Code No.: 4338/N

FACULTY OF ENGINEERING

B.E. II/IV Year (ECE) II Semester (Main) Examination, April/May 2008

(New)

ANALOG ELECTRONIC CIRCUITS

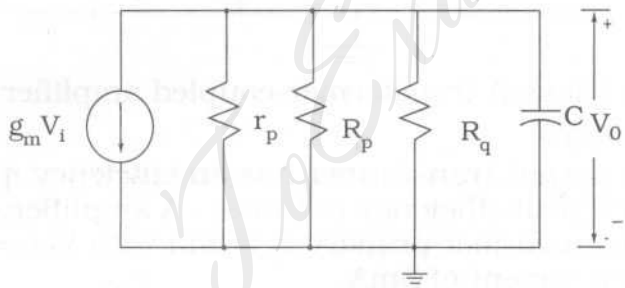
Time : 3 Hours] [Max. Marks : 75

Answer **all** *questions of* Part A.

Answer **five** *questions from* Part B.

Part A – (Marks : 25)

1. Draw the output wave of a Class AB amplifier.
2. Calculate the mid band gain $A_0 \equiv V_o/V_i$ for this circuit.



(for $R_p << r_p$ and $R_p << R_g$)

3. Draw the complementary symmetry amplifier circuit.
4. Why Class AB mode is preferred?
5. Define a Dominant pole.
6. What happens to R_{of}, R_{if} in current series feed back circuit?
7. Briefly explain unilaterisation.
8. Define selectivity.
9. Explain the function of a catcher/free-wheeling diode.
10. How EMI is reduced in switching regulators?

[P.T.O.

Part B – (Marks : 5 × 10 = 50)

11. Give an approximate expression relating f_H^* and the 3-dB frequencies of n-nonidentical stages. For two and three identical stages, What is f_H^* / f_H. 10

12. The parameters of the transistors in the circuit shown in Fig.1 are $h_{fe} = 50$, $h_{ie} = 1100\Omega$ and $h_{re} = h_{oe} = 0$. Find (a) the mid band gain (b) the value of C_b necessary to give a lower 3-dB fequency of 20Hz. (c) Find the value of C_b necessary to ensure less than 10% tilt for a 100Hz square-wave input. 10

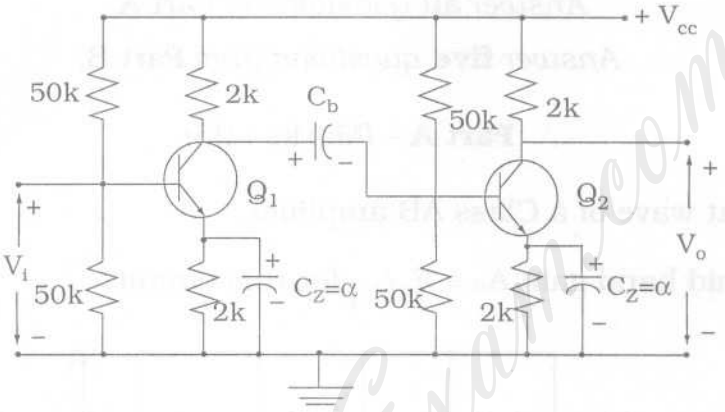


Fig. 1

13. (a) Draw a complete Class-A transformer-coupled amplifier and derive its theoretical efficiency.

(b) Assume that the output transformer has an efficiency $\eta = 80\%$. Calculate the maximum practical efficiency in Class – A amplifier, if the power delivered to the transformer primary is 20mn with Vcc = +13V and the Collector quiscent current of 5mA. 10

14. Explain the principle and operation of a Class – D amplifier with the help of a block diagram. 10

15. For two transistors in cascade with feed back from the second emitter to the first base through the resistor R′. If the block capacitors and biasing resistors are neglected, derive the expression for A_{vf}. 10

16. (a) Draw the circuit diagram of a RC-phase shift oscillator, using IC Op amplifier and mention the frequency of oscillation and condition of oscillation. 5

(b) Explain the principle and operation of the Colpitt's oscillator using FET as an amplifier. 4

(c) Why RF-chokes are used in LC-oscillators. 1

17. (a) Draw a transistorized double tuned amplifier and its equivalent circuit. 4

(b) Design a single tuned amplifier to operate a centre frequency of 455 kHz, a BW of 10 kHz with the given parameters for the transistor $g_m = 0.04$ A/V, $h_{fe} = 100$, Cb'e = 1000 PF, Cb'c = 10 PF, Q = 100. The bias network and Input resistance are adjusted so that $R_i = 5k\Omega$ and $R_L = 500\ \Omega$. 6