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Question Paper Code : 51204

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fourth Semester

Electronics and Communication Engineering

EC 1251 A — ELECTRONIC CIRCUITS – II

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define ripple factor.

2. List two advantages of switched Mode Power Supply.

3. What is Barkhausen criteria?

4. Draw the circuit of a twin-T oscillator.

5. The resonant frequency and Q factor of the single stage tuned amplifier are 300kHz and 15 respectively. If five single tuned amplifiers are connected in series, what is the effective bandwidth of the tuned amplifier?

6. Define the term efficiency of an amplifier.

7. Draw the circuit and write the expression for output for RC integrator and differentiator.

8. List out the different methods in which a bistable multivibrator may be triggered.

9. How boot-strapping improves linearity?

10. State the applications of relaxation oscillator using UJT.

PART B — (5 × 16 = 80 marks)

11. (a) With circuit diagrams and waveforms, explain the operation of half-wave and full-wave rectifiers. (8+8)

Or

(b) (i) With circuit diagrams and waveforms, explain power control using SCR. (10)

(ii) Discuss voltage protection in power supplies in brief. (6)

12. (a) (i) Explain the working of Colpitt's oscillator and derive the equation for frequency of oscillation. (8)

(ii) State why crystal oscillators are preferred for high frequency stability. Draw electrical equivalent circuit of crystal. (8)

Or

(b) With neat circuit diagrams explain the principle of operation of the following two types of oscillators:

(i) Hartley oscillator (8)

(ii) Armstrong oscillator: (8)

13. (a) Explain with neat circuit diagram, the operation of a double tuned amplifier. (16)

Or

(b) (i) Explain the stability of tuned amplifiers using neutralization techniques. (8)

(ii) Obtain the bandwidth of a n-stage cascaded identical single tuned amplifiers in terms of the bandwidth of a single stage single tuned amplifier. (8)

14. (a) (i) Sketch and explain transistor switching times. (8)

(ii) Explain positive, negative and combination clippers. (8)

Or

(b) Explain the working of bi-stable multivibrators. Also brief about various triggering methods suitable for bi-stable multivibrators. (16)

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15. (a) (i) Describe UJT relaxation oscillator. (10)

(ii) In a simple UJT sweep circuit, the resistance and capacitance are 100 k Ω and 0.4 μF. The ratio of peak point voltage to supply voltage is 0.57.

(1) Find the frequency of the sweep signal.

(2) If c is increased to 0.6 μ F, what should be the value of R to maintain the same frequency of sweep? (6)

Or

(b) Explain the following.

(i) Monostable blocking oscillator with emitter timing. (8)

(ii) Current time base circuits. (8)

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