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Question Paper Code : 91400

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014

Fourth Semester

Electronics and Communication Engineering

EC 2251/EC 41/10144 EC 402/080290019 – ELECTRONIC CIRCUITS – II

(Regulation 2008/2010)

(Common to PTEC 2251 Electronic Circuits – II for B.E. (Part-Time) Third Semester
ECE – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is negative feedback?
2. A feedback amplifier has an open loop gain of 600 and $\beta = 0.01$. Find the closed loop gain with negative feedback.
3. State Barkhausen's criterion for oscillation.
4. Draw the circuit of a Twin- T oscillator.
5. What is stagger tuning?
6. What do you mean by Neutralization?
7. Define Duty cycle.
8. How Low pass circuit is used as an Integrator?
9. What is Blocking Oscillator?
10. Calculate the frequency of the saw tooth waveform generated by a UJT oscillator, if $R_c = 100K\Omega$ and $C = 0.01\mu F$ and intrinsic stand off ratio ' η '

PART B — (5 × 16 = 80 marks)

11. (a) Draw the block diagram of four types of feedback topologies and compare them with respect to gain, input and output resistance. Give one example for each. (16)

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) Draw the circuit diagram of a Colpitts oscillator and explain its principle of operation. Derive its frequency of oscillation and condition to be satisfied for oscillation. (16)

Or

- (b) (i) Using the circuit model of a crystal, sketch its typical reactance characteristics. Distinguish between series resonant and parallel resonant frequencies. (10)
- (ii) Explain with a neat circuit diagram the working of a Pierce Crystal oscillator. (6)
13. (a) Draw the circuit diagram of a Single tuned amplifier. With the help of small signal Equivalent circuit derive expressions for the following.
- (i) Voltage gain
- (ii) Quality Factor
- (iii) Centre Frequency
- (iv) Bandwidth

Draw its frequency response curve. (16)

Or

- (b) Explain
- (i) Hazeltine Neutralisation (8)
- (ii) Coil Neutralisation (8)
14. (a) Draw the circuit diagram of a Collector Coupled Astable Multivibrator and draw the waveforms at the Collector and Base of both the transistors. Explain its principle of operation and derive expression for the frequency of oscillation. (16)

Or

- (b) Draw the circuit diagram of a Schmitt trigger and explain the operation with relevant waveforms. Derive LTP and UTP. (16)
15. (a) (i) Distinguish between the operation of Miller and Bootstrap sawtooth voltage generators. (10)
- (ii) State the applications of pulse transformer. (6)

Or

- (b) What is a time base? With the help of a circuit diagram explain the working of a UJT time base generator. Draw the waveforms at the emitter and both the bases. Derive its frequency of oscillation (16)