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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 (4)
i) Series resonant frequency. (3)
ii) Parallel resonant frequency. (3)
iii) By what percent does parallel resonant frequency exceed the series resonant frequency? (3)
iv) Find the Q factor. (3)
(OR)
- b) i) Illustrate the working principle of clapp oscillator with neat diagram. (7)
ii) 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 : (7)
i) Voltage sweep generator. (6)
ii) Current time base circuit. (6)
(OR)
- b) i) Explain the operation of UJT Sawtooth oscillator. (7)
ii) 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)