

BE/BTECH (PT-arrear) DEGREE END SEMESTER EXAMINATIONS APR/MAY-2014
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
III SEMESTER
PTEC9252/PTEC282 ELECTRONIC CIRCUITS-II
(Regulation 2009)

Dur:3Hrs

Max Marks:100

Answer all questions
Part-A (10 X 2=20 Marks)

- 1) Why single pole system is unconditionally stable?
- 2) Draw a circuit diagram of two stage voltage shunt feedback amplifier using BJTs
- 3) State Barkhausen criteria for oscillation.
- 4) A ring oscillator is constructed with three inverting amplifiers each with a bandwidth of 10KHz. Find the frequency of oscillation.
- 5) Determine the bandwidth of two stage synchronous tuned amplifier. Assume the bandwidth of individual stage is 310 kHz.
- 6) List-out the advantages of using the transformer in tuned amplifier circuit
- 7) What is the role of commutation capacitor in Bistable Multivibrator circuit.
- 8) Design an RC circuit to generate an output voltage, V_o with a slope error of 20% and sweep time of $10\mu s$ and a sweep voltage of 2V.
- 9) Draw the switching characteristics of IGBT
- 10) What should be the value of inductance to use an inductor filter connected to a FWR operating at 50Hz frequency if the ripple is not exceed 2% for a 100Ω load.

Part-B (5 X 16=80 Marks)

- 11) (i) Explain single tuned amplifier and derive for gain, resonant frequency and cutoff frequencies (12)
- (ii) Briefly explain Hazeltine neutralization used in tuned amplifier for stabilization (4)

- 12)a) i) Determine the voltage-gain, input impedance and output impedance of transistor based voltage series feedback amplifier (12)
- (ii) Identify the type of feedback amplifiers (Vide Figure-1) (4)

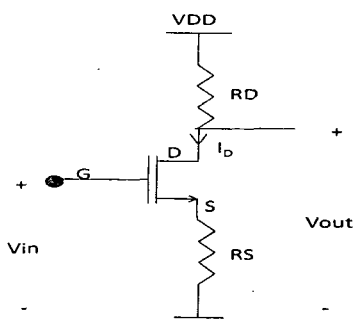


Figure-1a

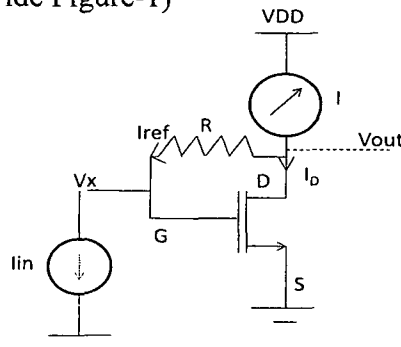


Figure-1b

(OR)

- b)i) Determine the current gain, voltage-gain, input impedance and output impedance of transistor based current shunt feedback amplifier. (12)
- ii) With an example describe about frequency compensation (4)

13)a) i) Draw Wein Bridge Oscillator using BJT, Explain and derive the condition for Oscillation. (12)

ii) In Colpitt's Oscillator $C_1=1\mu\text{F}$ and $C_2=0.2\mu\text{F}$. If the frequency of oscillation is 10KHz, find the value of inductor. Also find the required gain for sustained oscillation (4)

(OR)

b)i) Draw Hartely oscillator using FET, Explain and derive the condition for oscillation (10)

ii) Explain Franklin oscillator in detail. (6)

14) a) (i) Design a Schmitt trigger using BJT with $UTP=4\text{V}$ and $LTP=2\text{V}$. Assume $V_{cc}=12\text{V}$, $I_{c_2}=5\text{mA}$ and $h_{fe}=100$ (8)

ii) Explain the collector coupled bistable multivibrator in detail (8)

(OR)

b) i) With the help of neat circuit diagram explain the working principle of current-sweep generator (8)

ii) Explain the emitter coupled monostable multivibrator in detail (8)

15)a) Explain Buck Converter with relevant waveforms. Also derive for output voltage peak-to-peak ripple current and peak-to-peak ripple voltage (16)

(OR)

b)i) Explain in detail the working principle of Switched Mode Power Supplies (12)

ii) A simple voltage series regulator is shown in Figure-5. The h_{fe} and V_{BE} of the transistor are 24 and 0.6V respectively. Determine the current through 50Ω and 100Ω resistors. (4)

