Register Number: ……

B.E. DEGREE EXAMINATIONS: NOV/DEC 2010

Fourth Semester

ELCECTRONICS AND COMMUNICATION ENGINEERING

U07EC401: Electronic Circuits -II

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

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. A feedback amplifier has an open loop gain of 600 and a feed back factor β=0.01. The closed loop gain with negative feedback is

   A) 85.714 B) 95.714 C) 75.714 D) 65.714

2. The desensitivity of gain is

   A) $\frac{1}{1-\beta A}$ B) $\frac{1}{1+\beta A}$ C) 1+βA D) 1-βA

3. The range of frequencies for RC oscillators is

   A) 0 Hz to 20 Hz B) 0 Hz to 200 Hz

   C) 20 Hz to 200 KHz D) 200 KHz to few GHz

4. To maintain sustained oscillations, $|A\beta|$ should be

   A) lesser than one B) greater than one

   C) equal to one D) greater than or equal to one

5. At resonance the inductive and capacitive effects

   A) add with each other B) cancel each other

   C) subtract with each other D) does not change.

6. The series resistance of an inductor of 250μH and Q=300 at 1 MHz is

   A) 5.235Ω B) 471.24KΩ C) 47.124KΩ D) 52.35Ω

7. The overall operation of ---------- is based on the fact that no two active devices have exactly identical characteristics.

   A) Integrator and differentiator circuit B) Clippers and clamper circuit

   C) Multivibrator circuit D) Schmitt trigger circuit

8. The gain of a low pass RC circuit is

A) $|A| = \frac{1}{\sqrt{1+\left(\frac{f_c}{f}\right)^2}}$ B) $|A| = \frac{1}{\sqrt{1+\left(\frac{f}{f_c}\right)^2}}$

C) $|A| = \frac{1}{\sqrt{1-\left(\frac{f_c}{f}\right)^2}}$ D) $|A| = \frac{1}{\sqrt{1-\left(\frac{f}{f_c}\right)^2}}$

9. The circuit which uses regenerative feedback, producing a single pulse or pulse train is called

A) Blocking oscillator B) RC oscillator C) LC Oscillator D) Square wave oscillator.

10. In a transistorized constant current sweep, transistor is used in

A) Common Collector configuration B) Common base configuration

C) Common Emitter configuration D) Common source configuration

PART B (10 x 2 = 20 Marks)

11. Mention two advantages of negative feed back.
12. The gain and distortion of an amplifier are 100 and 4% respectively. If a negative feedback with β =0.3 is applied, find the new distortion in the system.
13. State Barkhausen criterion for sinusoidal oscillators.
14. How does crystal oscillator maintain frequency stability?
15. What is synchronously tuned amplifier?
16. Why quality factor is kept as high as possible in tuned circuit?
17. List the applications of Schmitt trigger circuits
18. What is the function of commutating capacitors in bi stable multivibrator?
19. What is the purpose of compensating network in time base generators?
20. Draw the waveforms of simple current time base generators.

PART B (5 x 14 = 70 Marks)

21. a) (i) Give the block diagram of feed back amplifier and discuss the effect of negative feedback with respect to closed loop gain, bandwidth and distortion. (8)

(ii) Draw the feed back topology diagram with voltage series feed back and derive the input impedance. (6)

(OR)

b) The circuit given in figure 1 has the following parameters R_c=4kΩ, $R^{'}$= 40kΩ, R_s=10 kΩ, h_{ie}=1.1k, h_{fe}=50 and h_{re}= h_{oe}=0. Find A_{vf}, R_{if} and R_{of}.

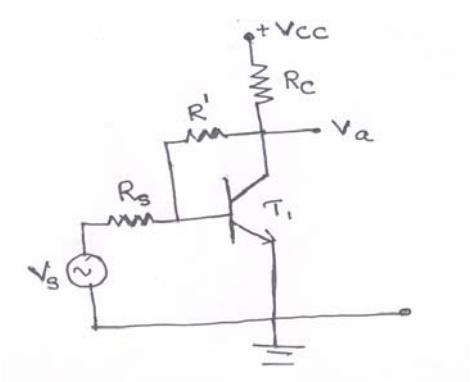

Figure 1

22. a) (i) Why do we need three RC networks for a phase-shift oscillator? (4)

(ii) Derive the expressions for the frequency of oscillation required for sustained oscillations of an RC phase shift oscillator. (10)

(OR)

b) (i) Differentiate amplifier and oscillator. (4)

(ii) Draw the circuit of a Hartley oscillator and obtain the expression for its frequency of oscillation. (10)

23. a) Explain class C tuned amplifier and derive its efficiency.

(OR)

b) (i) Explain single tuned voltage amplifier and discuss its frequency response. (8)

(ii) Describe Hazeltine neutralization method to maintain stability in tuned amplifiers. (6)

24. a) With neat diagram explain the working of a schmitt trigger circuit and draw the corresponding waveforms.

(OR)

b) With circuit diagrams and necessary waveforms explain the operation of RC circuits as integrators and differentiators for square wave input.

25. a) Describe the Miller and Bootstrap sweep generators with necessary circuits and waveforms.

(OR)

b) With neat circuit diagram, explain monostable blocking oscillators with base and emitter timing. Draw necessary waveforms.

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