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Question Paper Code : 51210

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 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. Calculate the ripple voltage of a full wave rectifier with a 100 micro Farad filter capacitor connected to a load drawing 50 mA.
2. Differentiate voltage multiplier and voltage regulator.
3. What is Barkhausen criteria?
4. Draw the circuit of a twin-T oscillator.
5. Draw a single tuned amplifier circuit diagram and its frequency response characteristics.
6. Determine the bandwidth of a 3-stage cascaded single tuned amplifier if the resonant frequency is 450 kHz and Q_L of each stage is 10.
7. Indicate the different switching times of a BJT in the collector current waveform of an inverter for a positive pulse input at the base.
8. List the triggering methods for bistable multivibrator.
9. What are the applications of blocking oscillators?
10. How can frequency is controlled using core saturation?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Derive the expressions for the rectification efficiency, ripple factor, transformer utilization factor, form factor and peak factor of bridge rectifier. (8)

(ii) Explain the operation of zener diode voltage regulator. (8)

Or

(b) (i) Describe how output voltage can be regulated with respect to line variations and load variations using SMPS. (8)

(ii) Explain the principle of AC power control using SCR. (8)

12. (a) Explain the operation of phase shift oscillator with neat diagram and derive its oscillator frequency. (16)

Or

(b) Derive the amplitude and phase conditions that are to be satisfied in LC oscillators using π network. Hence obtain the frequency of a Hartley oscillator. (16)

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) Explain the working principle and transfer characteristics of bistable multivibrator. (8)

(ii) Draw the Schmitt trigger circuit and explain its working with the help of waveforms. (8)

Or

(b) Design a collector coupled astable multivibrator for the following specifications:

Output voltage = 10 V; $I_C(\text{on}) = 1 \text{ mA}$; $h_{FE}(\text{min}) = 100$; $I_{CBO} = 0$

Output to be a positive pulse, the duration of which is 20 micro seconds, the time between pulses to be 10 micro seconds. (16)

15. (a) With a neat diagram and suitable waveforms explain push-pull astable blocking oscillator with emitter timing. (16)

Or

- (b) Explain with a neat circuit diagram, the operation of a linear voltage time base generator. (16)
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