BE/BTECH (FT-arrerar) DEGREE END SEMESTER EXAMINATIONS APRIL/MAY 2014
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
IV SEMESTER
EC9252/EC282 ELECTRONIC CIRCUITS-II
(Regulation 2008)

Dur:3Hrs **Max Marks:100**

Answer all questions

Part-A (10 X 2=20 Marks)

1) List out the properties of negative feedback amplifier
2) Why single pole system is unconditionally stable?
3) State Barkhausen criteria.
4) Give any two examples for high frequency and low frequency oscillators.
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 a 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, Vo with a slope error of 20% and sweep time of 20μs and a sweep voltage of 2V.
9) Draw the switching characteristics of IGBT
10) Differentiate between Half wave and Full wave rectifiers.

Part-B (5 X 16=80 Marks)

11) (i) Explain single tuned amplifier and derive for gain, resonant frequency and cutoff frequencies **(10)**

(ii) Briefly explain Hazeltine neutralization used in tuned amplifier for stabilization **(4)**

(iii) Differentiate between Synchronous and Staggered tuned amplifiers **(2)**

12) a)(i) Identify the nature of feedback in Figure-1. Let R_{C1}=3KΩ, R_{C2}=500Ω, R_E=50Ω, R_S=R_F=1.2KΩ, hfe=50, hie=1.1KΩ, hre=hoe=0. Determine overall voltage gain (Avf), overall current gain (Aif), input impedance (Rif) and output impedance (Rof). **(10)**

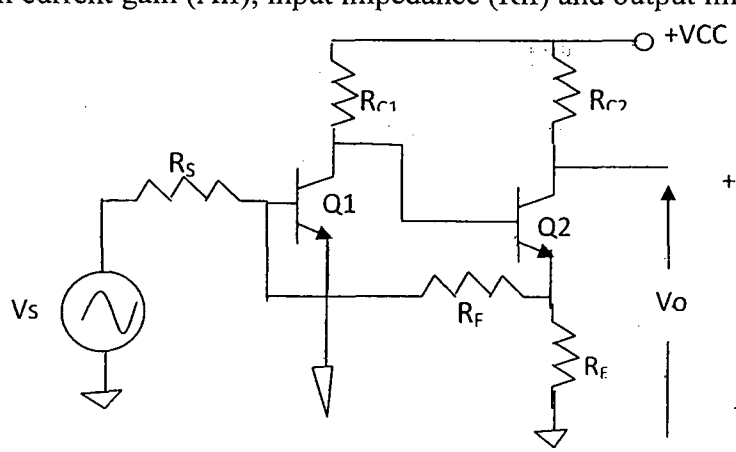

Figure-1

(ii) Explain the stability of a three pole amplifier in detail **(6)**

(OR)

b)i) Determine the trans-resistance gain, input impedance and output impedance of FET based single-stage voltage shunt amplifier. **(8)**

ii) Determine the trans-conductance gain, input impedance and output impedance of BJT based single-stage current-series amplifier. **(8)**

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

ii) In Colpitt's Oscillator C1=1μF and C2=0.2μF. 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 Clapp oscillator using FET, Explain and derive the condition for oscillation **(12)**

(ii)Briefly discuss about the frequency of oscillation of Ring Oscillator and Give its applications **(4)**

14) a) (i) Design a Schmitt trigger using BJT with UTP=5V and LTP=2V.Assume Vcc=15V, Ic_2=5mA and hfe=100 **(8)**

ii) Explain emitter coupled mono-stable multivibrator in detail **(8)**

(OR)

b) i) Explain Voltage Sweep generator in detail **(8)**

ii) Explain collector coupled astable multivibrator in detail **(8)**

15)a(i) Explain Boost Converter with relevant waveforms. Also derive for output voltage peak-to-peak ripple current and peak-to-peak ripple voltage **(12)**

ii) The Buck regulator is shown in Figure-2 has an input voltage of Vs=12V. The required average output voltage is Vo = 5V, and the peak-to-peak ripple voltage is 20mV. The switching frequency is 25KHz. If the peak-to-peak ripple current of Inductor is limited to 0.8A. Determine

(x) Duty Cycle (y) The filter inductance, L (z) The filter Capacitance 'C' **(4)**

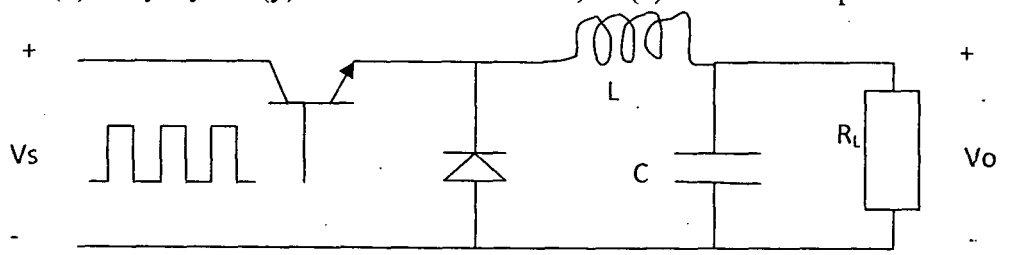

Figure-2

(OR)

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

ii) Derive an expression of ripple factor of a Full-Wave-Rectifier **(4)**