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Question Paper Code : 41210

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

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 peak Inverse Voltage.
2. Calculate the value of inductance to use in the inductor filter connected to a full-wave rectifier, operating at 60 Hz to provide a dc output with 4% ripple for a 100 Ω , load.
3. Mention two essential conditions to be satisfied by an oscillator.
4. A Wein-bridge oscillator is used for operation at resonant frequency of 10kHz. If the value of R is 100k Ω , find the value of capacitor C.
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 of a combinational clipper.
8. Design a differentiator circuit to differentiate an input signal that varies in frequency from 10Hz to about 1kHz.
9. Draw the electrical equivalent circuit of pulse transformer.
10. Mention any two applications of blocking oscillator.

PART B — (5 × 16 = 80 marks)

11. (a) Explain with neat diagram, the working of bridge rectifier with resistive load. Sketch the input and output waveforms. Also determine the dc output voltage, maximum efficiency and ripple factor. (16)

Or

- (b) (i) Explain the operation of switched mode power supply in detail with a block diagram. (10)
- (ii) Write a note on over load protection circuit in Regulators. (6)
12. (a) (i) Explain RC phase shift oscillator with neat circuit diagram. Derive its frequency of oscillation. (10)
- (ii) In a Hartley oscillator, the value of the capacitor in the tuned circuit is 500pF and the two sections of coil have inductances 38mH and 12 μ H. Find the frequency of oscillation and feedback factor β . (6)

Or

- (b) (i) Explain colpitt's oscillator. Derive its frequency of oscillation. (10)
- (ii) Write a note on frequency stability of oscillators. (6)
13. (a) What is the need for neutralization? Explain Hazeltine neutralization method. (16)

Or

- (b) With frequency response characteristics, explain single tuned and stagger tuned amplifiers. (16)
14. (a) With neat circuit diagram, explain the working of collector coupled Monostable multivibrator. Sketch the necessary base and collector waveforms. (16)

Or

- (b) Design a Schmitt trigger to have $V_{cc} = 12V$, $UTP = 5V$, $LTP = 3V$ and $I_c = 2mA$. Using two silicon NPN transistors with $h_{FE}(\min) = 100$ and $I_2 = 0.1 I_{c2}$. (16)

15. (a) (i) Describe UJT relaxation oscillator. (10)
- (ii) In a simple UJT sweep circuit, the resistance and capacitance are $100\text{ k}\Omega$ and $0.4\ \mu\text{F}$. 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 $0.6\ \mu\text{F}$, what should be the value of R to maintain the same frequency of sweep. (6)

Or

- (b) Write a note on
- (i) Monostable blocking oscillator with emitter timing (8)
- (ii) Current time base circuits. (8)