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

Question Paper Code : 57284

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fourth Semester

Electronics and Communication Engineering

EC 6401 – ELECTRONIC CIRCUITS – II

(Regulations 2013)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. List the effects of negative feedback on the noise and bandwidth of an amplifier.
2. Calculate the voltage gain and output voltage of a negative feedback amplifier with $A = 120$, $\beta = 0.05$ and $V_S = 75$ mV.
3. Sketch the feedback circuit of a Colpitts Oscillator. Calculate the value of the equivalent series capacitance required if it uses an inductance of 100 mH and is to oscillate at 40 kHz.
4. Mention the advantages and disadvantages of RC Phase shift oscillators.
5. What is the effect of Q on the resonance circuit ?
6. Draw the ideal response and actual response of tuned amplifiers.
7. An RC low pass circuit has R =1.5 kΩ and C = 0.2 μF. What is the rise time of the output when excited by a step input ?
8. State the role of commutating capacitors in bi-stable multivibrator.
9. What are the different methods for generation of ramp waveforms ?
10. Give the applications of blocking oscillators.

PART – B (5 × 16 = 80 Marks)

11. (a) Draw the circuit diagram of a single stage Common Emitter amplifier that uses emitter current feedback. Analyse the circuit and derive equations for gain, input and output impedance with feedback. **(16)**

OR

(b) With the help of a neat schematic (topology), discuss the classification of feedback amplifiers. Discuss qualitatively, the effect of topology of a feedback amplifier on input and output resistance. Also derive the expression for input and output resistance of shunt-series feedback amplifier. **(16)**

12. (a) (i) Explain the principle of operation of Armstrong oscillator with a neat circuit diagram. **(8)**

(ii) Discuss the operation and the principles involved in Twin-T Oscillators. **(8)**

OR

(b) (i) Discuss briefly the principle of oscillation in crystals and draw the equivalent circuit, impedance frequency graph of crystals and give expression for its series and parallel resonant frequency. **(8)**

(ii) Discuss about the frequency stability of crystal oscillator. **(8)**

13. (a) Describe the operation of a capacitance coupled single tuned amplifier and analyse the circuit with the high frequency transistor model to obtain the gain and bandwidth of the amplifier. Sketch its frequency response. **(16)**

OR

(b) Discuss briefly the need for neutralization in tuned amplifiers. Explain Hazeltine and Neutrodyne neutralization methods with relevant circuit diagrams. **(16)**

14. (a) Explain the operation of a Schmitt Trigger with a neat circuit diagram showing relevant input and output waveforms. **(16)**

OR

(b) Explain the following :

(i) Positive clamper **(5)**

(ii) Negative clamper and **(5)**

(iii) RC circuit differentiator **(6)**

15. (a) With neat circuit diagram and waveform, explain the operation of a UJT relaxation oscillator. Derive the expressions for the sweep time and frequency of oscillation of the circuit. **(16)**

OR

(b) Explain the operation and performance of a transistor current time base generator using a neat circuit diagram and relevant waveforms. **(16)**
