Reg. No. : | | | | | | | | | | | |

Question Paper Code : P 1246

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fourth Semester

(Regulation 2004)

Electronics and Communication Engineering

EC 1251 — ELECTRONIC CIRCUITS — II

(Common to B.E. (Part-Time) Third Semester – Regulation 2005)

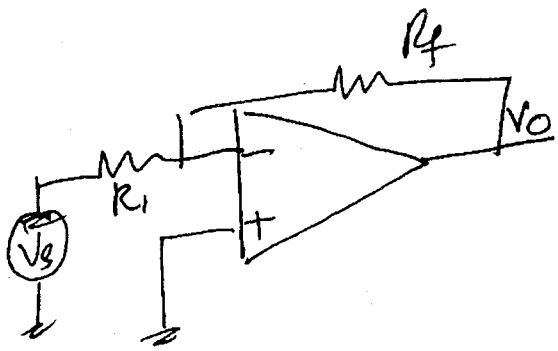
Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Determine the gain with feedback for the amplifier with open loop gain of 300 and feedback factor of 0.1.

2. Identify the type of feedback of the circuit shown :



3. A tuned amplifier is designed to receive A.M. broadcast of speech signal at 650 kHz. What is needed Q for amplifier?

4. Why neutralization is used in tuned amplifiers?

5. Draw the electrical equivalent circuit of crystal and mention the significance of each component.

6. Draw the Miller's oscillator circuit.

7. Describe a simple clamper circuit.

8. Distinguish between symmetric triggering and unsymmetric triggering methods.

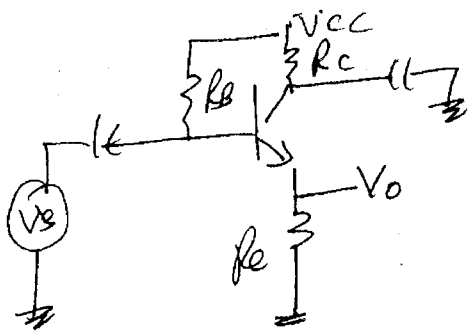
9. Draw the equivalent circuit of pulse transformer.

10. Draw the circuit of astable blocking oscillator.

PART B — (5 × 16 = 80 marks)

11. (a) (i) With block diagram of current series feedback and derive the expression for R_{if} and R_{of}. (8)

(ii) For the circuit shown, derive the expression for A_V and hence A_{Vf}. (8)



Or

(b) Design a two stage voltage series feedback amplifier so as to reduce the gain to 75. Assume $\beta = .01$, $V_{CC} = 20$, $h_{fe_1} = h_{fe_2} = 100$. Draw the designed circuit.

12. (a) Design a RC phase shift oscillator to generate sinusoidal signal at 5 kHz using BJT, given V_{CC} = 20 V and h_{fe} = 250. How will you modify the circuit so as to vary the frequency between two limits?

Or

(b) (i) With circuit diagram derive an expression for frequency of oscillation of a Clapp oscillator. Explain how Barhausen conditions are satisfied. (12)

(ii) Bring out the advantage of Clapp oscillator over Colpitt oscillator. (4)

13. (a) (i) Draw a class C tuned amplifier and derive its efficiency. (8)

(ii) Describe any one method of neutralisation used in tuned amplifiers. (8)

Or

(b) (i) Draw the single tuned amplifier and explain the frequency response. (6)

(ii) Derive the expression for its gain and cutoff frequency. (6)

(iii) What is meant by synchronous tuning of tuned amplifiers? (4)

14. (a) (i) Design a Schmitt trigger circuit for the data given :

V_{CC} = 20, UTP = 5V and LTP = 3 V.

$I_{C\ sat}$ = 2 mA and $h_{fe\ min}$ = 100.

Draw the designed circuit. (12)

(ii) Draw the hysterisis characteristics of above problem. (4)

Or

(b) (i) Explain the working of emitter coupled astable multivibrator with a circuit diagram and derive for its frequency. (8)

(ii) Design a collector coupled astable multivibrator using V_{CC} = 20 V and $I_{C\ sat}$ = 3 mA to generate a pulse wave at f = 2 kHz with 70% duty cycle. (8)

15. (a) Explain Bootstrap saw-tooth generator with circuit diagram and draw the output signal.

Or

(b) (i) Describe Monostable blocking oscillator using base timing. (8)

(ii) Explain UJT sawtooth generator in detail. (8)

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