

01/06/18 (FN)

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Question Paper Code : 40955

B.E./B.Tech. DEGREE EXAMINATION, APRIL /MAY 2018

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. An amplifier has $A_v = 1000 \pm 100$, determine the feedback needed to keep the gain within $\pm 0.1\%$. Find A_{vf} .
2. Distinguish series and shunt feedback.
3. Mention the bandwidth of double tuned amplifier.
4. Why Impedance matching is needed for tuned amplifier ?
5. Find the operating frequency of a Colpitts oscillator, if $C_1 = 0.001 \mu\text{F}$, $C_2 = 0.01 \mu\text{F}$ and $L = 15 \text{ mH}$.
6. A certain X-cut Quartz crystal resonant at 400 KHz . It has an equivalent inductance of 4 H and an equivalent capacitance of 0.029 PF, if its equivalent resistance is 500 ohms, calculate its Q factor.
7. What is meant by time base generator ?
8. For a low pass RC circuits it is desired to pass a 2 msec sweep of a Ramp input with less than 0.5% transmission error. Determine the upper 3 dB frequency.
9. List out the steps to analyse the clipper circuit.
10. Define sweep speed error.



PART - B

(5×13=65 Marks)

11. a) Draw the equivalent circuit of current series feedback amplifier and explain. Also derive R_{if} , R_{of} , A_v , A_{vf} . (13)
- (OR)
- b) Explain with neat diagram, the two stage voltage series feedback amplifier and determine the A_v , A_{vf} . (13)
12. a) A Crystal with $L = 0.4$ H, $C = 0.085$ PF and $C_M = 1$ PF with $R = 5$ Kilo-ohm. Find
- Series resonant frequency. (4)
 - Parallel resonant frequency. (3)
 - By what percent does parallel resonant frequency exceed the series resonant frequency? (3)
 - Find the Q factor. (3)
- (OR)
- Illustrate the working principle of clapp oscillator with neat diagram. (7)
 - With neat sketch explain the operation of Franklin oscillator. (6)
13. a) Demonstrate on single tuned amplifier and derive for gain and resonant frequency. (13)
- (OR)
- b) Explain the stability of tuned amplifier using Neutralization techniques. (13)
14. a) Determine and explain a series clipper circuits with clipping above Bias Voltage by showing the waveforms of input and output. Draw the transfer characteristics of it. (13)
- (OR)
- b) Draw and explain the operation of Astable multivibrator. Also give its output waveforms. (13)



15. a) Write a short note on :
- Voltage sweep generator. (7)
 - Current time base circuit. (6)
- (OR)
- Explain the operation of UJT Sawtooth oscillator. (7)
 - Discuss briefly about free running blocking oscillator. (6)

PART - C

(1×15=15 Marks)

16. a) Design a Hartley oscillator of frequency 100 KHz and explain its working with neat circuit diagram. Assume $L_1 = L_2 = 4$ mH. (15)
- (OR)
- b) Explain the operation of push-pull astable blocking oscillator with emitter timing. (15)