Code No. : 6122

FACULTY OF ENGINEERING

B.E. 2/4 (ECE) II Semester (Supple.) Examination, December 2009

ANALOG ELECTRONIC CIRCUITS

Time: 3 Hours] [Max. Marks: 75

*Note: Answer **all** questions of Part A. Answer **five** questions from Part B.*

PART – A **(25 Marks)**

1. The input coupling capacitor required with BJT amplifier is very much larger than that required with FET amplifier.

2. Differentiate between static and dynamic load of a TC amplifier.

3. Define the collector-circuit efficiency for a transistor power amplifier.

4. How cross-over distortion is eliminated or minimized ?

5. Draw a tranresistance amplifier equivalent circuit.

6. For an amplifier with 20dB of negative feedback, give the value of $(1 + \beta A)$.

7. Define quality factor Q.

8. What is neutralization ?

9. Explain duty-cycle.

10. Define fold-back limiting.

PART – B **(50 Marks)**

11. Sketch two stage RC-coupled CS-FET amplifier stages. Show the low frequency model for one stage and derive the expression for f_L. **10**

12.

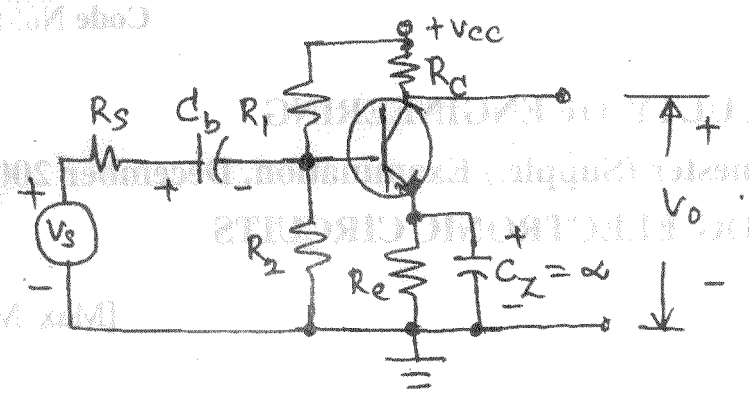

Fig. 1

In the circuit of Fig. 1 let $R_S = 500\Omega$, $R_1 = R_2 = 47K$, $R_c = R_e = 2K$. $h_{ie} = 1.1K$; $h_{fe} = 50$; $h_{re} = h_{oe} = 0$ $C_b = 5\mu F$.

a) Find f_L for the transistor stage.

b) Find the value of C_z for which f_L is virtually unaffected by the presence of the emitter by pass capacitor. **10**

13. Draw the schematic of a two-transistor class – B, push-pull amplifier and show that $P_{Cmax} \approx 0.4\ P_{max}$. **10**

14. What are the characteristics of a negative feedback amplifier ? Discuss in detail. **10**

15. For the transistor feedback amplifier shown in Fig. 2, $h_{fe} = 100$; $h_{ie} = 1000\Omega$ and $h_{re} = h_{oe} = 0$. Calculate : **10**

a) $R_{Mf} = V_o/I_s$ where $I_s = V_s/R_s$.

b) $A_{Vf} = V_o/V_s$

c) R_{if} and

d) R'_{of}.

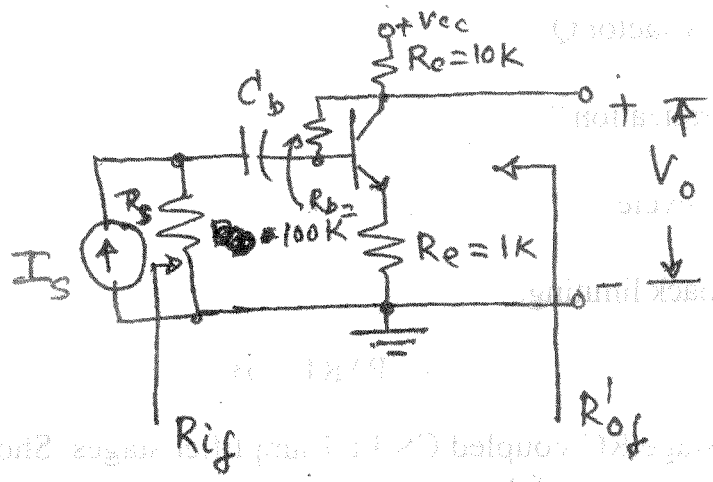

Fig. 2

16. Explain the single transistorized tuned amplifier and derive the expression for its bandwidth. **10**

17. a) Explain the operation of a shunt regular using op. amplifier. **5**

    b) For the network shown in Fig. 3 determine the range of V_i that will maintain at $V_o = 12$ V and not exceeding the maximum power ratings of the Zener diode. **5**

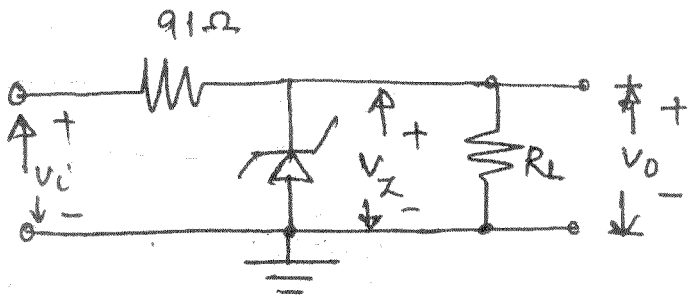

Fig. 3

Given that $V_Z = 8V$; $P_Z = 400$ mW and $R_L = 220\Omega$.