

B.E. DEGREE EXAMINATIONS: APRIL/MAY 2010

Fourth Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U07EC401: Electronics Circuits II

Time: Three Hours**Maximum Marks: 100****Answer ALL the Questions:-****PART A (10 x 1 = 10 Marks)**

1. The input impedance with feedback is given by
 A. $Z_i/(1+A\beta)$ B. $Z_o/(1+A\beta)$ C. $Z_i*(1+A\beta)$ D. $Z_o*(1+A\beta)$
2. Emitter follower is an example for _____ feedback.
 A. Voltage Series B. Voltage shunt C. Current Series D. Current Shunt
3. Very high frequency oscillator range is
 A. 10KHz-100KHz B. 100KHz-1000KHz C. 30MHz-300MHz D. 300MHz-3GHz
4. One of the conditions for producing oscillation is
 A. $|A\beta| = 0$ B. $|A\beta| = 1$ C. $|A\beta| > 1$ D. $|A\beta| < 1$
5. Small signal tuned amplifier is operated under _____ operation.
 A. Class A B. Class B C. Class AB D. Class C
6. Class C amplifier out put is obtained for:
 A. More than half cycle B. Less than half cycle C. More than full cycle D. Less than full cycle.
7. Astable multivibrator is also called as
 A. One shot multivibrator B. univibrator C. Free running multivibrator. D. Flipflop
8. Biased positive clipper is used to
 A. Remove full positive half cycle B. Remove full negative half cycle
 C. Remove part of positive half cycle D. Remove part of negative half cycle.
9. UJT Relaxation oscillator is used to generate
 A. Sine wave form B. Square wave form C. Time base waveform D. Sawtooth waveform
10. Turns ratio of pulse transformer in mono stable blocking oscillator is
 A. $2n:1$ B. $n:1$ C. $1:2n$ D. $1:n$

PART B (10 x 2 = 20 Marks)

11. Mention two advantages of negative feedback.
12. Draw the block diagram of voltage shunt feedback amplifier and give its input and output resistance.
13. Give the equivalent circuit of quartz crystal and mention its series and parallel resonance frequency.

14. Calculate the frequency of oscillation for the Hartley oscillator with $C=500\text{pF}$, $L_1=38\mu\text{H}$ and $L_2=12\mu\text{H}$.
15. A tuned amplifier has its maximum gain at a frequency of 2MHz and has a bandwidth of 50KHz . Calculate the Q factor.
16. Define Stagger Tuned amplifier.
17. Give the circuit of integrator using RC as circuit elements and mention its output voltage V_o if V_i is the input voltage.
18. Draw the circuit of negative clipper.
19. Define Time Base Generator.
20. Draw the equivalent circuit of pulse transformer.

PART C (5 x 14 = 70 Marks)

21. a) (i) Draw the block diagram of an amplifier with four types of feedback and compare them with respect to R_{if} and R_{of} . (10)
 (ii) Explain the criterion to analyze the stability of feedback amplifier. (4)
 (OR)
 b) (i) Discuss the effects of negative feedback on gain, bandwidth, distortion and noise. (10)
 (ii) An amplifier has a voltage gain of 400, $f_1=50\text{Hz}$, $f_2=200\text{ kHz}$ and distortion of 10% without feedback. Determine the amplifier voltage gain, f_{1f} , f_{2f} and D_f when negative feedback is applied with feedback ratio of 0.01. (4)
22. a) Explain RC phase shift oscillator with a neat diagram. Derive its frequency of oscillation and condition for maintaining oscillation.
 (OR)
 b) (i) Explain the Colpitts Oscillator and derive its frequency expression. (10)
 (ii) A crystal has the following parameters $L=0.5\text{H}$, $C_s=0.06\text{pF}$, $C_p=1\text{pF}$ and $R=5\text{k}\Omega$. Find its series resonant frequency and corresponding Q factor of crystal. (4)
23. a) Explain the working of single tuned voltage amplifier and discuss its frequency response.
 (OR)
 b) Define Class C amplifier. Sketch a tuned Class C amplifier with an LC tank circuit as Load. Derive its efficiency.
24. a) With neat circuit diagram explain the working of collector coupled Astable multivibrator. Draw base and collector waveforms. Derive its time period
 (OR)
 b) With neat circuit diagram explain the working of a Schmitt trigger circuit. Draw the corresponding waveforms.
25. a) Explain Miller and Bootstrap sweep generators with necessary circuits and waveforms.
 (OR)
 b) With neat circuit diagram explain the working of monostable blocking oscillator with base timing. Draw and derive the necessary waveform and equation.
