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

D 4148

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2008.

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. If an amplifier has a gain of 400 and feedback ratio is 0.1, find the gain with negative feedback.

2. Compare the input and output resistance for a voltage and current shunt feedback amplifier.

3. A Wien bridge oscillator is used for operation at 10 KHz. If the value of the resistance R is 100 K ohms, what is the value of C required.

4. Why a LC tank circuit does not produce sustained oscillations. How can this be overcome?

5. Mention applications of tuned amplifiers.

6. What is the need for neutralization in tuned amplifiers?

7. Draw a clipper circuit which clips all voltages above + 2 V.

8. Draw the circuit of a RC integrator and mention the condition under which the circuit behaves as a integrator.

9. Define sweep time with reference to a time base signal.

10. What is the major disadvantage of simple ramp generator and how this is solved?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is the effect of negative feedback on the bandwidth and distortion of an amplifier. (10)

(ii) A negative feedback is used to reduce the noise from an amplifier by 80%. What must be the percentage negative feedback to accomplish this if the amplifier voltage gain is 100? (6)

Or

(b) Draw the circuit of an emitter follower. Identify the type of negative feedback. Calculate the gain, input and output resistance with and without feedback. (16)

12. (a) (i) Sketch the circuit and explain the operation of a RC phase shift oscillator. Derive the expression for frequency and condition for sustained oscillations for the circuit. (12)

(ii) Explain the need for three RC networks for the circuit functioning. (4)

Or

(b) (i) With a neat diagram, explain the operation of a transistor Pierce crystal oscillator. (12)

(ii) A crystal has L = 0.33H, series capacitor 0.065 pF, parallel capacitor 1 pF and R = 5.5 K ohms. Find the series resonant frequency and Q factor of the circuit. (4)

13. (a) (i) Define quality factor. Obtain the quality factor for a parallel resonant circuit. (12)

(ii) A parallel resonant circuit has a capacitor of 100 pF and an inductor of 100 micro H. The inductor has a resistance of 5 ohms. Find the value of frequency at which the circuit resonates and the circuit impedance at resonance. (4)

Or

(b) (i) Explain the working and frequency response of a single tuned amplifier circuit. (12)

(ii) What are synchronous and stagger tuned amplifier circuits. (4)

14. (a) (i) Draw the circuit of a collector coupled transistor monostable multivibrator. Sketch the waveforms at base and collector for each transistor when the circuit is triggered and explain its working. (10)

(ii) Explain circuits used to trigger a transistor monostable multivibrator circuit. (6)

Or

(b) (i) Draw the circuit of a collector coupled transistor astable multivibrator. Explain its operation and mention the disadvantages of the circuit. (8)

(ii) Design an astable multivibrator circuit to generate a 1 KHZ square wave. The supply voltage is 5V and collector current is to be 2mA. (assume hfe = 70). (8)

15. (a) (i) With a neat diagram explain the circuit for generating sweep using UJT. Obtain expressions for sweep period and frequency. (12)

(ii) In a simple UJT circuit, the resistance and capacitance are 100 K ohms and 0.4 micro Farad. The ratio of peak point voltage to supply voltage is 0.57. Find the frequency of the sweep. (4)

Or

(b) Explain the operation of a bootstrap ramp generator circuit. Discuss the advantages of this circuit with other ramp generators. (16)

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