amplifier with the following acting loads
a) NMOS diode b) Depletion PMOS c) PMOS current mirror (6)

(ii) Draw a current steering circuit using MOSFET with one source terminal and one sink terminal. Derive for terminal current as a function of reference current(10)

15. a) Explain the operation of Class B power amplifier. Derive for the efficiency. How cross over distortion can be eliminated. (16)

(OR)

b) (i) Define fα and fβ (4)

(ii) Derive for fβ (6)

(iii) For the circuit shown calculate the cut-off frequencies due to C1 and C2 (6)